



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM-606 201, VILLUPURAM DISTRICT, TAMIL NADU, INDIA.

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai.

An ISO 9001: 2015 Certified Institution

A Christian Minority Institution run by the Franciscan Sisters of the Immaculate Heart of Mary Society, Puducherry.

Phone: 04151-258325, 258326

Website: [www.iecw.edu.in](http://www.iecw.edu.in)

Email ID: [indhaya@iecw.edu.in](mailto:indhaya@iecw.edu.in)

## 1.3.2 Average percentage of courses that include experiential learning through project work/field work/ internship during last five years

### ACADEMIC YEAR 2017-18

S.No	Name of the Programme	No. of Courses
1.	B.E - Computer Science and Engineering	22
2.	B.E - Electrical and Electronics Engineering	20
3.	B.E - Electronics and Communication Engineering	23
4.	B.Tech - Information Technology	1
5.	M.E - Computer Science and Engineering	14
6.	M.E – Communication Systems	14
	Total	94





# IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM-606 201, VILLUPURAM DISTRICT, TAMIL NADU, INDIA.

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai.

An ISO 9001: 2015 Certified Institution

A Christian Minority Institution run by the Franciscan Sisters of the Immaculate Heart of Mary Society, Puducherry.

Phone: 04151-258325, 258326

Website: [www.iecw.edu.in](http://www.iecw.edu.in)

Email ID: [indhaya@iecw.edu.in](mailto:indhaya@iecw.edu.in)

S.No	Program Name	Program Code	Course Code	Course Name	Project Work	Field Work	Internship
1.	B.E-CSE	104	GE8151	Problem Solving and Python Programming	√		
2.	B.E-CSE	104	CS8251	Programming in C	√		
3.	B.E-CSE	104	CS6301	Programming and Data Structure II	√		
4.	B.E-CSE	104	CS6302	Database Management Systems	√		
5.	B.E-CSE	104	CS6303	Computer Architecture	√		
6.	B.E-CSE	104	CS6551	Computer Networks	√		
7.	B.E-CSE	104	CS6401	Operating Systems	√	√	
8.	B.E-CSE	104	CS6402	Design and Analysis of Algorithms	√		
9.	B.E-CSE	104	CS6403	Software Engineering	√		
10.	B.E-CSE	104	CS6501	Internet Programming	√		√
11.	B.E-CSE	104	CS6502	Object Oriented Analysis and Design	√		
12.	B.E-CSE	104	CS6503	Theory of Computation	√		
13.	B.E-CSE	104	CS6504	Computer Graphics	√		
14.	B.E-CSE	104	CS6601	Distributed Systems	√		
15.	B.E-CSE	104	IT6601	Mobile Computing	√	√	
16.	B.E-CSE	104	CS6660	Compiler Design	√		
17.	B.E-CSE	104	CS6659	Artificial Intelligence	√	√	
18.	B.E-CSE	104	CS6703	Grid and Cloud Computing	√		
19.	B.E-CSE	104	CS6003	Ad hoc and Sensor Networks	√		
20.	B.E-CSE	104	EC6703	Embedded and Real Time Systems	√		
21.	B.E-CSE	104	CS6801	Multi – Core Architectures and Programming	√		
22.	B.E-CSE	104	CS6008	Human Computer Interaction	√		
23.	B.E-EEE	105	EE6301	Digital Logic Circuits	√		
24.	B.E-EEE	105	EE6302	Electromagnetic Theory	√		
25.	B.E-EEE	105	EC6202	Electronic Devices and Circuits	√		
26.	B.E-EEE	105	EE6401	Electrical Machines - I	√		√
27.	B.E-EEE	105	EE6402	Transmission and Distribution	√	√	
28.	B.E-EEE	105	EE6404	Measurements and Instrumentation	√		
29.	B.E-EEE	105	EE6501	Power System Analysis	√	√	
30.	B.E-EEE	105	EE6503	Power Electronics	√		
31.	B.E-EEE	105	EE6504	Electrical Machines - II	√		√
32.	B.E-EEE	105	IC6501	Control Systems	√		
33.	B.E-EEE	105	EE6602	Embedded Systems	√	√	
34.	B.E-EEE	105	EE6603	Power System Operation and	√		

*Anne*  
PRINCIPAL

IDHAYA Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM-606 201, VILLUPURAM DISTRICT, TAMIL NADU, INDIA.

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai.

An ISO 9001: 2015 Certified Institution

A Christian Minority Institution run by the Franciscan Sisters of the Immaculate Heart of Mary Society, Puducherry.

Phone: 04151-258325, 258326

Website: [www.iecw.edu.in](http://www.iecw.edu.in)

Email ID: [indhaya@iecw.edu.in](mailto:indhaya@iecw.edu.in)

				Control			
35.	B.E-EEE	105	EE6002	Power System Transients	√		
36.	B.E-EEE	105	EE6701	High Voltage Engineering	√		
37.	B.E-EEE	105	EE6702	Protection and Switchgear	√		
38.	B.E-EEE	105	EE6703	Special Electrical Machines	√		
39.	B.E-EEE	105	EE6005	Power Quality	√		
40.	B.E-EEE	105	EE6008	Microcontroller Based System Design	√		
41.	B.E-EEE	105	EE6801	Electric Energy Generation, Utilization and Conservation	√		
42.	B.E-EEE	105	EE6010	High Voltage Direct Current Transmission	√		
43.	B.E-ECE	106	EC8252	Electronic Devices	√		
44.	B.E-ECE	106	EC6302	Digital Electronics	√		
45.	B.E-ECE	106	EC6303	Signals and Systems	√		
46.	B.E-ECE	106	EC6304	Electronic Circuits- I	√		
47.	B.E-ECE	106	EC6401	Electronic Circuits II	√		
48.	B.E-ECE	106	EC6402	Communication Theory	√		
49.	B.E-ECE	106	EC6403	Electromagnetic Fields	√		
50.	B.E-ECE	106	EC6404	Linear Integrated Circuits	√		
51.	B.E-ECE	106	EC6405	Control System Engineering	√		
52.	B.E-ECE	106	EC6501	Digital Communication	√		
53.	B.E-ECE	106	EC6503	Transmission Lines and Wave Guides	√		
54.	B.E-ECE	106	CS6303	Computer Architecture	√		
55.	B.E-ECE	106	CS6551	Computer Networks	√		
56.	B.E-ECE	106	EC6601	VLSI Design	√	√	
57.	B.E-ECE	106	EC6602	Antenna and Wave propagation	√		
58.	B.E-ECE	106	EC6001	Medical Electronics	√		
59.	B.E-ECE	106	EC6701	RF and Microwave Engineering	√		
60.	B.E-ECE	106	EC6702	Optical Communication and Networks	√		
61.	B.E-ECE	106	IT6005	Digital Image Processing	√		
62.	B.E-ECE	106	EC6011	Advanced Computer Architecture	√		
63.	B.E-ECE	106	EC6016	Opto Electronic Devices	√		
64.	B.E-ECE	106	EC6801	Wireless Communication	√		
65.	B.E-ECE	106	EC6802	Wireless Networks	√		
66.	B.Tech-IT	205	IT6503	Web Programming		√	
67.	M.E-CSE	405	CP5151	Advanced Data Structures and Algorithms	√		
68.	M.E-CSE	405	CP5152	Advanced Computer Architecture	√		
69.	M.E-CSE	405	CP5153	Operating System Internals	√		

*Anne*  
PRINCIPAL

IDHAYA Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201,  
Hallakurichi Taluk, Villupuram District.



# IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM-606 201, VILLUPURAM DISTRICT, TAMIL NADU, INDIA.

Approved by AICTE, New Delhi, Affiliated to Anna University, Chennai.

An ISO 9001: 2015 Certified Institution

A Christian Minority Institution run by the Franciscan Sisters of the Immaculate Heart of Mary Society, Puducherry.

Phone: 04151-258325, 258326

Website: [www.iecw.edu.in](http://www.iecw.edu.in)

Email ID: [indhaya@iecw.edu.in](mailto:indhaya@iecw.edu.in)

70.	M.E-CSE	405	CP5154	Advanced Software Engineering	√		
71.	M.E-CSE	405	CP5191	Machine Learning Techniques	√		
72.	M.E-CSE	405	CP5201	Network Design and Technologies	√		
73.	M.E-CSE	405	CP5291	Security Practices	√		
74.	M.E-CSE	405	CP5292	Internet of Things	√		
75.	M.E-CSE	405	CP5293	Big Data Analytics	√		
76.	M.E-CSE	405	CP5092	Cloud Computing Technologies	√		
77.	M.E-CSE	405	CP5094	Information Retrieval Techniques	√		
78.	M.E-CSE	405	CP5005	Software Quality Assurance and Testing	√		
79.	M.E-CSE	405	CP5073	Embedded Software Development	√		
80.	M.E-CSE	405	CP5097	Mobile Application Development	√		
81.	M.E-CS	403	CU5191	Advanced Radiation Systems	√		
82.	M.E-CS	403	CU5151	Advanced Digital Communication Techniques	√		
83.	M.E-CS	403	AP5152	Advanced Digital Signal Processing	√		
84.	M.E-CS	403	CU5192	Optical Networks	√		
85.	M.E-CS	403	CU5091	Advanced Satellite Communication and Navigation Systems	√		
86.	M.E-CS	403	CU5291	Advanced Wireless Communication Systems	√		
87.	M.E-CS	403	CU5201	MIC and RF System Design	√		
88.	M.E-CS	403	CU5292	Electromagnetic Interference and Compatibility	√		
89.	M.E-CS	403	CU5071	Digital Communication Receivers	√		
90.	M.E-CS	403	DS5291	Advanced Digital Image processing	√		
91.	M.E-CS	403	EL5071	Broadband Access Technologies	√		
92.	M.E-CS	403	CU5301	Millimeter Wave Communication	√		
93.	M.E-CS	403	MU5091	Multimedia Compression Techniques	√		
94.	M.E-CS	403	NC5291	Communication Network Security	√		

*Mano*  
PRINCIPAL

IDHAYA Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District

**DEPARTMENT OF COMPUTER SCIENCE  
ENGINEERING**



**OBJECTIVES:**

- To know the basics of algorithmic problem solving
- To read and write simple Python programs.
- To develop Python programs with conditionals and loops.
- To define Python functions and call them.
- To use Python data structures — lists, tuples, dictionaries.
- To do input/output with files in Python.

**UNIT I ALGORITHMIC PROBLEM SOLVING 9**

Algorithms, building blocks of algorithms (statements, state, control flow, functions), notation (pseudo code, flow chart, programming language), algorithmic problem solving, simple strategies for developing algorithms (iteration, recursion). Illustrative problems: find minimum in a list, insert a card in a list of sorted cards, guess an integer number in a range, Towers of Hanoi.

**UNIT II DATA, EXPRESSIONS, STATEMENTS 9**

Python interpreter and interactive mode; values and types: int, float, boolean, string, and list; variables, expressions, statements, tuple assignment, precedence of operators, comments; modules and functions, function definition and use, flow of execution, parameters and arguments; Illustrative programs: exchange the values of two variables, circulate the values of n variables, distance between two points.

**UNIT III CONTROL FLOW, FUNCTIONS 9**

Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else); Iteration: state, while, for, break, continue, pass; Fruitful functions: return values, parameters, local and global scope, function composition, recursion; Strings: string slices, immutability, string functions and methods, string module; Lists as arrays. Illustrative programs: square root, gcd, exponentiation, sum an array of numbers, linear search, binary search.

**UNIT IV LISTS, TUPLES, DICTIONARIES 9**

Lists: list operations, list slices, list methods, list loop, mutability, aliasing, cloning lists, list parameters; Tuples: tuple assignment, tuple as return value; Dictionaries: operations and methods; advanced list processing - list comprehension; Illustrative programs: selection sort, insertion sort, merge sort, histogram.

**UNIT V FILES, MODULES, PACKAGES 9**

Files and exception: text files, reading and writing files, format operator; command line arguments, errors and exceptions, handling exceptions, modules, packages; Illustrative programs: word count, copy file.

**TOTAL: 45 PERIODS****OUTCOMES:****Upon completion of the course, students will be able to**

- Develop algorithmic solutions to simple computational problems
- Read, write, execute by hand simple Python programs..
- Decompose a Python program into functions.
- Represent compound data using Python lists, tuples, dictionaries.
- Read and write data from/to files in Python Programs.

**TEXT BOOKS:**

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", 2<sup>nd</sup> edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016 (<http://greenteapress.com/wp/think-python/>)
2. Guido van Rossum and Fred L. Drake Jr, —An Introduction to Python – Revised and updated for Python 3.2, Network Theory Ltd., 2011.

**REFERENCES:**

1. John V Guttag, —Introduction to Computation and Programming Using Python", Revised and expanded Edition, MIT Press, 2013
2. Robert Sedgewick, Kevin Wayne, Robert Dondero, —Introduction to Programming in Python: An Inter-disciplinary Approach, Pearson India Education Services Pvt. Ltd., 2016.
3. Timothy A. Budd, —Exploring Python, Mc-Graw Hill Education (India) Private Ltd., 2015.
4. Kenneth A. Lambert, —Fundamentals of Python: First Programs, CENGAGE Learning, 2012.
5. Charles Dierbach, —Introduction to Computer Science using Python: A Computational Problem-Solving Focus, Wiley India Edition, 2013.
6. Paul Gries, Jennifer Campbell and Jason Montojo, Practical Programming: An Introduction to Computer Science using Python 3, Second edition, Pragmatic Programmers,


  
PRINCIPAL

dhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



**EMERGING SERVICES AND ANALYTICS**

**FOR CLOUD COMPUTING WITH**

**CLOUD SERVICE PROVIDER**



**A PROJECT REPORT**

*Submitted by*

**FOWMITHA.J**

**621114104009**

**GAYATHRI.T**

**621114104012**

**SHALINI.B**

**621114104033**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI-600 025**

**APRIL 2018**

*Wen*  
PRINCIPAL

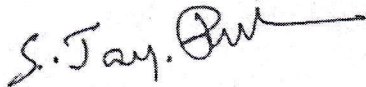
Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606707  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY : CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "EMERGING SERVICES AND ANALYTICS FOR CLOUD COMPUTING WITH CLOUD SERVICE PROVIDER" is the bonafide work of "J. FOWMITHA, T. GAYATHRI, B. SHALINI" who carried out their project work under my supervision.



SIGNATURE

Mr.S. JAYAPRAKASH., M.E., (Ph.D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.



SIGNATURE

Mrs. P. MOHANAVALLI., M.E.,

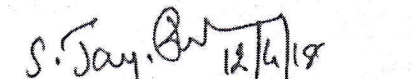
SUPERVISOR

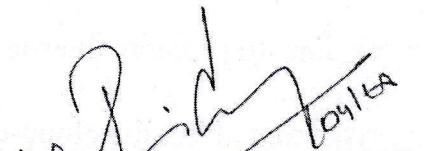
Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.

  
12/4/19  
INTERNAL EXAMINER

  
10/1/19  
EXTERNAL EXAMINER

## ABSTRACT

The use of cloud computing has increased rapidly in many organizations. Cloud computing provides many benefits in terms of low cost and accessibility of data. Ensuring the security of cloud computing is a major factor in the cloud computing environment, as users often store sensitive information with cloud storage providers but these providers may be untrusted. Dealing with “single cloud” providers is predicted to become less popular with customers due to risks of service availability failure and the possibility of malicious insiders in the single cloud. A movement towards “multi-clouds”, or in other words, “interclouds” or “cloud-of-clouds” has emerged recently. This paper surveys recent research related to single and multi-cloud security and addresses possible solutions. It is found that the research into the use of multi-cloud providers to maintain security has received less attention from the research community than has the use of single clouds. This work aims to promote the use of multi-clouds due to its ability to reduce security risks that affect the cloud-computing user.



**OBJECTIVES:**

- To develop C Programs using basic programming constructs
- To develop C programs using arrays and strings
- To develop applications in C using functions , pointers and structures
- To do input/output and file handling in C

**UNIT I BASICS OF C PROGRAMMING**

9

Introduction to programming paradigms - Structure of C program - C programming: Data Types - Storage classes - Constants - Enumeration Constants - Keywords - Operators: Precedence and Associativity - Expressions - Input/Output statements, Assignment statements - Decision making statements - Switch statement - Looping statements - Pre-processor directives - Compilation process

**UNIT II ARRAYS AND STRINGS**

9

Introduction to Arrays: Declaration, Initialization - One dimensional array - Example Program: Computing Mean, Median and Mode - Two dimensional arrays - Example Program: Matrix Operations (Addition, Scaling, Determinant and Transpose) - String operations: length, compare, concatenate, copy - Selection sort, linear and binary search

**UNIT III FUNCTIONS AND POINTERS**

9

Introduction to functions: Function prototype, function definition, function call, Built-in functions (string functions, math functions) - Recursion - Example Program: Computation of Sine series, Scientific calculator using built-in functions, Binary Search using recursive functions - Pointers - Pointer operators - Pointer arithmetic - Arrays and pointers - Array of pointers - Example Program: Sorting of names - Parameter passing: Pass by value, Pass by reference - Example Program: Swapping of two numbers and changing the value of a variable using pass by reference.

**UNIT IV STRUCTURES**

9

Structure - Nested structures - Pointer and Structures - Array of structures - Example Program using structures and pointers - Self referential structures - Dynamic memory allocation - Singlylinked list - typedef

**UNIT V FILE PROCESSING**

9

Files - Types of file processing: Sequential access, Random access - Sequential access file - Example Program: Finding average of numbers stored in sequential access file - Random access file - Example Program: Transaction processing using random access files - Command line arguments

**OUTCOMES:**

Upon completion of the course, the students will be able to

- Develop simple applications in C using basic constructs
- Design and implement applications using arrays and strings
- Develop and implement applications in C using functions and pointers.
- Develop applications in C using structures.
- Design applications using sequential and random access file processing.

**TEXT BOOKS:**

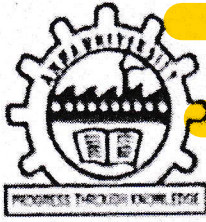
1. Reema Thareja, —Programming in C, Oxford University Press, Second Edition, 2016.
2. Kernighan, B.W and Ritchie,D.M, —The C Programming language, Second Edition, Pearson Education, 2006

**REFERENCES:**

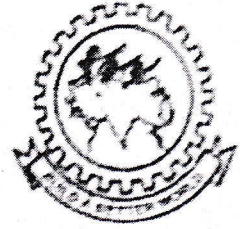
1. Paul Deitel and Harvey Deitel, —C How to Program, Seventh edition, Pearson Publication
2. Juneja, B. L and Anita Seth, —Programming in C, CENGAGE Learning India Pvt. Ltd., 2011
3. Pradip Dey, Manas Ghosh, —Fundamentals of Computing and Programming in C, First Edition, Oxford University Press, 2009.
4. Anita Goel and Ajay Mittal, —Computer Fundamentals and Programming in C, DorlingKindersley (India) Pvt. Ltd., Pearson Education in South Asia, 2011.
5. Byron S. Gottfried, "Schaum's Outline of Theory and Problems of Programming with C", McGraw-Hill Education, 1996.

  
PRINCIPAL

Adhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



**EVALUATION FRAMEWORK BASED  
CHANNEL STATE INFORMATION  
WITH PATH IDENTIFIERS**



**A PROJECT REPORT**

*Submitted by*

**DHIVYABHARATHI.T**

621114104006

**PERIYANAYAKI JENIFER MARY.S**

621114104028

**PRAGATHI.R**

621114104701

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI 600 025**

**APRIL 2018**

*Principi*  
**PRINCIPAL**

Idhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM-600 025  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "EVALUATION FRAMEWORK  
BASED CHANNEL STATE INFORMATION WITH PATH  
IDENTIFIERS" is the bonafide work of "DHIVYABHARATHI.T.  
PERIYANAYAKIJENIFER MARY.S, PRAGATHI.R" who carried  
out their project work under my supervision.

*S. Jay. Pr*  
SIGNATURE

Mr.S.JAYAPRAKASH, M.E.,

HEAD OF THE DEPARTMENT

Associate Professor / CSE,

Idhaya Engineering College

For Women,

Chinnasalem-606 201.

*K. Gandhimathi*  
SIGNATURE

Mrs.K.GANDHIMATHI, M.E.,

SUPERVISOR

Associate Professor / CSE,

Idhaya Engineering College

For Women,

Chinnasalem-606 201.

*S. Jay. Pr*  
INTERNAL EXAMINER

*V. P. S.*  
EXTERNAL EXAMINER

*neeraj*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNAsALEM-606201,  
kallakurichi Taluk, Villupuram District

## ABSTRACT

In this digital era, networks and their capacities are continuously growing and significantly increasing their market space. Attackers are improving their skills and developing tools based on new concepts in cyber security to stay ahead in hacker's world by considering how it is powerful, easy to use and cost effective. Distributed Denial of Service (DDOS) attacks are a serious problem with the internet services and the networks. These attacks are massively fired by distributing malicious computers. These attacks can be carried out in various forms such as servers crashing, router crashing, overwhelming the network with high traces, damaging server critical resources etc. Today anyone with black hat mindset can launch the attack. Availability of tools and cost effective attack service have made DDOS attacks more dangerous and more temporal than ever. These attacks have become very complex with respect to time scale such that existing security algorithms are not that much sufficient to counter and protect against these attacks. In existing approaches Path Identifiers (PIDS) used are static which makes it easy for attackers to launch DDOS attacks. The proposed scheme uses Dynamic Path Identifiers (DPID) is simple to implement, introduces no bandwidth overhead, low computational overhead and has low fault probability. In D-PID, PID of an inter domain path connecting two domains is kept secret and changes dynamically.



**OBJECTIVES:****The student should be made to:**

- Study the basic concepts and functions of operating systems.
- Understand the structure and functions of OS.
- Learn about Processes, Threads and Scheduling algorithms.
- Understand the principles of concurrency and Deadlocks.
- Learn various memory management schemes.
- Study I/O management and File systems.
- Learn the basics of Linux system and perform administrative tasks on Linux Servers.

<b>UNIT I</b>	<b>OPERATING SYSTEMS OVERVIEW</b>	<b>9</b>
	Computer System Overview-Basic Elements, Instruction Execution, Interrupts, Memory Hierarchy, Cache Memory, Direct Memory Access, Multiprocessor and Multicore Organization. Operating system overview-objectives and functions, Evolution of Operating System.- Computer System Organization- Operating System Structure and Operations- System Calls, System Programs, OS Generation and System Boot.	
<b>UNIT II</b>	<b>PROCESS MANAGEMENT</b>	<b>9</b>
	Processes-Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication; Threads- Overview, Multicore Programming, Multithreading Models; Windows 7 - Thread and SMP Management. Process Synchronization - Critical Section Problem, Mutex Locks, Semaphores, Monitors; CPU Scheduling and Deadlocks.	
<b>UNIT III</b>	<b>STORAGE MANAGEMENT</b>	<b>9</b>
	Main Memory-Contiguous Memory Allocation, Segmentation, Paging, 32 and 64 bit architecture Examples; Virtual Memory- Demand Paging, Page Replacement, Allocation, Thrashing; Allocating Kernel Memory, OS Examples.	
<b>UNIT IV</b>	<b>I/O SYSTEMS</b>	<b>9</b>
	Mass Storage Structure- Overview, Disk Scheduling and Management; File System Storage-File Concepts, Directory and Disk Structure, Sharing and Protection; File System Implementation- File System Structure, Directory Structure, Allocation Methods, Free Space Management, I/O Systems.	
<b>UNIT V</b>	<b>CASE STUDY</b>	<b>9</b>
	Linux System- Basic Concepts;System Administration-Requirements for Linux System Administrator, Setting up a LINUX Multifunction Server, Domain Name System, Setting Up Local Network Services; Virtualization- Basic Concepts, Setting Up Xen,VMware on Linux Host and Adding Guest OS.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design various Scheduling algorithms.
- Apply the principles of concurrency.
- Design deadlock, prevention and avoidance algorithms.
- Compare and contrast various memory management schemes.
- Design and Implement a prototype file systems.
- Perform administrative tasks on Linux Servers.

**TEXT BOOK:**

1. Abraham Silberschatz, Peter Baer Galvin and Greg Gagne, "Operating System Concepts", 9<sup>th</sup>Edition, John Wiley and Sons Inc., 2012.

**REFERENCES:**

1. William Stallings, "Operating Systems – Internals and Design Principles", 7<sup>th</sup> Edition, Prentice Hall,2011.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Second Edition, Addison Wesley, 2001.
3. Charles Crowley, "Operating Systems: A Design-Oriented Approach", Tata McGraw HillEducation", 1996.
4. D M Dhamdhare, "Operating Systems: A Concept-Based Approach", Second Edition, TataMcGraw-Hill Education, 2007.
5. <http://nptel.ac.in/>.

  
 PRINCIPAL  
 Vidhya Engineering College for Women  
 Vainarpalayam Road, CHINNASALEM-606206  
 Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Understand the basic concepts of mobile computing
- Be familiar with the network protocol stack
- Learn the basics of mobile telecommunication system
- Be exposed to Ad-Hoc networks
- Gain knowledge about different mobile platforms and application development

**UNIT I INTRODUCTION**

9

Mobile Computing – Mobile Computing Vs wireless Networking – Mobile Computing Applications – Characteristics of Mobile computing – Structure of Mobile Computing Application. MAC Protocols – Wireless MAC Issues – Fixed Assignment Schemes – Random Assignment Schemes – ReservationBased Schemes.

**UNIT II MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER**

9

Overview of Mobile IP – Features of Mobile IP – Key Mechanism in Mobile IP – route Optimization. Overview of TCP/IP – Architecture of TCP/IP- Adaptation of TCP Window – Improvement in TCP Performance.

**UNIT III MOBILE TELECOMMUNICATION SYSTEM**

9

Global System for Mobile Communication (GSM) – General Packet Radio Service (GPRS) – Universal Mobile Telecommunication System (UMTS).

**UNIT IV MOBILE AD-HOC NETWORKS**

9

Ad-Hoc Basic Concepts – Characteristics – Applications – Design Issues – Routing – Essential of Traditional Routing Protocols – Popular Routing Protocols – Vehicular Ad Hoc networks (VANET) – MANET Vs VANET – Security.

**UNIT V MOBILE PLATFORMS AND APPLICATIONS**

9

Mobile Device Operating Systems – Special Constrains & Requirements – Commercial Mobile Operating Systems – Software Development Kit: iOS, Android, BlackBerry, Windows Phone – M- Commerce – Structure – Pros & Cons – Mobile Payment System – Security Issues.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Explain the basics of mobile telecommunication system
- Choose the required functionality at each layer for given application
- Identify solution for each functionality at each layer
- Use simulator tools and design Ad hoc networks
- Develop a mobile application.

**TEXT BOOK:**

1. Prasant Kumar Pattnaik, Rajib Mall, "Fundamentals of Mobile Computing", PHI Learning Pvt.Ltd, New Delhi – 2012.

**REFERENCES:**

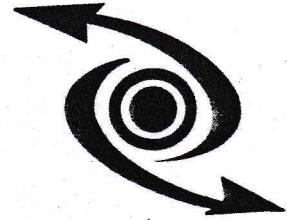
1. Jochen H. Schller, "Mobile Communications", Second Edition, Pearson Education, New Delhi, 2007.
2. Dharma Prakash Agarwal, Qing and An Zeng, "Introduction to Wireless and Mobile systems", Thomson Asia Pvt Ltd, 2005.
3. Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, "Principles of Mobile Computing", Springer, 2003.
4. William.C.Y.Lee, "Mobile Cellular Telecommunications-Analog and Digital Systems", Second Edition, Tata Mc Graw Hill Edition ,2006.
5. C.K.Toth, "AdHoc Mobile Wireless Networks", First Edition, Pearson Education, 2002.
6. Android Developers : <http://developer.android.com/index.html>
7. Apple Developer : <https://developer.apple.com/>
8. Windows Phone Dev Center : <http://developer.windowsphone.com>
9. BlackBerry Developer : <http://developer.blackberry.com/>



PRINCIPAL

idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District.





**JP INFOTECH**

ISO 9001 : 2008 Certified Company

REF NO : IP71734

# Certificate

This is to certify that Mr/MS..... R:PRIYA.....

from Idhaya Engineering College for women

has attended the In-plant Training in Java.....

at JP INFOTECH, Puducherry on 6<sup>th</sup> to 8<sup>th</sup> Dec 2017

During the training he/she has shown interest in learning new technologies.

We wish on all success in his/her future endeavors.

For:  
*S. Perambali*  
V. BHADRI  
Chief Execution Officer

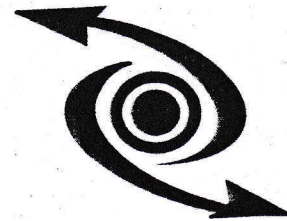


*meeni*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.P.  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNALEM-606 201, KALLAKURICHI

*Jayaprakash*  
JAYAPRAKASH  
Managing Director







**JP INFOTECH**

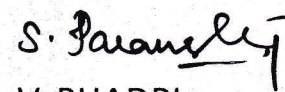
ISO 9001 : 2008 Certified Company

REF NO : IP11736

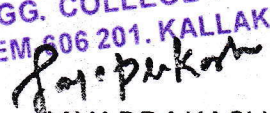
# Certificate

This is to certify that Mr/MS.....J. JASMIN MARY.....  
from Idhaya Engineering College for women  
has attended the In-plant Training in JAVA.....  
at JP INFOTECH, Puducherry on 6<sup>th</sup> to 8<sup>th</sup> Dec 2017.  
During the training he/she has shown interest in learning  
new technologies.

We wish on all success in his/her future endeavors.

For :  
  
V. BHADRI  
Chief Execution Officer



  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM 606 201, KALLAKURICHI DT.**

JAYAPRAKASH  
Managing Director



**bluish**  
technologies





**OBJECTIVES:**

The student should be made to:

- Learn Java Programming.
- Understand different Internet Technologies.
- Be exposed to java specific web services architecture.

**UNIT I JAVA PROGRAMMING 9**

An overview of Java — Data Types — Variables and Arrays — Operators — Control Statements — Classes — Objects — Methods — Inheritance - Packages — Abstract classes — Interfaces and Inner classes — Exception handling - Introduction to Threads — Multithreading — String handling — Streams and I/O — Applets.

**UNIT II WEBSITES BASICS, HTML 5, CSS 3, WEB 2.0 8**

**Web 2.0:** Basics-RIA Rich Internet Applications - Collaborations tools - **Understanding websites and web servers:** Understanding Internet — Difference between websites and web server- Internet technologies Overview —Understanding the difference between internet and intranet; **HTML and CSS:** HTML 5.0 , XHTML, CSS 3.

**UNIT III CLIENT SIDE AND SERVER SIDE PROGRAMMING 11**

**Java Script:** An introduction to JavaScript—JavaScript DOM Model-Date and Objects,-Regular Expressions- Exception Handling-Validation-Built-in objects-Event Handling- DHTML with JavaScript. **Servlets:** Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling- Understanding Cookies- Installing and Configuring Apache Tomcat Web Server;- **DATABASE CONNECTIVITY:** JDBC perspectives, JDBC program example - **JSP:** Understanding Java Server Pages-JSP Standard Tag Library(JSTL)-Creating HTML forms by embedding JSP code.

**UNIT IV PHP and XML 8**

**An introduction to PHP:** PHP- Using PHP- Variables- Program control- Built-in functions-Connecting to Database — Using Cookies- Regular Expressions; **XML:** Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation, News Feed (RSS and ATOM).

**UNIT V INTRODUCTION TO AJAX and WEB SERVICES 9**

**AJAX:** Ajax Client Server Architecture-XML Http Request Object-Call Back Methods; **Web Services:** Introduction- Java web services Basics — Creating, Publishing ,Testing and Describing a Web services (WSDL)-Consuming a web service, Database Driven web service from an application — SOAP.

**TOTAL (L:45+T:15): 60 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Implement Java programs.
- Create a basic website using HTML and Cascading Style Sheets.
- Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
- Design rich client presentation using AJAX.
- Design and implement simple web page in PHP, and to present data in XML format.
- Design and implement server side programs using Servlets and JSP.

**TEXT BOOKS:**

1. Deitel and Deitel and Nieto, "Internet and World Wide Web - How to Program", Prentice Hall, 5<sup>th</sup> Edition, 2011.
2. Herbert Schildt, "Java-The Complete Reference", Eighth Edition, Mc Graw Hill Professional, 2011.

**REFERENCES:**

1. Stephen Wynnkoop and John Burke "Running a Perfect Website", QUE, 2<sup>nd</sup> Edition, 1999.
2. Chris Bates, Web Programming — Building Intranet Applications, 3<sup>rd</sup> Edition, Wiley Publications, 2009.
3. Jeffrey C and Jackson, "Web Technologies A Computer Science Perspective", Pearson Education, 2011.
4. Gopalan N.P. and Akilandeswari J., "Web Technology", Prentice Hall of India, 2011.
5. Paul Dietel and Harvey Deitel, "Java How to Program", , 8<sup>th</sup> Edition Prentice Hall of India.
6. Mahesh P. Matha, "Core Java A Comprehensive Study", Prentice Hall of India, 2011.
7. Uttam K.Roy, "Web Technologies", Oxford University Press, 2011

*Principals*  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-600  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

The student should be made to:

- Learn Java Programming.
- Understand different Internet Technologies.
- Be exposed to java specific web services architecture.

**UNIT I JAVA PROGRAMMING**

9

An overview of Java — Data Types — Variables and Arrays — Operators — Control Statements — Classes — Objects — Methods — Inheritance - Packages — Abstract classes — Interfaces and Inner classes — Exception handling - Introduction to Threads — Multithreading — String handling — Streams and I/O — Applets.

**UNIT II WEBSITES BASICS, HTML 5, CSS 3, WEB 2.0**

8

**Web 2.0:** Basics-RIA Rich Internet Applications - Collaborations tools - **Understanding websites and web servers:** Understanding Internet — Difference between websites and web server- Internet technologies Overview —Understanding the difference between internet and intranet; **HTML and CSS:** HTML 5.0, XHTML, CSS 3.

**UNIT III CLIENT SIDE AND SERVER SIDE PROGRAMMING**

11

**Java Script:** An introduction to JavaScript—JavaScript DOM Model-Date and Objects,-Regular Expressions- Exception Handling- Validation-Built-in objects-Event Handling- DHTML with JavaScript. **Servlets:** Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling- Understanding Cookies- Installing and Configuring Apache Tomcat Web Server;- **DATABASE CONNECTIVITY:** JDBC perspectives, JDBC program example - **JSP:** Understanding Java Server Pages-JSP Standard Tag Library(JSTL)-Creating HTML forms by embedding JSP code.

**UNIT IV PHP and XML**

8

**An introduction to PHP:** PHP- Using PHP- Variables- Program control- Built-in functions-Connecting to Database — Using Cookies- Regular Expressions; **XML:** Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation, News Feed (RSS and ATOM).

**UNIT V INTRODUCTION TO AJAX and WEB SERVICES**

9

**AJAX:** Ajax Client Server Architecture-XML Http Request Object-Call Back Methods; **Web Services:** Introduction- Java web services Basics — Creating, Publishing, Testing and Describing a Web services (WSDL)-Consuming a web service, Database Driven web service from an application — SOAP.

**TOTAL (L:45+T:15): 60 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Implement Java programs.
- Create a basic website using HTML and Cascading Style Sheets.
- Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
- Design rich client presentation using AJAX.
- Design and implement simple web page in PHP, and to present data in XML format.
- Design and implement server side programs using Servlets and JSP.

**TEXT BOOKS:**

1. Deitel and Deitel and Nieto, "Internet and World Wide Web - How to Program", Prentice Hall, 5<sup>th</sup> Edition, 2011.
2. Herbert Schildt, "Java-The Complete Reference", Eighth Edition, Mc Graw Hill Professional, 2011.

**REFERENCES:**

1. Stephen Wynkoop and John Burke "Running a Perfect Website", QUE, 2<sup>nd</sup> Edition, 1999.
2. Chris Bates, Web Programming – Building Intranet Applications, 3<sup>rd</sup> Edition, Wiley Publications, 2009.
3. Jeffrey C and Jackson, "Web Technologies A Computer Science Perspective", Pearson Education, 2011.
4. Gopalan N.P. and Akilandeswari J., "Web Technology", Prentice Hall of India, 2011.
5. Paul Dietel and Harvey Deitel, "Java How to Program", 8<sup>th</sup> Edition Prentice Hall of India.
6. Mahesh P. Matha, "Core Java A Comprehensive Study", Prentice Hall of India, 2011.
7. Uttam K. Roy, "Web Technologies", Oxford University Press, 2011

*Principals*  
PRINCIPAL

Adhaya Engineering College for Women,  
Nainarpalayam Road, CHINNASELEM-606,  
Kallakurichi Taluk, Villupuram District



## CERTIFICATE OF MERIT

This is to certify that SHERLY MERTILDA DENNIS (Reg No. 621115205012) has successfully completed the internship in JAVA Application Development in our concern from 6/12/14 to 8/12/14.

During the internship period, the performance of the intern was found to be GOOD.

*D. Jayarami-C*  
Program Coordinator

*the*  
Jt.R.GURUMANN,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201. KALLAKURICHI DT.

*M. K. Suresh*  
HR Head



## CERTIFICATE OF MERIT

This is to certify that T. GHAYATHRI (Reg No. 6241115205005) has  
successfully completed the internship in JAVA Application Development in our  
concern from 6/10/19 to 8/12/19.

During the internship period, the performance of the intern was found to be Good.

*Dir Yamini*

Program Coordinator

*Heaven*  
Dr.R.GURUMANI, M.E., Ph.D., M.B.A., M.ISTE, F.I.E.  
PRINCIPAL  
CELL FOR WOMEN

*M. K...*

HR Head



## CERTIFICATE OF MERIT

This is to certify that SRIJAYA SRI (Reg No. 621115205201) has  
successfully completed the internship in JAVA Application Development in our  
concern from 01/08/2018 to 18/12/18.  
During the internship period, the performance of the intern was found to be Good.

*S. S. S. S.*  
Program Coordinator

*Princip*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.I.S.T.E., F.I.E.  
PRINCIPAL  
COLLEGE FOR WOMEN

*M. Suresh*  
HR Head



## CERTIFICATE OF MERIT

This is to certify that S. PRAVITHA (Reg No. 621115205009) has  
successfully completed the internship in JAVA Application Development in our  
concern from 6-12-17 to 8-12-17.

During the internship period, the performance of the intern was found to be GOOD.

*Divyami - C*  
Program Coordinator

*Dr. R. Gurumani*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM 606 201, KALLAKURICHI DT.

*M. K...*  
HR Head



**OBJECTIVES:****The student should be made to:**

- Study the concepts of Artificial Intelligence.
- Learn the methods of solving problems using Artificial Intelligence.
- Introduce the concepts of Expert Systems and machine learning.

<b>UNIT I</b>	<b>INTRODUCTION TO AI AND PRODUCTION SYSTEMS</b>	<b>9</b>
	Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics -Specialized production system- Problem solving methods - Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breadth first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms.	
<b>UNIT II</b>	<b>REPRESENTATION OF KNOWLEDGE</b>	<b>9</b>
	Game playing - Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge.	
<b>UNIT III</b>	<b>KNOWLEDGE INFERENCE</b>	<b>9</b>
	Knowledge representation -Production based system, Frame based system. Inference - Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory.	
<b>UNIT IV</b>	<b>PLANNING AND MACHINE LEARNING</b>	<b>9</b>
	Basic plan generation systems - Strips -Advanced plan generation systems — K strips -Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning.	
<b>UNIT V</b>	<b>EXPERT SYSTEMS</b>	<b>9</b>
	Expert systems - Architecture of expert systems, Roles of expert systems - Knowledge Acquisition — Meta knowledge, Heuristics. Typical expert systems - MYCIN, DART, XOON, Expert systems shells.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Identify problems that are amenable to solution by AI methods.
- Identify appropriate AI methods to solve a given problem.
- Formalise a given problem in the language/framework of different AI methods.
- Implement basic AI algorithms.
- Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.

**TEXT BOOKS:**

1. Kevin Night and Elaine Rich, Nair B., "Artificial Intelligence (SIE)", Mc Graw Hill- 2008.(Units-I,II,VI & V)
2. Dan W. Patterson, "Introduction to AI and ES", Pearson Education, 2007. (Unit-III).

**REFERENCES:**

1. Peter Jackson, "Introduction to Expert Systems", 3<sup>rd</sup> Edition, Pearson Education, 2007.
2. Stuart Russel and Peter Norvig "AI – A Modern Approach", 2<sup>nd</sup> Edition, Pearson Education 2007.
3. Deepak Khemani "Artificial Intelligence", Tata Mc Graw Hill Education 2013.
4. <http://nptel.ac.in>

*Principals*  
PRINCIPAL

Sadhya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Study the concepts of Artificial Intelligence.
- Learn the methods of solving problems using Artificial Intelligence.
- Introduce the concepts of Expert Systems and machine learning.

<b>UNIT I</b>	<b>INTRODUCTION TO AI AND PRODUCTION SYSTEMS</b>	<b>9</b>
	Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics -Specialized production system- Problem solving methods - Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breadth first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms.	
<b>UNIT II</b>	<b>REPRESENTATION OF KNOWLEDGE</b>	<b>9</b>
	Game playing - Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge.	
<b>UNIT III</b>	<b>KNOWLEDGE INFERENCE</b>	<b>9</b>
	Knowledge representation -Production based system, Frame based system. Inference - Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory.	
<b>UNIT IV</b>	<b>PLANNING AND MACHINE LEARNING</b>	<b>9</b>
	Basic plan generation systems - Strips -Advanced plan generation systems — K strips -Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning.	
<b>UNIT V</b>	<b>EXPERT SYSTEMS</b>	<b>9</b>
	Expert systems - Architecture of expert systems, Roles of expert systems - Knowledge Acquisition — Meta knowledge, Heuristics. Typical expert systems - MYCIN, DART, XOON, Expert systems shells.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Identify problems that are amenable to solution by AI methods.
- Identify appropriate AI methods to solve a given problem.
- Formalise a given problem in the language/framework of different AI methods.
- Implement basic AI algorithms.
- Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.

**TEXT BOOKS:**

1. Kevin Night and Elaine Rich, Nair B., "Artificial Intelligence (SIE)", Mc Graw Hill- 2008.(Units-I,II,VI & V)
2. Dan W. Patterson, "Introduction to AI and ES", Pearson Education, 2007. (Unit-III).

**REFERENCES:**

1. Peter Jackson, "Introduction to Expert Systems", 3<sup>rd</sup> Edition, Pearson Education, 2007.
2. Stuart Russel and Peter Norvig "AI – A Modern Approach", 2<sup>nd</sup> Edition, Pearson Education 2007.
3. Deepak Khemani "Artificial Intelligence", Tata Mc Graw Hill Education 2013.
4. <http://nptel.ac.in>

*Mani*  
PRINCIPAL

Adhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Hallakurichi Taluk, Villupuram District



08/12/2017

**To Whom Ever It may Concern**

This is to certify that **Ms.N.Sharmila Devi** (621115205011), B.Tech (IT) III year student of Idhaya engineering college for women, Chinnasalem have undergone Internship Training on "Latest Information Technology Products" at Hailstone Technology, Coimbatore from 04/12/2017 to 08/12/2017.

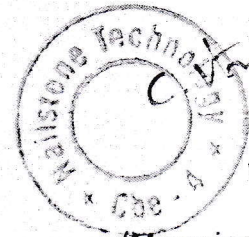
We observed Sharmila Devi as sincere and committed towards her work. She is capable of discharging her duties in a similar capacity and her conduct was found to be good during the period of training.

We wish her all the best for all future endeavors.

**For Hailstone Technology**

Authorized Signatory

  
**Dr.R.GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201. KALLAKURICHI DT.**



**Vignesh C**  
(Managing Director)



**OBJECTIVES:**

The student should be made to:

- Be familiar with the C++ concepts of abstraction, encapsulation, constructor, polymorphism, overloading and Inheritance.
- Learn advanced nonlinear data structures.
- Be exposed to graph algorithms
- Learn to apply Tree and Graph structures

<b>UNIT I</b>	<b>OBJECT ORIENTED PROGRAMMING FUNDAMENTALS</b>	<b>9</b>
	C++ Programming features - Data Abstraction - Encapsulation - class - object - constructors - static members – constant members – member functions – pointers – references - Role of this pointer – Storage classes – function as arguments.	
<b>UNIT II</b>	<b>OBJECT ORIENTED PROGRAMMING CONCEPTS</b>	<b>9</b>
	String Handling – Copy Constructor - Polymorphism – compile time and run time polymorphisms – function overloading – operators overloading – dynamic memory allocation - Nested classes - Inheritance – virtual functions.	
<b>UNIT III</b>	<b>C++ PROGRAMMING ADVANCED FEATURES</b>	<b>9</b>
	Abstract class – Exception handling - Standard libraries - Generic Programming - templates – class template - function template – STL – containers – iterators – function adaptors – allocators - Parameterizing the class - File handling concepts.	
<b>UNIT IV</b>	<b>ADVANCED NON-LINEAR DATA STRUCTURES</b>	<b>9</b>
	AVL trees – B-Trees – Red-Black trees – Splay trees - Binomial Heaps – Fibonacci Heaps – Disjoint Sets – Amortized Analysis – accounting method – potential method – aggregate analysis.	
<b>UNIT V</b>	<b>GRAPHS</b>	<b>9</b>
	Representation of Graphs – Breadth-first search – Depth-first search – Topological sort – Minimum Spanning Trees – Kruskal and Prim algorithm – Shortest path algorithm – Dijkstra’s algorithm – Bellman-Ford algorithm – Floyd - Warshall algorithm.	

**TOTAL: 45 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Design problem solutions using Object Oriented Techniques.
- Apply the concepts of data abstraction, encapsulation and inheritance for problem solutions.
- Use the control structures of C++ appropriately.
- Critically analyse the various algorithms.
- Apply the different data structures to problem solutions.

**TEXT BOOKS:**

1. Bjarne Stroustrup, “The C++ Programming Language”, 3<sup>rd</sup> Edition, Pearson Education, 2007.
2. Mark Allen Weiss, “Data Structures and Algorithm Analysis in C++”, 2<sup>nd</sup> Edition, Pearson Education, 2005

**REFERENCES:**

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Second Edition, Mc Graw Hill, 2002.
2. Michael T Goodrich, Roberto Tamassia, David Mount, “Data Structures and Algorithms in C++”, 7<sup>th</sup> Edition, Wiley Publishers, 2004.

*Aravind*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606520  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To expose the students to the fundamentals of Database Management Systems.
- To make the students understand the relational model.
- To familiarize the students with ER diagrams.
- To expose the students to SQL.
- To make the students to understand the fundamentals of Transaction Processing and Query Processing.
- To familiarize the students with the different types of databases.
- To make the students understand the Security Issues in Databases.

<b>UNIT I</b>	<b>INTRODUCTION TO DBMS</b>	<b>10</b>
	File Systems Organization - Sequential, Pointer, Indexed, Direct - Purpose of Database System- Database System Terminologies-Database characteristics- Data models — Types of data models — Components of DBMS- Relational Algebra. LOGICAL DATABASE DESIGN: Relational DBMS - Codd's Rule - Entity-Relationship model - Extended ER Normalization — Functional Dependencies. Anomaly- 1NF to 5NF- Domain Key Normal Form — Denormalization	
<b>UNIT II</b>	<b>SQL &amp; QUERY OPTIMIZATION</b>	<b>8</b>
	SQL Standards - Data types - Database Objects- DDL-DML-DCL-TCL-Embedded SQL-Static Vs Dynamic SQL - QUERY OPTIMIZATION: Query Processing and Optimization - Heuristics and Cost Estimates in Query Optimization.	
<b>UNIT III</b>	<b>TRANSACTION PROCESSING AND CONCURRENCY CONTROL</b>	<b>8</b>
	Introduction-Properties of Transaction- Serializability- Concurrency Control – Locking Mechanisms- Two Phase Commit Protocol- Dead lock.	
<b>UNIT IV</b>	<b>TRENDS IN DATABASE TECHNOLOGY</b>	<b>10</b>
	Overview of Physical Storage Media – Magnetic Disks – RAID – Tertiary storage – File Organization – Organization of Records in Files – Indexing and Hashing – Ordered Indices – B+ tree Index Files – B tree Index Files – Static Hashing – Dynamic Hashing - Introduction to Distributed Databases- Client server technology- Multidimensional and Parallel databases- Spatial and multimedia databases- Mobile and web databases- Data Warehouse-Mining- Data marts.	
<b>UNIT V</b>	<b>ADVANCED TOPICS</b>	<b>9</b>
	DATABASE SECURITY: Data Classification-Threats and risks – Database access Control – Types of Privileges – Cryptography- Statistical Databases.- Distributed Databases-Architecture-Transaction Processing-Data Warehousing and Mining-Classification- Association rules-Clustering-Information Retrieval- Relevance ranking-Crawling and Indexing the Web- Object Oriented Databases- XML Databases.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design Databases for applications.
- Use the Relational model, ER diagrams.
- Apply concurrency control and recovery mechanisms for practical problems.
- Design the Query Processor and Transaction Processor.
- Apply security concepts to databases.

**TEXT BOOK:**

1. Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", Fifth Edition, Pearson Education, 2008.

**REFERENCES:**

1. Abraham Silberschatz, Henry F. Korth and S. Sudharshan, "Database System Concepts", Sixth Edition, Tata Mc Graw Hill, 2011.
2. C.J.Date, A.Kannan and S.Swamynathan, "An Introduction to Database Systems", Eighth Edition, Pearson Education, 2006.
3. Atul Kahate, "Introduction to Database Management Systems", Pearson Education, New Delhi, 2006.
4. Alexis Leon and Mathews Leon, "Database Management Systems", Vikas Publishing House Private Limited, New Delhi, 2003.
5. Raghu Ramakrishnan, "Database Management Systems", Fourth Edition, Tata Mc Graw Hill, 2010.
6. G.K.Gupta, "Database Management Systems", Tata Mc Graw Hill, 2011.
7. Rob Cornell, "Database Systems Design and Implementation", Cengage Learning, 2011.

*Principals*  
**PRINCIPAL**

**Adhaya Engineering College for Women**  
**Vainarpalayam Road, CHINNASALEM-6062**  
**Kallakurichi Taluk, Villupuram District**

P742



**TOWARDS EFFICIENT AND SECURE  
ENCRYPTED DATABASES: EXTENDING  
MESSAGE-LOCKED ENCRYPTION IN THREE  
PARTY MODEL USING RE-ENCRYPTION**



**A PROJECT REPORT**

*Submitted by*

**MAREESWARI LAKSHMI.D**

621114104022

**NAGALAKSHMI.S**

621114104026

**THIRUMALAI DEVI RAMYA.D**

621114104041

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI-600 025**

**APRIL 2018**

*neeraj*  
**PRINCIPAL**

**Idhaya Engineering College for Women,  
Nainarpalayam Road, CHINNASALEM-60620,  
Kallakurichi Taluk, Villupuram District**



ANNA UNIVERSITY :: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report “ TOWARDS EFFICIENT AND SECURE ENCRYPTED DATABASES:EXTENDING MESSAGE-LOCKED ENCRYPTION IN THREE-PARTY MODEL USING RE-ENCRYPTION” is the bonafide work of “D.MAREESWARILAKSHMI, S.NAGALAKSHMI, D.THIRUMALAI DEVI RAMYA ” who carried out their project work under my supervision.

  
SIGNATURE

Mr.S. JAYAPRAKASH., M.E., (Ph.D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.

  
SIGNATURE

Sr.J. Arockia jaya, M.E.,


SUPERVISOR

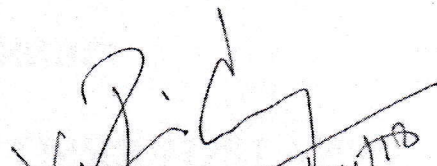
Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

In database systems with three parties consisting of a data owner, a database manager and a data analyst, the data owner uploads encrypted data to a database and the data analyst delegated by the data owner, analyzes the data by accessing to the database without knowing plaintexts. In this work, towards an efficient and secure scheme whose encryption can be processed in real time, we extend Message-locked encryption where parts of cipher texts are generated from their Plaintexts deterministically. In particular, we introduce both delegations of relational search between cipher texts from a data owner to a data analyst, and re-encryption of cipher texts such that cipher texts of the message-locked encryption become truly probabilistic against a Database manager. We call the scheme message-locked encryption with re-encryption and relational search, and formalize the security, which is feasible and practical, in two cases, i.e., any relationship in a general setting and only an equality test in a restricted setting. Both settings are useful from a standpoint of trade-offs between the security and the efficiency. We also propose an instantiation with the equality test between cipher texts.





**IP LINKED SIM800C BASED  
REAL TIME IOT SYSTEM FOR  
V2IOT APPLICATION**



**A PROJECT REPORT**

*Submitted by*

**ELIZABETH SMILA.F**

**621114104007**

**GUNAVATHI.B**

**621114104015**

**MOHANA.M**

**621114104024**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*In*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI-600 025**

**APRIL 2018**

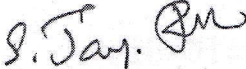
**PRINCIPAL**

**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60624  
Kallakurichi Taluk, Villupuram District**

**ANNA UNIVERSITY: CHENNAI-600 025**


**BONAFIDE CERTIFICATE**

Certified that this project report "IP LINKED SIM800C BASED REAL TIME SYSTEM FOR V2IOT APPLICATION" is the bonafide work of "F.ELIZABETH SMILA, B.GUNAVATHI, M.MOHANA" who carried out their project work under my supervision.

  
SIGNATURE


Mr.S. JAYAPRAKASH,M.E.,  
**HEAD OF THE DEPARTMENT**

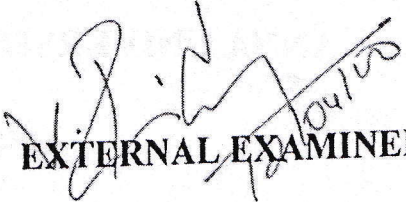
Assistant professor/CSE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE 11/4/18

Ms.V.VIMALADEVI,M.E.,  
**SUPERVISOR**

Assistant Professor/CSE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

Now a day's major cause of crime is only through vehicle. For crimes like kidnapping, robbery, killing etc vehicle is the main parameter. Many times due to police chasing several innocent people also die in the encounter. Our proposed approach is to make a system which will be implemented in all the vehicles to keep track of it easily. It will be efficient enough to navigate and control the vehicles in real time. If police or vehicle owner wants, he/she can control and track the vehicle in real-time using VIoT module. This type of IoT is free from Wi-Fi limitations. The project dealt here is about the Vehicle to Internet of Things 'V2IoT'. It is dealing with dynamic location and static control. It aims to use the techniques and concepts of the Internet of Things to improve Intelligent Transport System (ITS) and the vehicular communications, the V2I systems within smart cities. Our IOT module has inbuilt PIC16F1526 IC for logical operation. System is highly accurate and responds really fast in few second. Net speed is also not the major parameter as it can also work with 2G net connection speeds.

  
PRINCIPAL



**OBJECTIVES:**

The student should be made to:

- Learn the algorithm analysis techniques.
- Become familiar with the different algorithm design techniques.
- Understand the limitations of Algorithm power.

<b>UNIT I</b>	<b>INTRODUCTION</b>	<b>9</b>
	Notion of an Algorithm – Fundamentals of Algorithmic Problem Solving – Important Problem Types – Fundamentals of the Analysis of Algorithm Efficiency – Analysis Framework – Asymptotic Notations and its properties – Mathematical analysis for Recursive and Non-recursive algorithms.	
<b>UNIT II</b>	<b>BRUTE FORCE AND DIVIDE-AND-CONQUER</b>	<b>9</b>
	Brute Force - Closest-Pair and Convex-Hull Problems-Exhaustive Search - Traveling Salesman Problem - Knapsack Problem - Assignment problem. Divide and conquer methodology – Merge sort – Quick sort – Binary search – Multiplication of Large Integers – Strassen's Matrix Multiplication-Closest-Pair and Convex-Hull Problems.	
<b>UNIT III</b>	<b>DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE</b>	<b>9</b>
	Computing a Binomial Coefficient – Warshall's and Floyd's algorithm – Optimal Binary Search Trees – Knapsack Problem and Memory functions. Greedy Technique– Prim's algorithm- Kruskal's Algorithm- Dijkstra's Algorithm-Huffman Trees.	
<b>UNIT IV</b>	<b>ITERATIVE IMPROVEMENT</b>	<b>9</b>
	The Simplex Method-The Maximum-Flow Problem – Maximum Matching in Bipartite Graphs- The Stable marriage Problem.	
<b>UNIT V</b>	<b>COPING WITH THE LIMITATIONS OF ALGORITHM POWER</b>	<b>9</b>
	Limitations of Algorithm Power-Lower-Bound Arguments-Decision Trees-P, NP and NP-Complete Problems--Coping with the Limitations - Backtracking – n-Queens problem – Hamiltonian Circuit Problem – Subset Sum Problem-Branch and Bound – Assignment problem – Knapsack Problem – Traveling Salesman Problem- Approximation Algorithms for NP – Hard Problems – Traveling Salesman problem – Knapsack problem.	

**TOTAL: 45 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Design algorithms for various computing problems.
- Analyze the time and space complexity of algorithms.
- Critically analyze the different algorithm design techniques for a given problem.
- Modify existing algorithms to improve efficiency.

**TEXT BOOK:**

1. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Third Edition, Pearson Education, 2012.

**REFERENCES:**

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, "Introduction to Algorithms", Third Edition, PHI Learning Private Limited, 2012.
2. Alfred V. Aho, John E. Hopcroft and Jeffrey D. Ullman, "Data Structures and Algorithms", Pearson Education, Reprint 2006.
3. Donald E. Knuth, "The Art of Computer Programming", Volumes 1 & 3 Pearson Education, 2009. Steven S. Skiena, "The Algorithm Design Manual", Second Edition, Springer, 2008.
4. <http://nptel.ac.in/>

*Mansi*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606202  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Understand the phases in a software project
- Understand fundamental concepts of requirements engineering and Analysis Modelling.
- Understand the major considerations for enterprise integration and deployment.
- Learn various testing and maintenance measures

<b>UNIT I</b>	<b>SOFTWARE PROCESS AND PROJECT MANAGEMENT</b>	<b>9</b>
Introduction to Software Engineering, Software Process, Perspective and Specialized Process Models – Software Project Management: Estimation – LOC and FP Based Estimation, COCOMO Model – Project Scheduling – Scheduling, Earned Value Analysis - Risk Management.		
<b>UNIT II</b>	<b>REQUIREMENTS ANALYSIS AND SPECIFICATION</b>	<b>9</b>
Software Requirements: Functional and Non-Functional, User requirements, System requirements, Software Requirements Document – Requirement Engineering Process: Feasibility Studies, Requirements elicitation and analysis, requirements validation, requirements management-Classical analysis: Structured system Analysis, Petri Nets- Data Dictionary.		
<b>UNIT III</b>	<b>SOFTWARE DESIGN</b>	<b>9</b>
Design process — Design Concepts-Design Model– Design Heuristic — Architectural Design — Architectural styles, Architectural Design, Architectural Mapping using Data Flow- User Interface Design: Interface analysis, Interface Design – Component level Design: Designing Class based components, traditional Components.		
<b>UNIT IV</b>	<b>TESTING AND IMPLEMENTATION</b>	<b>9</b>
Software testing fundamentals-Internal and external views of Testing-white box testing- basis path testing-control structure testing-black box testing- Regression Testing – Unit Testing – Integration Testing – Validation Testing – System Testing And Debugging – Software Implementation Techniques: Coding practices-Refactoring.		
<b>UNIT V</b>	<b>PROJECT MANAGEMENT</b>	<b>9</b>
Estimation — FP Based, LOC Based, Make/Buy Decision, COCOMO II - Planning — Project Plan, Planning Process, RFP Risk Management — Identification, Projection, RMMM - Scheduling and Tracking –Relationship between people and effort, Task Set & Network, Scheduling, EVA - Process and Project Metrics.		

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to**


- Identify the key activities in managing a software project.
- Compare different process models.
- Concepts of requirements engineering and Analysis Modeling.
- Apply systematic procedure for software design and deployment.
- Compare and contrast the various testing and maintenance.

**TEXT BOOK:**

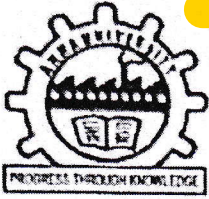
1. Roger S. Pressman, "Software Engineering — A Practitioner's Approach", Seventh Edition, Mc Graw-Hill International Edition, 2010.

**REFERENCES:**

1. Ian Sommerville, "Software Engineering", 9<sup>th</sup> Edition, Pearson Education Asia, 2011.
2. Rajib Mall, "Fundamentals of Software Engineering", Third Edition, PHI Learning Private Limited, 2009.
3. Pankaj Jalote, "Software Engineering, A Precise Approach", Wiley India, 2010.
4. Kelkar S.A., "Software Engineering", Prentice Hall of India Pvt Ltd, 2007.
5. Stephen R. Schach, "Software Engineering", Tata McGraw-Hill Publishing Company Limited, 2007.
6. <http://nptel.ac.in/>.

  
 PRINCIPAL  
 Vidhya Engineering College for Women  
 Nainarpalayam Road, CHINNASALEM-60620  
 Kallakurichi Taluk, Villupuram District





**A NEW MULTIMODEL APPROACH**

**FOR PASSWORD**

**STRENGTH ESTIMATION**



**A PROJECT REPORT**

*Submitted by*

**AMBIKA.D**

**621113104003**

**ARULANIS**

**621113104005**

**LAKSHMI.R**

**621113104019**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

**in**

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY:: CHENNAI-600 025**

**APRIL 2018**

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women,  
Vainarpalaym Road, CHINNASALEM-606 004,  
Kallakurichi Taluk, Villupuram District.



ANNA UNIVERSITY: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "A NEW MULTIMODEL APPROACH FOR PASSWORD STRENGTH ESTIMATION" is the bonafide work of "D.AMBIKA, S.ARULANI, P.LAKSHMI" who carried out their project work under my supervision.

  
SIGNATURE

Mr. S. JAYAPRAKASH., M.E.,


HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College

for Women,

Chinnasalem-606 201.

  
SIGNATURE

Mr. S. JAYAPRAKASH., M.E.,


SUPERVISOR


Assistant Professor/CSE,

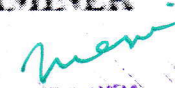
Idhaya Engineering College

for Women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

After more than two decades of research in the field of password strength estimation, one clear conclusion may be drawn: no password strength metric by itself is better than all other metrics for every possible password. Building upon this certainty and also taking advantage of the knowledge gained in the area of information fusion, in this paper, we propose a **novel multimodal strength metric** that combines several imperfect individual metrics to benefit from their strong points in order to overcome many of their weaknesses. The final multimodal metric comprises different modules based both heuristics and on statistics, which, after their fusion, succeed to provide in real time a realistic and reliable feedback regarding the "guessability" of passwords.



**OBJECTIVES:**

- To make students understand the basic structure and operation of digital computer.
- To understand the hardware-software interface.
- To familiarize the students with arithmetic and logic unit and implementation of fixed point and floating-point arithmetic operations.
- To expose the students to the concept of pipelining.
- To familiarize the students with hierarchical memory system including cache memories and virtual memory.
- To expose the students with different ways of communicating with I/O devices and standard I/O interfaces.

<b>UNIT I</b>	<b>OVERVIEW &amp; INSTRUCTIONS</b>	<b>9</b>
	Eight ideas — Components of a computer system — Technology — Performance — Power wall — Uniprocessors to multiprocessors; Instructions — operations and operands — representing instructions — Logical operations — control operations — Addressing and addressing modes.	
<b>UNIT II</b>	<b>ARITHMETIC OPERATIONS</b>	<b>7</b>
	ALU - Addition and subtraction — Multiplication — Division — Floating Point operations — Subword parallelism.	
<b>UNIT III</b>	<b>PROCESSOR AND CONTROL UNIT</b>	<b>11</b>
	Basic MIPS implementation — Building datapath — Control Implementation scheme — Pipelining — Pipelined datapath and control — Handling Data hazards & Control hazards — Exceptions.	
<b>UNIT IV</b>	<b>PARALLELISM</b>	<b>9</b>
	Instruction-level-parallelism — Parallel processing challenges — Flynn's classification — Hardware multithreading — Multicore processors	
<b>UNIT V</b>	<b>MEMORY AND I/O SYSTEMS</b>	<b>9</b>
	Memory hierarchy - Memory technologies — Cache basics — Measuring and improving cache performance - Virtual memory, TLBs - Input/output system, programmed I/O, DMA and interrupts, I/O processors.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design arithmetic and logic unit.
- Design and analyse pipelined control units
- Evaluate performance of memory systems.
- Understand parallel processing architectures.

**TEXT BOOK:**

1. David A. Patterson and John L. Hennessey, "Computer organization and design", MorganKauffman / Elsevier, Fifth edition, 2014.

**REFERENCES:**

1. V. Carl Hamacher, Zvonko G. Varanasic and Safat G. Zaky, "Computer Organisation", VI<sup>th</sup> edition, Mc Graw-Hill Inc, 2012.
2. William Stallings "Computer Organization and Architecture", Seventh Edition, Pearson Education, 2006.
3. Vincent P. Heuring, Harry F. Jordan, "Computer System Architecture", Second Edition, Pearson Education, 2005.
4. Govindarajulu, "Computer Architecture and Organization, Design Principles and Applications", first edition, Tata McGraw Hill, New Delhi, 2005.
5. John P. Hayes, "Computer Architecture and Organization", Third Edition, Tata Mc Graw Hill, 1998.
6. <http://nptel.ac.in/>.


  
**PRINCIPAL**

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606.  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Understand the division of network functionalities into layers.
- Be familiar with the components required to build different types of networks
- Be exposed to the required functionality at each layer
- Learn the flow control and congestion control algorithms

<b>UNIT I</b>	<b>FUNDAMENTALS &amp; LINK LAYER</b>	<b>9</b>
	Building a network – Requirements - Layering and protocols - Internet Architecture – Network software – Performance ; Link layer Services - Framing - Error Detection - Flow control	
<b>UNIT II</b>	<b>MEDIA ACCESS &amp; INTERNETWORKING</b>	<b>9</b>
	Media access control - Ethernet (802.3) - Wireless LANs – 802.11 – Bluetooth - Switching and bridging – Basic Internetworking (IP, CIDR, ARP, DHCP, ICMP)	
<b>UNIT III</b>	<b>ROUTING</b>	<b>9</b>
	Routing (RIP, OSPF, metrics) – Switch basics – Global Internet (Areas, BGP, IPv6), Multicast – addresses – multicast routing (DVMRP, PIM)	
<b>UNIT IV</b>	<b>TRANSPORT LAYER</b>	<b>9</b>
	Overview of Transport layer - UDP - Reliable byte stream (TCP) - Connection management - Flow control - Retransmission – TCP Congestion control - Congestion avoidance (DECbit, RED) – QoS – Application requirements	
<b>UNIT V</b>	<b>APPLICATION LAYER</b>	<b>9</b>
	Traditional applications - Electronic Mail (SMTP, POP3, IMAP, MIME) – HTTP – Web Services – DNS - SNMP	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Identify the components required to build different types of networks
- Choose the required functionality at each layer for given application
- Identify solution for each functionality at each layer
- Trace the flow of information from one node to another node in the network

**TEXT BOOK:**

1. Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systems Approach", Fifth Edition, Morgan Kaufmann Publishers, 2011.

**REFERENCES:**

1. James F. Kurose, Keith W. Ross, "Computer Networking - A Top-Down Approach Featuring the Internet", Fifth Edition, Pearson Education, 2009.
2. Nader F. Mir, "Computer and Communication Networks", Pearson Prentice Hall Publishers, 2010.
3. Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, "Computer Networks: An Open Source Approach", Mc Graw Hill Publisher, 2011.
4. Behrouz A. Forouzan, "Data communication and Networking", Fourth Edition, Tata McGraw – Hill, 2011.



PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-606206  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Recent years have witnessed an increased interest in recommender systems. Indeed, this provides a study of exploiting online travel information for personalized travel package recommendation. A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, we first analyze the characteristics of the existing travel packages and develop a tourist-area-season topic (TAST) model. This TAST model can represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. Then, based on this topic model representation, we propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data group formation.



P 799



**PERSONALIZED TRAVEL ROUTE  
RECOMMENDATION SYSTEM**



**A PROJECT REPORT**

*Submitted by*

**GANGA.P**

621114104010

**SOUNDARYA.S**

621114104034

**UTHIRAMBAL.S**

621114104043

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY:: CHENNAI-600 025**

**APRIL 2018**

i

*Mani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY:: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "PERSONALIZED TRAVEL ROUTRE RECOMMENDATION SYSTEM" is the bonafide work of "P.GANGA, S.SOUNDARYA, S.UTHIRAMBAL" who carried out their project work under my supervision.

  
SIGNATURE

Mr.S.JAYAPRAKASH.,M.E.,(Ph. D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College for women, Idhaya Engineering College for women,

Chinnasalem-606 201.

  
SIGNATURE


Mrs.P.SUMATHI, M.E.,

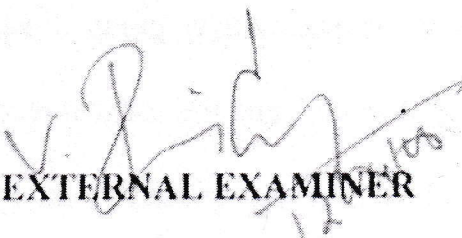
SUPERVISOR

Assistant Professor/CSE,

Idhaya Engineering College for women, Idhaya Engineering College for women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women,  
Mainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Recent years have witnessed an increased interest in recommender systems. Indeed, this provides a study of exploiting online travel information for personalized travel package recommendation. A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, we first analyze the characteristics of the existing travel packages and develop a tourist-area-season topic (TAST) model. This TAST model can represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. Then, based on this topic model representation, we propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data group formation.



**OBJECTIVES:**

The student should be made to:

- Learn the basics of OO analysis and design skills.
- Learn the UML design diagrams.
- Learn to map design to code.
- Be exposed to the various testing techniques.

**UNIT I UML DIAGRAMS**

9

Introduction to OOAD – Unified Process - UML diagrams – Use Case – Class Diagrams– Interaction Diagrams – State Diagrams – Activity Diagrams – Package, component and Deployment Diagrams.

**UNIT II DESIGN PATTERNS**

9

GRASP: Designing objects with responsibilities – Creator – Information expert – Low Coupling – High Cohesion – Controller - Design Patterns – creational - factory method - structural – Bridge – Adapter - behavioral – Strategy – observer.

**UNIT III CASE STUDY**

9

Case study – the Next Gen POS system, Inception -Use case Modeling - Relating Use cases – include, extend and generalization - Elaboration - Domain Models - Finding conceptual classes and description classes – Associations – Attributes – Domain model refinement – Finding conceptual class Hierarchies - Aggregation and Composition.

**UNIT IV APPLYING DESIGN PATTERNS**

9

System sequence diagrams - Relationship between sequence diagrams and use cases Logical architecture and UML package diagram – Logical architecture refinement - UML class diagrams - UML interaction diagrams - Applying Gof design patterns.

**UNIT V CODING AND TESTING**

9

Mapping design to code – Testing: Issues in OO Testing – Class Testing – OO Integration Testing –GUI Testing – OO System Testing.

**TOTAL: 45 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Design and implement projects using OO concepts.
- Use the UML analysis and design diagrams.
- Apply appropriate design patterns.
- Create code from design.

**TEXT BOOK:**

1. Craig Larman, "Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development", Third Edition, Pearson Education, 2005.

**REFERENCES:**

1. Simon Bennett, Steve Mc Robb and Ray Farmer, "Object Oriented Systems Analysis and Design Using UML", Fourth Edition, Mc-Graw Hill Education, 2010.
2. Erich Gamma, and Richard Helm, Ralph Johnson, John Vlissides, "Design patterns: Elements of Reusable Object-Oriented Software", Addison-Wesley, 1995.
3. Martin Fowler, "UML Distilled: A Brief Guide to the Standard Object Modeling Language", Third edition, Addison Wesley, 2003.
4. Paul C. Jorgensen, "Software Testing:- A Craftsman's Approach", Third Edition, Auerbach Publications, Taylor and Francis Group, 2008.

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606206  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Understand various Computing models like Finite State Machine, Pushdown Automata, and Turing Machine.
- Be aware of Decidability and Un-decidability of various problems.
- Learn types of grammars.

**UNIT I FINITE AUTOMATA**

9

Introduction- Basic Mathematical Notation and techniques- Finite State systems – Basic Definitions – Finite Automaton – DFA & NDFA – Finite Automaton with  $\epsilon$ - moves – Regular Languages- Regular Expression – Equivalence of NFA and DFA – Equivalence of NDFA's with and without  $\epsilon$ -moves – Equivalence of finite Automaton and regular expressions – Minimization of DFA- - Pumping Lemma for Regular sets – Problems based on Pumping Lemma.

**UNIT II GRAMMARS**

9

Grammar Introduction– Types of Grammar - Context Free Grammars and Languages– Derivations and Languages – Ambiguity- Relationship between derivation and derivation trees – Simplification of CFG – Elimination of Useless symbols - Unit productions - Null productions – Greiback Normal form – Chomsky normal form – Problems related to CNF and GNF.

**UNIT III PUSHDOWN AUTOMATA**

9

Pushdown Automata- Definitions – Moves – Instantaneous descriptions – Deterministic pushdown automata – Equivalence of Pushdown automata and CFL - pumping lemma for CFL – problems based on pumping Lemma.

**UNIT IV TURING MACHINES**

9

Definitions of Turing machines – Models – Computable languages and functions – Techniques for Turing machine construction – Multi head and Multi tape Turing Machines - The Halting problem – Partial Solvability – Problems about Turing machine- Chomskian hierarchy of languages.

**UNIT V UNSOLVABLE PROBLEMS AND COMPUTABLE FUNCTIONS**

9

Unsolvable Problems and Computable Functions – Primitive recursive functions – Recursive and recursively enumerable languages – Universal Turing machine. MEASURING AND CLASSIFYING COMPLEXITY: Tractable and Intractable problems- Tractable and possibly intractable problems - P and NP completeness - Polynomial time reductions.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design Finite State Machine, Pushdown Automata, and Turing Machine.
- Explain the Decidability or Undecidability of various problems

**TEXT BOOKS:**

1. Hopcroft J.E., Motwani R. and Ullman J.D, "Introduction to Automata Theory, Languages and Computations", Second Edition, Pearson Education, 2008. (UNIT 1,2,3)
2. John C Martin, "Introduction to Languages and the Theory of Computation", Third Edition, TataMcGraw Hill Publishing Company, New Delhi, 2007. (UNIT 4,5)

**REFERENCES:**

1. Mishra K L P and Chandrasekaran N, "Theory of Computer Science - Automata, Languages and Computation", Third Edition, Prentice Hall of India, 2004.
2. Harry R Lewis and Christos H Papadimitriou, "Elements of the Theory of Computation", Second Edition, Prentice Hall of India, Pearson Education, New Delhi, 2003.
3. Peter Linz, "An Introduction to Formal Language and Automata", 3<sup>RD</sup> Edition, Narosa Publishers, New Delhi,
4. Kamala Krithivasan and Rama. R, "Introduction to Formal Languages, Automata Theory and Computation", Pearson Education 2000.



P747



**DATA PRIVACY MANAGEMENT FOR  
CONTENT BASED IMAGE RETRIVAL  
SCHEME IN SPONTANEOUS CLOUD  
IMAGE REPOSITORIES**



A PROJECT REPORT

*Submitted by*

**GIRIJA.S**

621114104013

**MONICA.R**

621114104025

**SARANYA.G**

621114104032

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI-600 025**

**APRIL 2018**

i

*M. S. S.*  
PRINCIPAL

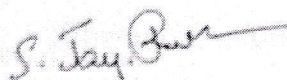
Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY :: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report, "DATA PRIVACY MANAGEMENT FOR CONTENT BASED IMAGE RETRIEVAL IN SPONTANEOUS CLOUD IMAGE REPOSITORIES" is the bonafide work of "S.GIRIJA, R.MONICA, G.SARANYA" who carried out their project work under my supervision.

  
SIGNATURE

Mr. S. JAYAPRAKASH., M.E.,

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
SIGNATURE


Sr. C. JANSI SOPHIA MARY, M.E.,

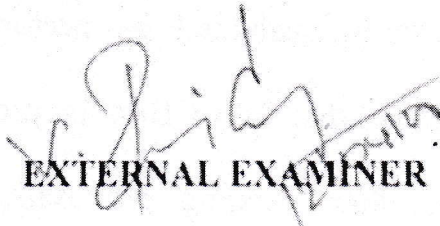
SUPERVISOR

Assistant Professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Storage requirements for visual data have been increasing in recent years, following the emergence of many highly interactive multimedia services and applications for mobile devices in both personal and corporate scenarios. This has been a key driving factor for the adoption of cloud-based data outsourcing solutions. However, outsourcing data storage to the Cloud also leads to new security challenges that must be carefully addressed, especially regarding privacy. In this paper we propose a **secure framework** for outsourced privacy-preserving storage and retrieval in large shared image repositories. This proposal is based on IES-CBIR, a novel Image Encryption Scheme that exhibits Content-Based Image Retrieval properties. The framework enables both encrypted storage and searching using Content-Based Image Retrieval queries while preserving privacy against honest-but-curious cloud administrators. We have built a prototype of the proposed framework, formally analyzed and proven its security properties, and experimentally evaluated its performance and retrieval precision. This results show that IES-CBIR is provably secure, allows more efficient operations than existing proposals, both in terms of time and space complexity, and paves the way for new practical application scenarios.



**OBJECTIVES:****The student should be made to:**

- Gain knowledge about graphics hardware devices and software used.
- Understand the two dimensional graphics and their transformations.
- Understand the three dimensional graphics and their transformations.
- Be familiar with understand clipping techniques.

**UNIT I INTRODUCTION**

9

Survey of computer graphics, Overview of graphics systems – Video display devices, Raster scan systems, Random scan systems, Graphics monitors and Workstations, Input devices, Hard copy Devices, Graphics Software; Output primitives – points and lines, line drawing algorithms, loading the frame buffer, line function; circle and ellipse generating algorithms; Pixel addressing and object geometry, filled area primitives.

**UNIT II TWO DIMENSIONAL GRAPHICS**

9

Two dimensional geometric transformations – Matrix representations and homogeneous coordinates, composite transformations; Two dimensional viewing – viewing pipeline, viewing coordinate reference frame; widow-to-viewport coordinate transformation, Two dimensional viewing functions; clipping operations – point, line, and polygon clipping algorithms.

**UNIT III THREE DIMENSIONAL GRAPHICS**

10

Three dimensional concepts; Three dimensional object representations – Polygon surfaces- Polygon tables- Plane equations - Polygon meshes; Curved Lines and surfaces, Quadratic surfaces; Blobby objects; Spline representations – Bezier curves and surfaces -B-Spline curves and surfaces. TRANSFORMATION AND VIEWING: Three dimensional geometric and modeling transformations – Translation, Rotation, Scaling; Three dimensional viewing – viewing pipeline, viewing coordinates, Projections, Clipping; Visible surface detection methods.

**UNIT IV ILLUMINATION AND COLOUR MODELS**

7

Light sources - basic illumination models – halftone patterns and dithering techniques; Properties of light - Standard primaries and chromaticity diagram; Intuitive colour concepts - RGB colour model - YIQ colour model - CMY colour model - HSV colour model - HLS colour model; Colour selection.

**UNIT V ANIMATIONS & REALISM**

10

**ANIMATION GRAPHICS:** Design of Animation sequences – animation function – raster animation –key frame systems – motion specification –morphing – tweening. **COMPUTER GRAPHICS REALISM:** Tiling the plane – Recursively defined curves – Koch curves – C curves – Dragons – space filling curves – fractals – Grammar based models – fractals – turtle graphics – ray tracing.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design two and three dimensional graphics.
- Apply two and three dimensional transformations.
- Apply Illumination and color models.
- Apply clipping techniques to graphics.
- Design animation sequences.

**TEXT BOOKS:**

1. John F. Hughes, Andries Van Dam, Morgan Mc Guire ,David F. Sklar , James D. Foley, Steven K. Feiner and Kurt Akeley ,”Computer Graphics: Principles and Practice”, 3<sup>rd</sup> Edition, Addison-Wesley Professional,2013. (UNIT I, II, III, IV).
2. Donald Hearn and Pauline Baker M, “Computer Graphics”, Prentice Hall, New Delhi, 2007(UNIT V).

**REFERENCES:**

1. Donald Hearn and M. Pauline Baker, Warren Carithers,“Computer Graphics With Open GL”,4<sup>th</sup> Edition, Pearson Education, 2010.
2. Jeffrey McConnell, “Computer Graphics: Theory into Practice”, Jones and Bartlett Publishers,2006. .
3. Hill F S Jr, "Computer Graphics", Maxwell Macmillan”, 1990.
4. Peter Shirley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Reinhard, KelvinSung, and AK Peters, Fundamental of Computer Graphics, CRC Press, 2010.
5. William M. Newman and Robert F.Sproull, “Principles of Interactive Computer Graphics”, Mc GrawHill 1978.
6. <http://nptel.ac.in/>

  
 PRINCIPAL

Idhaya Engineering College for Women  
 Vainarpalayam Road, CHINNASALEM-606201  
 Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Study the concepts of Artificial Intelligence.
- Learn the methods of solving problems using Artificial Intelligence.
- Introduce the concepts of Expert Systems and machine learning.

<b>UNIT I</b>	<b>INTRODUCTION TO AI AND PRODUCTION SYSTEMS</b>	<b>9</b>
	Introduction to AI-Problem formulation, Problem Definition -Production systems, Control strategies, Search strategies. Problem characteristics, Production system characteristics -Specialized production system- Problem solving methods - Problem graphs, Matching, Indexing and Heuristic functions -Hill Climbing-Depth first and Breadth first, Constraints satisfaction - Related algorithms, Measure of performance and analysis of search algorithms.	
<b>UNIT II</b>	<b>REPRESENTATION OF KNOWLEDGE</b>	<b>9</b>
	Game playing - Knowledge representation, Knowledge representation using Predicate logic, Introduction to predicate calculus, Resolution, Use of predicate calculus, Knowledge representation using other logic-Structured representation of knowledge.	
<b>UNIT III</b>	<b>KNOWLEDGE INFERENCE</b>	<b>9</b>
	Knowledge representation -Production based system, Frame based system. Inference - Backward chaining, Forward chaining, Rule value approach, Fuzzy reasoning - Certainty factors, Bayesian Theory-Bayesian Network-Dempster - Shafer theory.	
<b>UNIT IV</b>	<b>PLANNING AND MACHINE LEARNING</b>	<b>9</b>
	Basic plan generation systems - Strips -Advanced plan generation systems — K strips -Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning.	
<b>UNIT V</b>	<b>EXPERT SYSTEMS</b>	<b>9</b>
	Expert systems - Architecture of expert systems, Roles of expert systems - Knowledge Acquisition — Meta knowledge, Heuristics. Typical expert systems - MYCIN, DART, XOON, Expert systems shells.	

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Identify problems that are amenable to solution by AI methods.
- Identify appropriate AI methods to solve a given problem.
- Formalise a given problem in the language/framework of different AI methods.
- Implement basic AI algorithms.
- Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.

**TEXT BOOKS:**

1. Kevin Night and Elaine Rich, Nair B., "Artificial Intelligence (SIE)", Mc Graw Hill- 2008.(Units-I,II,VI & V)
2. Dan W. Patterson, "Introduction to AI and ES", Pearson Education, 2007. (Unit-III).

**REFERENCES:**

1. Peter Jackson, "Introduction to Expert Systems", 3<sup>rd</sup> Edition, Pearson Education, 2007.
2. Stuart Russel and Peter Norvig "AI – A Modern Approach", 2<sup>nd</sup> Edition, Pearson Education 2007.
3. Deepak Khemani "Artificial Intelligence", Tata Mc Graw Hill Education 2013.
4. <http://nptel.ac.in>


  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District





**COMBINATION OF SHARING MATRIX AND  
IMAGE ENCRYPTION FOR LOSSLES (k,n)  
SECRET IMAGE SHARING**



A PROJECT REPORT

*Submitted by*

**AARTHI.J.W**

**621114104001**

**EMALDA MARY.A**

**621114104008**

**GAYATHRI.M**

**621114104011**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY:CHENNAI-600 025**

**APRIL 2018**

*Handwritten signature*

PRINCIPAL

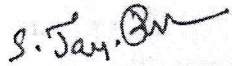
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606200,  
Kallakurichi Taluk, Villupuram District



**ANNA UNIVERSITY:CHENNAI-600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "COMBINATION OF SHARING AND IMAGE ENCRYPTION FOR LOSSLESS (k,n)-SECRET IMAGE SHARING" is the bonafide work of "J.W. AARTHI, A. EMALDA MARY, M. GAYATHRI" who carried out their project work under my supervision.

  
SIGNATURE

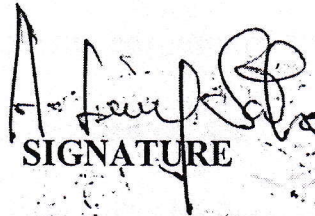
Mr.S. JAYAPRAKASH., M.E., (Ph.D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
SIGNATURE

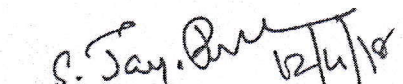
Ms, A.LILLY SARA., M.E.,

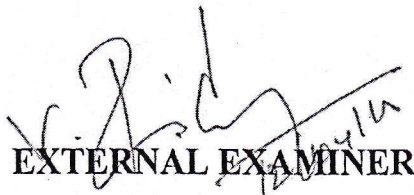
SUPERVISOR

Assistant Professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

There are many researches that have been proposed for embedding data into digital video. However, most of those schemes extending data hiding technique for still images to videos by treating each single frame as a still image and embed data in intra-frame. In this paper, we propose an effective data-hiding scheme that embeds data in digital videos using the phase angle of the motion vector of the macroblocks in the inter-frame. The scheme can be applied to either compressed or uncompressed videos. Furthermore, the embedded data can be extracted directly without using the original video sequences. Our experimental results prove the feasibility of the proposed method. The method is implemented and tested for hiding data in natural sequences of multiple groups of pictures and the results are evaluated. The evaluation is based on two criteria: **minimum distortion to the reconstructed video and minimum overhead on the compressed video size.** Based on the aforementioned criteria, the proposed method is found to perform well and is compared to a motion vector attribute-based method from the literature.

  
PRINCIPAL



**OBJECTIVES:****The student should be made to:**

- Understand foundations of Distributed Systems.
- Introduce the idea of peer to peer services and file system.
- Understand in detail the system level and support required for distributed system.
- Understand the issues involved in studying process and resource management.

**UNIT I INTRODUCTION**

7

**Examples of Distributed Systems–Trends in Distributed Systems** – Focus on resource sharing – Challenges. **Case study:** World Wide Web.

**UNIT II COMMUNICATION IN DISTRIBUTED SYSTEM**

10

System Model – Inter process communication - the API for internet protocols – External data representation and Multicast communication. **Network virtualization:** Overlay networks. **Case study:** MPI **Remote Method Invocation And Objects:** Remote Invocation – Introduction - Request-reply protocols - Remote procedure call - Remote method invocation. **Case study:** Java RMI - Group communication - Publish-subscribe systems - Message queues - Shared memory approaches - Distributed objects - Case study: Enterprise Java Beans -from objects to components.

**UNIT III PEER TO PEER SERVICES AND FILE SYSTEM**

10

**Peer-to-peer Systems – Introduction - Napster and its legacy - Peer-to-peer – Middleware - Routing overlays. Overlay case studies:** Pastry, Tapestry- Distributed File Systems –Introduction - File service architecture – Andrew File system. **File System:** Features-File model -File accessing models  
- File sharing semantics **Naming:** Identifiers, Addresses, Name Resolution – Name Space Implementation – Name Caches –LDAP.

**UNIT IV SYNCHRONIZATION AND REPLICATION**

9

Introduction - Clocks, events and process states - Synchronizing physical clocks- Logical time and logical clocks - Global states – Coordination and Agreement – Introduction - Distributed mutual exclusion – Elections – Transactions and Concurrency Control– Transactions -Nested transactions –Locks – Optimistic concurrency control - Timestamp ordering – Atomic Commit protocols -Distributed deadlocks – Replication – Case study – Coda.

**UNIT V PROCESS & RESOURCE MANAGEMENT**

9

**Process Management:** Process Migration: Features, Mechanism - Threads: Models, Issues, Implementation. **Resource Management:** Introduction- Features of Scheduling Algorithms –Task Assignment Approach – Load Balancing Approach – Load Sharing Approach.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Discuss trends in Distributed Systems.
- Apply network virtualization.
- Apply remote method invocation and objects.
- Design process and resource management systems.

**TEXT BOOK:**

1. George Coulouris, Jean Dollimore and Tim Kindberg, “Distributed Systems Concepts and Design”, Fifth Edition, Pearson Education, 2012.

**REFERENCES:**

1. Pradeep K Sinha, "Distributed Operating Systems: Concepts and Design", Prentice Hall of India, 2007.
2. Tanenbaum A.S., Van Steen M., “Distributed Systems: Principles and Paradigms”, Pearson Education, 2007.
3. Liu M.L., “Distributed Computing, Principles and Applications”, Pearson Education, 2004.
4. Nancy A Lynch, “Distributed Algorithms”, Morgan Kaufman Publishers, USA, 2003.


  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-601  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Learn the design principles of a Compiler.
- Learn the various parsing techniques and different levels of translation
- Learn how to optimize and effectively generate machine codes

**UNIT I INTRODUCTION TO COMPILERS**

5

Translators-Compilation and Interpretation-Language processors -The Phases of Compiler-Errors Encountered in Different Phases-The Grouping of Phases-Compiler Construction Tools - Programming Language basics.

**UNIT II LEXICAL ANALYSIS**

9

Need and Role of Lexical Analyzer-Lexical Errors-Expressing Tokens by Regular Expressions- Converting Regular Expression to DFA- Minimization of DFA-Language for Specifying Lexical Analyzers-LEX-Design of Lexical Analyzer for a sample Language.

**UNIT III SYNTAX ANALYSIS**

10

Need and Role of the Parser-Context Free Grammars -Top Down Parsing -General Strategies- Recursive Descent Parser Predictive Parser-LL(1) Parser-Shift Reduce Parser-LR Parser-LR (0)Item- Construction of SLR Parsing Table - Introduction to LALR Parser - Error Handling and Recovery in Syntax Analyzer-YACC-Design of a syntax Analyzer for a Sample Language .

**UNIT IV SYNTAX DIRECTED TRANSLATION & RUN TIME ENVIRONMENT**

12

Syntax directed Definitions-Construction of Syntax Tree-Bottom-up Evaluation of S-Attribute Definitions- Design of predictive translator - Type Systems-Specification of a simple type checker- Equivalence of Type Expressions-Type Conversions.

RUN-TIME ENVIRONMENT: Source Language Issues-Storage Organization-Storage Allocation- Parameter Passing-Symbol Tables-Dynamic Storage Allocation-Storage Allocation in FORTRAN.

**UNIT V CODE OPTIMIZATION AND CODE GENERATION**

9

Principal Sources of Optimization-DAG- Optimization of Basic Blocks-Global Data Flow Analysis- Efficient Data Flow Algorithms-Issues in Design of a Code Generator - A Simple Code Generator Algorithm.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

- Design and implement a prototype compiler.
- Apply the various optimization techniques.
- Use the different compiler construction tools.

**TEXTBOOK:**

1. Alfred V Aho, Monica S. Lam, Ravi Sethi and Jeffrey D Ullman, "Compilers — Principles, Techniques and Tools", 2<sup>nd</sup> Edition, Pearson Education, 2007.

**REFERENCES:**

1. Randy Allen, Ken Kennedy, "Optimizing Compilers for Modern Architectures: A Dependence-based Approach", Morgan Kaufmann Publishers, 2002.
2. Steven S. Muchnick, "Advanced Compiler Design and Implementation", Morgan Kaufmann Publishers - Elsevier Science, India, Indian Reprint 2003.
3. Keith D Cooper and Linda Torczon, "Engineering a Compiler", Morgan Kaufmann Publishers Elsevier Science, 2004.
4. Charles N. Fischer, Richard. J. LeBlanc, "Crafting a Compiler with C", Pearson Education, 2008.

*Mona*  
PRINCIPAL

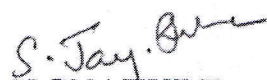
Idhaya Engineering College for Women,  
Vainarpalayam Road, CHINNASALEM-606,  
Kallakurichi Taluk, Villupuram District



**ANNA UNIVERSITY: CHENNAI-600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "AN EFFICIENT APPROACH TO ELECTRICITY THEFT USING DETECTION AND REPORTING" is the bonafide work of "RATHINA PRIYA.R, VANAJA.A, KARKUZHALLI.S" who carried out their project work under my supervision.

  
SIGNATURE

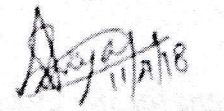
Mr.S. JAYAPRAKASH., M.E., (Ph. D)

**HEAD OF THE DEPARTMENT**

Assistant professor/CSE,

Idhaya Engineering College for women,

Chinnasalem-606 201.

  
SIGNATURE


Ms.M. ABINAYA, M.E.,

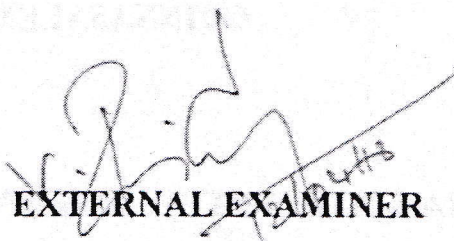
**SUPERVISOR**

Assistant Professor/CSE,

Idhaya Engineering College for Women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

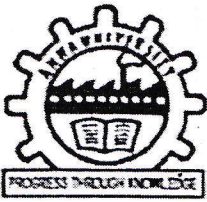
  
EXTERNAL EXAMINER



## ABSTRACT

Theft of electricity is the criminal practice of stealing electrical power. It is a crime and is punishable by fines and/or incarceration. It's the loss for government and indirectly to the people also. In terms of low voltage, increasing current price, transformer damage etc. Our intention is to deploy a real-time project to detect and report electricity theft in real-time. We will test the project in practical working environment for feasibility detection. The system is made over Arduino Nano programmer and Atmega 328 P Pu microcontroller. The system works with the concept of vibration. If someone tries to do any type of tampering to the electricity meter then automatically it's sending the information to electricity board and junior engineer. The system is highly implementable and can be used for real-time applications.





**AN EFFICIENT APPROACH TO ELECTRICITY  
THEFT USING DETECTING AND REPORTING**



A PROJECT REPORT

*Submitted by*

**RATHINA PRIYA.R**

**621114104029**

**VANAJA.A**

**621114104044**

**KARKUZHALLI.S**

**621114104301**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

**In**

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI-600 025**

**APRIL 2018**

PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60620,  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:****The student should be made to:**

- Understand the design issues in ad hoc and sensor networks.
- Learn the different types of MAC protocols.
- Be familiar with different types of adhoc routing protocols.
- Be expose to the TCP issues in adhoc networks.
- Learn the architecture and protocols of wireless sensor networks.

**UNIT I INTRODUCTION** 9

**Fundamentals of Wireless Communication Technology — The Electromagnetic Spectrum** — Radio propagation Mechanisms — Characteristics of the Wireless Channel -mobile ad hoc networks (MANETs) and wireless sensor networks (WSNs) :concepts and architectures. Applications of Ad Hoc and Sensor networks. Design Challenges in Ad hoc and Sensor Networks.

**UNIT II MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS** 9

**Issues in designing a MAC Protocol- Classification of MAC Protocols-** Contention based protocols-Contention based protocols with Reservation Mechanisms- Contention based protocols with Scheduling Mechanisms — Multi channel MAC-IEEE 802.11

**UNIT III ROUTING PROTOCOLS AND TRANSPORT LAYER IN AD HOC WIRELESS NETWORKS** 9

Issues in designing a routing and Transport Layer protocol for Ad hoc networks- proactive routing, reactive routing (on-demand), hybrid routing- Classification of Transport Layer solutions-TCP over Ad hoc wireless Networks.

**UNIT IV WIRELESS SENSOR NETWORKS (WSNS) AND MAC PROTOCOLS** 9

Single node architecture: hardware and software components of a sensor node - WSN Network architecture: typical network architectures- data relaying and aggregation strategies -MAC layer protocols: self-organizing, Hybrid TDMA/FDMA and CSMA based MAC- IEEE 802.15.4.

**UNIT V WSN ROUTING, LOCALIZATION & QOS** 9

Issues in WSN routing – OLSR- Localization – Indoor and Sensor Network Localization-absolute andrelative localization, triangulation- QOS in WSN-Energy Efficient Design-Synchronization-Transport Layer issues.

**TOTAL: 45 PERIODS****OUTCOMES:****Upon completion of the course, the student should be able to:**

- Explain the concepts, network architectures and applications of ad hoc and wireless sensornetworks
- Analyze the protocol design issues of ad hoc and sensor networks
- Design routing protocols for ad hoc and wireless sensor networks with respect to some protocol design issues
- Evaluate the QoS related performance measurements of ad hoc and sensor networks

**TEXT BOOK:**

1. C. Siva Ram Murthy, and B. S. Manoj, "Ad Hoc Wireless Networks: Architectures and Protocols ",Prentice Hall Professional Technical Reference, 2008.

**REFERENCES:**

1. Carlos De Moraes Cordeiro, Dharma Prakash Agrawal "Ad Hoc & Sensor Networks:Theory and Applications", World Scientific Publishing Company, 2006.
2. Feng Zhao and Leonides Guibas, "Wireless Sensor Networks", Elsevier Publication -2002.
3. Holger Karl and Andreas Willig "Protocols and Architectures for Wireless Sensor Networks",Wiley, 2005
4. Kazem Sohraby, Daniel Minoli, & Taieb Znati, "Wireless Sensor Networks-Technology,Protocols, and Applications", John Wiley, 2007.
5. Anna Hac, "Wireless Sensor Network Designs", John Wiley, 2003.

*Principi*  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEY  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Understand how Grid computing helps in solving large scale scientific problems.
- Gain knowledge on the concept of virtualization that is fundamental to cloud computing.
- Learn how to program the grid and the cloud.
- Understand the security issues in the grid and the cloud environment.

**UNIT I INTRODUCTION** 9

Evolution of Distributed computing: Scalable computing over the Internet – Technologies for network based systems – clusters of cooperative computers - Grid computing Infrastructures – cloud computing - service oriented architecture – Introduction to Grid Architecture and standards – Elements of Grid – Overview of Grid Architecture.

**UNIT II GRID SERVICES** 9

Introduction to Open Grid Services Architecture (OGSA) – Motivation – Functionality Requirements – Practical & Detailed view of OGSA/OGSI – Data intensive grid service models – OGSA services.

**UNIT III VIRTUALIZATION** 9

Cloud deployment models: public, private, hybrid, community – Categories of cloud computing: Everything as a service: Infrastructure, platform, software - Pros and Cons of cloud computing – Implementation levels of virtualization – virtualization structure – virtualization of CPU, Memory and I/O devices – virtual clusters and Resource Management – Virtualization for data center automation.

**UNIT IV PROGRAMMING MODEL** 9

Open source grid middleware packages – Globus Toolkit (GT4) Architecture, Configuration – Usage of Globus – Main components and Programming model - Introduction to Hadoop Framework - Mapreduce, Input splitting, map and reduce functions, specifying input and output parameters, configuring and running a job – Design of Hadoop file system, HDFS concepts, command line and java interface, dataflow of File read & File write.

**UNIT V SECURITY** 9

Trust models for Grid security environment – Authentication and Authorization methods – Grid security infrastructure – Cloud Infrastructure security: network, host and application level – aspects of data security, provider data and its security, Identity and access management architecture, IAM practices in the cloud, SaaS, PaaS, IaaS availability in the cloud, Key privacy issues in the cloud.

**TOTAL: 45 PERIODS****OUTCOMES:****At the end of the course, the student should be able to:**

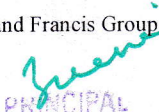
- Apply grid computing techniques to solve large scale scientific problems.
- Apply the concept of virtualization.
- Use the grid and cloud tool kits.
- Apply the security models in the grid and the cloud environment.

**TEXT BOOK:**

1. Kai Hwang, Geoffery C. Fox and Jack J. Dongarra, "Distributed and Cloud Computing: Clusters, Grids, Clouds and the Future of Internet", First Edition, Morgan Kaufman Publisher, an Imprint of Elsevier, 2012.

**REFERENCES:**

1. Jason Venner, "Pro Hadoop- Build Scalable, Distributed Applications in the Cloud", A Press, 2009
2. Tom White, "Hadoop The Definitive Guide", First Edition. O'Reilly, 2009.
3. Bart Jacob (Editor), "Introduction to Grid Computing", IBM Red Books, Vervante, 2005
4. Ian Foster, Carl Kesselman, "The Grid: Blueprint for a New Computing Infrastructure", 2<sup>nd</sup> Edition, Morgan Kaufmann.
5. Frederic Magoules and Jie Pan, "Introduction to Grid Computing" CRC Press, 2009.
6. Daniel Minoli, "A Networking Approach to Grid Computing", John Wiley Publication, 2005.
7. Barry Wilkinson, "Grid Computing: Techniques and Applications", Chapman and Hall, CRC, Taylor and Francis Group, 2010.

  
 PRINCIPAL  
 Idhaya Engineering College for Women  
 Vainarpalaym Road, CHINNASALEM-60520  
 Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Learn the architecture and programming of ARM processor.
- Be familiar with the embedded computing platform design and analysis.
- Be exposed to the basic concepts of real time Operating system.
- Learn the system design techniques and networks for embedded systems

**UNIT I INTRODUCTION TO EMBEDDED COMPUTING AND ARM PROCESSORS 9**

Complex systems and micro processors- Embedded system design process -Design example: Model train controller- Instruction sets preliminaries - ARM Processor – CPU: programming input and output- supervisor mode, exceptions and traps – Co-processors- Memory system mechanisms – CPU performance- CPU power consumption.

**UNIT II EMBEDDED COMPUTING PLATFORM DESIGN 9**

The CPU Bus-Memory devices and systems-Designing with computing platforms – consumer electronics architecture – platform-level performance analysis - Components for embedded programs- Models of programs- Assembly, linking and loading – compilation techniques- Program level performance analysis – Software performance optimization – Program level energy and power analysis and optimization – Analysis and optimization of program size- Program validation and testing.

**UNIT III PROCESSES AND OPERATING SYSTEMS 9**

Introduction – Multiple tasks and multiple processes – Multirate systems- Preemptive real-time operating systems- Priority based scheduling- Interprocess communication mechanisms – Evaluating operating system performance- power optimization strategies for processes – Example Real time operating systems-POSIX-Windows CE.

**UNIT V SYSTEM DESIGN TECHNIQUES AND NETWORKS 9**

Design methodologies- Design flows - Requirement Analysis – Specifications-System analysis and architecture design – Quality Assurance techniques- Distributed embedded systems – MPSoCs and shared memory multiprocessors.

**UNIT V CASE STUDY 9**

Data compressor - Alarm Clock - Audio player - Software modem-Digital still camera - Telephone answering machine-Engine control unit – Video accelerator.

**TOTAL: 45 PERIODS****OUTCOMES:****Upon completion of the course, students will be able to:**

- Describe the architecture and programming of ARM processor.
- Outline the concepts of embedded systems
- Explain the basic concepts of real time Operating system design.
- Use the system design techniques to develop software for embedded systems
- Differentiate between the general purpose operating system and the real time operating system
- Model real-time applications using embedded-system concepts

**TEXT BOOK:**

1. Marilyn Wolf, "Computers as Components - Principles of Embedded Computing System Design", Third Edition "Morgan Kaufmann Publisher (An imprint from Elsevier), 2012.

**REFERENCES:**

1. Jonathan W.Valvano, "Embedded Microcomputer Systems Real Time Interfacing", Third Edition Cengage Learning, 2012.
2. David. E. Simon, "An Embedded Software Primer", 1st Edition, Fifth Impression, Addison-Wesley Professional, 2007.
3. Raymond J.A. Buhr, Donald L.Bailey, "An Introduction to Real-Time Systems- From Design to Networking with C/C++", Prentice Hall, 1999.
4. C.M. Krishna, Kang G. Shin, "Real-Time Systems", International Editions, Mc Graw Hill 1997
5. K.V.K.K.Prasad, "Embedded Real-Time Systems: Concepts, Design & Programming", DreamTech Press, 2005.
6. Sriram V Iyer, Pankaj Gupta, "Embedded Real Time Systems Programming", Tata Mc Graw Hill, 2004.

*Principi*  
PRINCIPAL

rdhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:****The student should be made to:**

- Learn the foundations of Human Computer Interaction.
- Be familiar with the design technologies for individuals and persons with disabilities.
- Be aware of mobile HCI.
- Learn the guidelines for user interface.

**UNIT I FOUNDATIONS OF HCI 9**

The Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles – elements – interactivity- Paradigms.

**UNIT II DESIGN & SOFTWARE PROCESS 9**

Interactive Design basics – process – scenarios – navigation – screen design – Iteration and prototyping. HCI in software process – software life cycle – usability engineering – Prototyping in practice – design rationale. Design rules – principles, standards, guidelines, rules. Evaluation Techniques – Universal Design.

**UNIT III MODELS AND THEORIES 9**

Cognitive models – Socio-Organizational issues and stake holder requirements – Communication and collaboration models – Hypertext, Multimedia and WWW.

**UNIT IV MOBILE HCI 9**

Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of Mobile Design, Tools.

**UNIT V WEB INTERFACE DESIGN 9**

Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.

**L: 45, T: 0, TOTAL: 45 PERIODS**

**OUTCOMES:****Upon completion of the course, the student should be able to:**

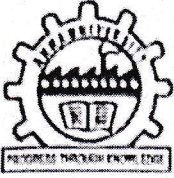
- Design effective dialog for HCI.
- Design effective HCI for individuals and persons with disabilities.
- Assess the importance of user feedback.

**TEXT BOOKS:**

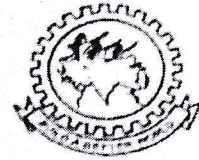
1. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", 3<sup>rd</sup> Edition, Pearson Education, 2004 (UNIT I, II & III).
2. Brian Fling, "Mobile Design and Development", First Edition, O'Reilly Media Inc., 2009 (UNIT –IV).

*Bueni*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**Improving Efficiency in Secure Mosaic  
Image using Style Transfer**



PTA 4

A PROJECT REPORT

*Submitted by*

**KOWSALYA.P**

**621114104018**

**MERLIN CLARA.A**

**621114104023**

**SUJITHA.S**

**621114104039**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI-600 025**

**APRIL 2018**

i

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-600 025  
Kallakurichi Taluk, Villupuram District




## ABSTRACT

Image is sent securely using mosaic image in which the target image undergoes a style transfer process. The combination of two images is said as Style image in which one image appears to the style of another image. Texture synthesis process is used for acquiring the Style image. Dual Domain Filter (DDF) is used for enhancing the quality of the Style image. Secret and target image is divided into fragments of same size and the fragments of secret tile block is fitted into the target tile to obtain the mosaic image based on the mapping sequence generated by the Genetic Algorithm and permute the sequence using Key Based Random Permutation with a key. Color transformation and rotation are made in order to make the mosaic image similar to target image. For recovery of the secret image some related information are embedded on to the mosaic image. The secret image is regained by using the same key and the mapping sequence.

**ANNA UNIVERSITY : CHENNAI-600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "IMPROVING EFFICIENCY IN SECURE MOSAIC IMAGE USING STYLE TRANSFER" is the bonafide work of "P. KOWSALYA, A. MERLIN CLARA, S. SUJITHA" who carried out the project work under my supervision.

  
SIGNATURE


Mr.S. JAYAPRAKASH., M.E., (Ph.D)

**HEAD OF THE DEPARTMENT**

Assistant Professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
SIGNATURE

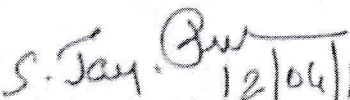
Mr.S. JAYAPRAKASH., M.E., (Ph.D)

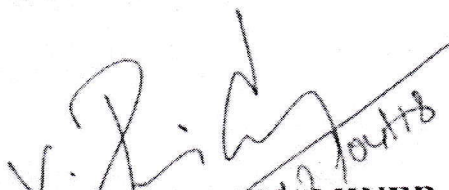
**SUPERVISOR**

Assistant Professor/CSE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
12/04/18  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



P748



**OPTIMUM LOAD SHARING FOR  
EFFECTIVE ENERGY SAVING WITH  
COOPERATIVE COMMUNICATIONS**



A PROJECT REPORT

*Submitted by*

**K. JAYANTHI**

**621114104016**

**S. MADHURA**

**621114104020**

**K.M. SANGEETHA**

**621114104031**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI - 600 025**

**APRIL 2018**


i

*Principal*  
**PRINCIPAL**  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY:: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certificate that this project report "OPTIMUM LOAD SHARING FOR EFFECTIVE ENERGY SAVING WITH COOPERATIVE COMMUNICATIONS" is the bonafide work of **K.JAYANTH S.MADHURA. K.M.SANGEETHA** who carried out the project work under my supervision.

  
SIGNATURE

S. JAYAPRAKASH., M.E.,

HEAD OF THE DEPARTMENT

Assistant Professor / CSE,

Idhaya Engineering College for  
Women,

Chinnasaalem - 606 201.

  
SIGNATURE


R.GOVINDHAN, M.E.,


SUPERVISOR

Assistant Professor / CSE,

Idhaya Engineering College for  
Women,

Chinnasaalem - 606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

In wireless networks, multi-path routing is proposed for energy balancing which prolongs the network lifetime as compared to single-path routing where utilization of a single route between a source node and the base station results in imbalanced energy dissipation. In this existing overlay architecture for dynamic routing, such that only a subset of devices need to make the dynamic routing decisions. The essential collection of nodes is determined that most traffic for achieving the maximum multi-commodity network throughput. In the overlay, each peer maintains temporary database information to be retrieved by routing, and searching. Peers are communicating with other peers using message transmitted over the network. **Multipath Cooperative routing protocol** reduces the failure of delivery of a package to the goal. Comprehensive simulations based on two real workload traces show that markov decision processing achieves significant performance gains versus two existing overlay approaches for energy consumption, resource shortage, and the number of nodes migrations. The results of the analysis show that by utilizing the optimization scheme proposed, it is possible to achieve near-optimal energy consumption using at most multi path cooperative for each node.

## ABSTRACT

Recent years have witnessed an increased interest in recommender systems. Indeed, this provides a study of exploiting online travel information for personalized travel package recommendation. A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, we first analyze the characteristics of the existing travel packages and develop a tourist-area-season topic (TAST) model. This TAST model can represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. Then, based on this topic model representation, we propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data group formation.



P 799



**PERSONALIZED TRAVEL ROUTE  
RECOMMENDATION SYSTEM**



**A PROJECT REPORT**

*Submitted by*

**GANGA.P**

**621114104010**

**SOUNDARYA.S**

**621114104034**

**UTHIRAMBAL.S**

**621114104043**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY:: CHENNAI-600 025**

**APRIL 2018**

i

*Mani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY:: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "PERSONALIZED TRAVEL ROUTRE RECOMMENDATION SYSTEM" is the bonafide work of "P.GANGA, S.SOUNDARYA, S.UTHIRAMBAL" who carried out their project work under my supervision.

  
SIGNATURE

Mr.S.JAYAPRAKASH.,M.E.,(Ph. D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College for women, Idhaya Engineering College for women,

Chinnasalem-606 201.

  
SIGNATURE


Mrs.P.SUMATHI, M.E.,

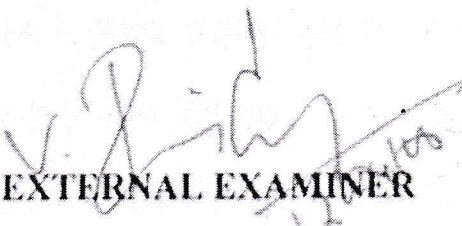
SUPERVISOR

Assistant Professor/CSE,

Idhaya Engineering College for women, Idhaya Engineering College for women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women,  
Mainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Recent years have witnessed an increased interest in recommender systems. Indeed, this provides a study of exploiting online travel information for personalized travel package recommendation. A critical challenge along this line is to address the unique characteristics of travel data, which distinguish travel packages from traditional items for recommendation. To that end, we first analyze the characteristics of the existing travel packages and develop a tourist-area-season topic (TAST) model. This TAST model can represent travel packages and tourists by different topic distributions, where the topic extraction is conditioned on both the tourists and the intrinsic features (i.e., locations, travel seasons) of the landscapes. Then, based on this topic model representation, we propose a cocktail approach to generate the lists for personalized travel package recommendation. Furthermore, we extend the TAST model to the tourist-relation-area-season topic (TRAST) model for capturing the latent relationships among the tourists in each travel group. Finally, we evaluate the TAST model, the TRAST model, and the cocktail recommendation approach on the real-world travel package data group formation.



**EMERGING SERVICES AND ANALYTICS**

**FOR CLOUD COMPUTING WITH**

**CLOUD SERVICE PROVIDER**



**A PROJECT REPORT**

*Submitted by*

**FOWMITHA.J**

**621114104009**

**GAYATHRI.T**

**621114104012**

**SHALINI.B**

**621114104033**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**COMPUTER SCIENCE AND ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY :: CHENNAI-600 025**

**APRIL 2018**

*Principals*  
**PRINCIPAL**

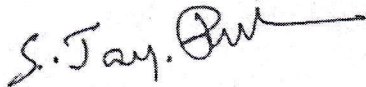
**Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606707  
Kallakurichi Taluk, Villupuram District**



ANNA UNIVERSITY : CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "EMERGING SERVICES AND ANALYTICS FOR CLOUD COMPUTING WITH CLOUD SERVICE PROVIDER" is the bonafide work of "J. FOWMITHA, T. GAYATHRI, B. SHALINI" who carried out their project work under my supervision.



SIGNATURE

Mr.S. JAYAPRAKASH., M.E., (Ph.D)

HEAD OF THE DEPARTMENT

Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.



SIGNATURE

Mrs. P. MOHANAVALLI., M.E.,

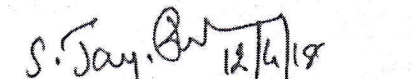
SUPERVISOR

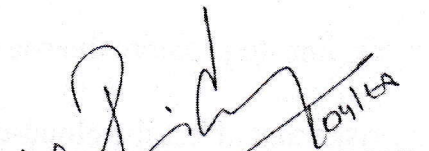
Assistant professor/CSE,

Idhaya Engineering College for

Women,

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

The use of cloud computing has increased rapidly in many organizations. Cloud computing provides many benefits in terms of low cost and accessibility of data. Ensuring the security of cloud computing is a major factor in the cloud computing environment, as users often store sensitive information with cloud storage providers but these providers may be untrusted. Dealing with “single cloud” providers is predicted to become less popular with customers due to risks of service availability failure and the possibility of malicious insiders in the single cloud. A movement towards “multi-clouds”, or in other words, “interclouds” or “cloud-of-clouds” has emerged recently. This paper surveys recent research related to single and multi-cloud security and addresses possible solutions. It is found that the research into the use of multi-cloud providers to maintain security has received less attention from the research community than has the use of single clouds. This work aims to promote the use of multi-clouds due to its ability to reduce security risks that affect the cloud-computing user.



**DEPARTMENT OF ELECTRICAL AND  
ELECTRONICS ENGINEERING**

**OBJECTIVES:****The student should be made to:**

- Be familiar with the structure of basic electronic devices.
- Be exposed to the operation and applications of electronic devices.

**UNIT I PN JUNCTION DEVICES**

9

PN junction diode –structure, operation and V-I characteristics, diffusion and transient capacitance -Rectifiers – Half Wave and Full Wave Rectifier,– Display devices- LED, Laser diodes- Zener diode- characteristics-Zener Reverse characteristics – Zener as regulator

**UNIT II TRANSISTORS**

9

BJT, JFET, MOSFET- structure, operation, characteristics and Biasing UJT, Thyristor and IGBT - Structure and characteristics.

**UNIT III AMPLIFIERS**

9

BJT small signal model – Analysis of CE, CB, CC amplifiers- Gain and frequency response – MOSFET small signal model– Analysis of CS and Source follower – Gain and frequency response-High frequency analysis.

**UNIT IV MULTISTAGE AMPLIFIERS AND DIFFERENTIAL AMPLIFIER**

9

BI-MOS cascade amplifier, Differential amplifier – Common mode and Difference mode analysis – FET input stages – Single tuned amplifiers – Gain and frequency response – Neutralization methods, power amplifiers –Types (Qualitative analysis).

**UNIT V FEEDBACK AMPLIFIERS AND OSCILLATORS**

9

Advantages of negative feedback – voltage / current, series, Shunt feedback –positive feedback – Condition for oscillations, phase shift – Wien bridge, Hartley, Colpitts and Crystal oscillators.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:**


- To explain the structure of the basic electronic devices.
- To design applications using the basic electronic devices.

**TEXT BOOKS:**

1. David A. Bell, [Electronic Devices and Circuits], Prentice Hall of India, 2004.
2. Sedra and Smith, —Microelectronic Circuits — Oxford University Press, 2004.

**REFERENCES:**

1. Rashid, —Micro Electronic Circuits| Thomson publications, 1999.
2. Floyd, —Electron Devices| Pearson Asia 5th Edition, 2001.
3. Donald A Neamen, —Electronic Circuit Analysis and Design| Tata McGraw Hill, 3<sup>rd</sup> Edition, 2003.
4. Robert L. Boylestad, —Electronic Devices and Circuit theory|, 2002.
5. Robert B. Northrop, —Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation|, CRC Press, 2004.


  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-606206  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To model the power system under steady state operating condition.
- To apply numerical methods to solve the power flow problem.
- To model and analyze the system under faulted conditions.
- To model and analyze the transient behaviour of power system when it is subjected to a fault.

**UNIT I INTRODUCTION**

9

Need for system planning and operational studies – basic components of a power system.-Introduction to restructuring - Single line diagram – per phase and per unit analysis – Generator - transformer – transmission line and load representation for different power system studies.- Primitive network - construction of Y-bus using inspection and singular transformation methods – z-bus.

**UNIT II POWER FLOW ANALYSIS**

9

Importance of power flow analysis in planning and operation of power systems - statement of power flow problem - classification of buses - development of power flow model in complex variables form - iterative solution using Gauss-Seidel method - Q-limit check for voltage controlled buses – power flow model in polar form - iterative solution using Newton-Raphson method .

**UNIT III FAULT ANALYSIS – BALANCED FAULTS**

9

Importance of short circuit analysis - assumptions in fault analysis - analysis using Thevenin's theorem - Z-bus building algorithm - fault analysis using Z-bus – computations of short circuit capacity, post fault voltage and currents.

**UNIT IV FAULT ANALYSIS – UNBALANCED FAULTS**

9

Introduction to symmetrical components – sequence impedances – sequence circuits of synchronous machine, transformer and transmission lines - sequence networks analysis of single line to ground, line to line and double line to ground faults using Thevenin's theorem and Z-bus matrix.

**UNIT V STABILITY ANALYSIS**

9

Importance of stability analysis in power system planning and operation - classification of power system stability - angle and voltage stability – Single Machine Infinite Bus (SMIB) system: Development of swing equation - equal area criterion - determination of critical clearing angle and time– solution of swing equation by modified Euler method and Runge-Kutta fourth order method.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. Nagrath L.J. and Kothari D.P., 'Modern Power System Analysis', Tata McGraw-Hill, Fourth Edition, 2011.
2. John J. Grainger and W.D. Stevenson Jr., 'Power System Analysis', Tata McGraw-Hill, Sixth reprint, 2010.
3. P. Venkatesh, B.V. Manikandan, S. Charles Raja, A. Srinivasan, 'Electrical Power Systems-Analysis, Security and Deregulation', PHI Learning Private Limited, New Delhi, 2012.

**REFERENCES:**

1. Hadi Saadat, 'Power System Analysis', Tata McGraw Hill Education Pvt. Ltd., New Delhi, 21st reprint, 2010.
2. Kundur P., 'Power System Stability and Control, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 10th reprint, 2010.
3. Pai M.A., 'Computer Techniques in Power System Analysis', Tata McGraw-Hill Publishing Company Ltd., New Delhi, Second Edition, 2007.
4. J. Duncan Glover, Mulukutla S. Sarma, Thomas J. Overbye, 'Power System Analysis & Design', Cengage Learning, Fifth Edition, 2012.
5. Olle. I Elgerd, 'Electric Energy Systems Theory — An Introduction', Tata McGraw Hill Publishing Company Limited, New Delhi, Second Edition, 2012.
6. C.A.Gross, 'Power System Analysis', Wiley India, 2011.

  
 PRINCIPAL

Adhaya Engineering College for Women  
 Nainarpalaym Road, CHINNASALEM-606023  
 Kaliakurichi Taluk, Villupuram District



**MOSFET BASED CHOPPER  
CONTROL OF DC SHUNT MOTOR  
USING PWM TECHNIQUES**



A PROJECT REPORT

*Submitted by*

**INDUMATHI.V**

621114105005

**INFANTCYRILLA. J**

621114105006

**MAHA LAKSHMI.S.S**

621114105011

**SIVA SHAKTHI.C**

621114105023

*In partial fulfillment for the award of the degree*

*Of*

**BACHELOR OF ENGINEERING**

*In*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM-606201**

**ANNA UNIVERSITY :: CHENNAI-600025**

**APRIL 2018**

*Mervi*

**PRINCIPAL**

**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District**




ANNA UNIVERSITY :: CHENNAI-600025

BONAFIDE CERTIFICATE

Certified that this project titled "MOSFET BASED CHOPPER CONTROL OF DC SHUNT MOTOR USING PWM TECHNIQUES" is the bonafide work of "V.INDUMATHI, J.INFANT CYRILLA, S.S.MAHALAKSHMI and C.SIVASHAKTHI" who carried out the project work under my supervision.


  
SIGNATURE

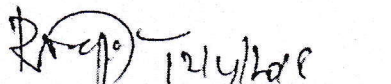
Mrs. A. YOGARANI., M.E.,  
HEAD OF THE DEPARTMENT,  
Department of EEE,  
Idhaya Engineering College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mr. S. SILAMBARASAN, M.E.,  
SUPERVISOR,  
Assistant Professor/ EEE,  
Idhaya Engineering College for Women,  
Chinnasalem-606 201.

Submitted for the University Examination held on 12.4.2012.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER  
CR. NEPOLAN ADAR  
4208-ATCE

  
PRINCIPAL  
Idhaya Engineering College for Women  
Mainarpalayam Road, CHINNASALEM-606 201  
Sallakurichi Taluk, Villupuram District

## ABSTRACT

Electric drives have numerous applications in diverse areas such as rolling mills, electric trains and robotic manipulators. Inefficient control of motor speed can destroy the equipment itself; even can cause a severe accident. The four main reasons for the usage of dc motors are reliability, simplicity and favorable cost. At the same time the dc motor drive is less complex compare to ac motor drives. In this project, a low-cost MOSFET based chopper drive Direct Current (DC) motor speed control system was designed and implemented. Such a drive will be appropriate for the speed control of DC motor in household and industrial appliances. The speed control of DC motor for various applications is very important. There are several techniques for controlling the speed of DC motor. In this project we are going to employ Pulse Width Modulation(PWM) technique for controlling the speed of the DC motor. PWM technique is used as the most efficient DC motor speed control. IC555 timer acts as a gate control circuit for chopper drive. The project is a real time working project and this can be further improvised by using other safety features.



**OBJECTIVES:**

- To introduce the basic functional elements of instrumentation
- To introduce the fundamentals of electrical and electronic instruments
- To educate on the comparison between various measurement techniques
- To introduce various storage and display devices
- To introduce various transducers and the data acquisition systems

**UNIT I INTRODUCTION**

9

Functional elements of an instrument – Static and dynamic characteristics – Errors in measurement – Statistical evaluation of measurement data – Standards and calibration.

**UNIT II ELECTRICAL AND ELECTRONICS INSTRUMENTS**

9

Principle and types of analog and digital voltmeters, ammeters, multimeters – Single and three phase wattmeters and energy meters – Magnetic measurements – Determination of B-H curve and measurements of iron loss – Instrument transformers – Instruments for measurement of frequency and phase.

**UNIT III COMPARISON METHODS OF MEASUREMENTS**

9

D.C & A.C potentiometers, D.C & A.C bridges, transformer ratio bridges, self-balancing bridges. Interference & screening – Multiple earth and earth loops - Electrostatic and electromagnetic interference – Grounding techniques.

**UNIT IV STORAGE AND DISPLAY DEVICES**

9

Magnetic disk and tape – Recorders, digital plotters and printers, CRT display, digital CRO, LED, LCD & dot matrix display – Data Loggers.

**UNIT V TRANSDUCERS AND DATA ACQUISITION SYSTEMS**

9

Classification of transducers – Selection of transducers – Resistive, capacitive & inductive transducers – Piezoelectric, Hall effect, optical and digital transducers – Elements of data acquisition system – A/D, D/A converters – Smart sensors.

**TOTAL :45 PERIODS****OUTCOMES:**

- Ability to model and analyze electrical apparatus and their application to power system

**TEXT BOOKS:**

1. A.K. Sawhney, 'A Course in Electrical & Electronic Measurements & Instrumentation', Dhanpat Rai and Co, 2004.
2. J. B. Gupta, 'A Course in Electronic and Electrical Measurements', S. K. Kataria & Sons, Delhi, 2003.
3. Doebelin E.O. and Manik D.N., 'Measurement Systems – Applications and Design, Special Indian Edition, Tata McGraw Hill Education Pvt. Ltd., 2007.

**REFERENCES:**

1. H.S. Kalsi, 'Electronic Instrumentation', Tata McGraw Hill, II Edition 2004.
2. D.V.S. Moorthy, 'Transducers and Instrumentation', Prentice Hall of India Pvt Ltd, 2007.
3. A.J. Bouwens, 'Digital Instrumentation', Tata McGraw Hill, 1997.
4. Martin Reissland, 'Electrical Measurements', New Age International (P) Ltd, Delhi, 2001.
5. Alan. S. Morris, 'Principles of Measurements and Instrumentation, 2nd Edition, Prentice Hall of India, 2003.



PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-605  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To develop expressions for the computation of transmission line parameters.
- To obtain the equivalent circuits for the transmission lines based on distance and operating voltage for determining voltage regulation and efficiency. Also to improve the voltage profile of the transmission system.
- To analyse the voltage distribution in insulator strings and cables and methods to improve the same.
- To understand the operation of the different distribution schemes.

**UNIT I STRUCTURE OF POWER SYSTEM 9**

Structure of electric power system: generation, transmission and distribution; Types of AC and DC distributors – distributed and concentrated loads – interconnection – EHVAC and HVDC transmission -Introduction to FACTS.

**UNIT II TRANSMISSION LINE PARAMETERS 9**

Parameters of single and three phase transmission lines with single and double circuits - Resistance, inductance and capacitance of solid, stranded and bundled conductors, Symmetrical and unsymmetrical spacing and transposition - application of self and mutual GMD; skin and proximity effects - interference with neighboring communication circuits - Typical configurations, conductor types and electrical parameters of EHV lines, corona discharges.

**UNIT III MODELLING AND PERFORMANCE OF TRANSMISSION LINES 9**

Classification of lines - short line, medium line and long line - equivalent circuits, phasor diagram, attenuation constant, phase constant, surge impedance; transmission efficiency and voltage regulation, real and reactive power flow in lines, Power - circle diagrams, surge impedance loading, methods of voltage control; Ferranti effect.

**UNIT IV INSULATORS AND CABLES 9**

Insulators - Types, voltage distribution in insulator string, improvement of string efficiency, testing of insulators. Underground cables - Types of cables, Capacitance of Single-core cable, Grading of cables, Power factor and heating of cables, Capacitance of 3- core belted cable, D.C cables.

**UNIT V MECHANICAL DESIGN OF LINES AND GROUNDING 9**

Mechanical design of transmission line – sag and tension calculations for different weather conditions, Tower spotting, Types of towers, Substation Layout (AIS, GIS), Methods of grounding.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. D.P.Kothari , I.J. Nagarath, 'Power System Engineering', Tata McGraw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
2. C.L.Wadhwa, 'Electrical Power Systems', New Academic Science Ltd, 2009.
3. S.N. Singh, 'Electric Power Generation, Transmission and Distribution', Prentice Hall of India Pvt. Ltd, New Delhi, Second Edition, 2011.

**REFERENCES:**

1. B.R.Gupta , S.Chand, 'Power System Analysis and Design' New Delhi, Fifth Edition, 2008.
2. Luces MFualken berry ,Walter Coffe, 'Electrical Power Distribution and Transmission', Pearson Education, 2007.
3. Hadi Saadat, 'Power System Analysis', PSA Publishing; Third Edition, 2010.
4. J.Brian, Hardy and Colin R.Bayliss 'Transmission and Distribution in Electrical Engineering', Newnes; Fourth Edition, 2012.
5. G.Ramamurthy, —Handbook of Electrical power Distribution, Universities Press, 2013.

*Suevi*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNABALEV-606623  
Kallakurichi Taluk, Villupuram District





**UNDER GROUND CABLE FAULT DETECTOR  
USING GSM AND BLUETOOTH**



A PROJECT REPORT

*Submitted by*

**MONIKA.S**

621114105013

**SANTHIYA.S**

621114105019

**SUREKA.S**

621114105026

**ANU PRADHA.C.D**

621114105702

*In partial fulfilment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

**IN**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM-606 201**

**ANNA UNIVERSITY:: CHENNAI-600 025**

**APRIL 2018**

*Mani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "UNDERGROUND CABLE FAULT DETECTOR USING GSM AND BLUETOOTH" is the bonafide work of "S.MONIKA, S.SANTHIYA, S.SUREKA, C.D.ANU PRADHA" who carried out the project work under my supervision.

  
SIGNATURE

Mrs. A. YOGARANI., M.E.,  
HEAD OF THE DEPARTMENT

Assistant Professor,  
Department of EEE,  
Idhaya Engineering College  
For women  
Chinnasalem-606 201.

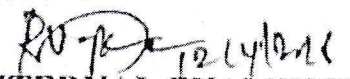
  
SIGNATURE

Ms .K. NANTHINI., M.E.,  
SUPERVISOR

Assistant Professor,  
Department of EEE,  
Idhaya Engineering College  
For women  
Chinnasalem-606 201.

Submitted for the University Examination Held On 12.04.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER  
PRINCEPIAN ABLE

4/20/18 AICE

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpaiaym Road, CHINNAsALEM-60620  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

The objective of this project is to determine the distance of underground cable fault from the base station in kilometers. Underground cable system is a common practice followed in major urban areas. While a fault occurs for some reason, at that time the repairing process related to that particular cable is difficult due to exact unknown location of the fault in the cable. It is used to find out the exact location of the fault and to send an SMS with details to a remote mobile phone using GSM module. The project is assembled with a set of resistors representing the cable length in km and the fault creation is made by a set of switches at every known km to cross check the accuracy of the same. The fault occurring at a particular distance, the respective phase along with the distance is displayed on the LCD. The same information is also sent to the concerned authority mobile phone to controlling the robot and sending the message over GSM, interfaced to the **ATMEGA328microcontroller** and **BLUETOOTH**.

  
PRINCIPAL

**OBJECTIVES:**

- To impart knowledge on Construction and performance of salient and non — salient types synchronous generators.
- To impart knowledge on Principle of operation and performance of synchronous motor.
- To impart knowledge on Construction, principle of operation and performance of induction machines.
- To impart knowledge on Starting and speed control of three-phase induction motors.
- To impart knowledge on Construction, principle of operation and performance of single phase induction motors and special machines.

**UNIT I SYNCHRONOUS GENERATOR**

9

Constructional details – Types of rotors – winding factors – emf equation – Synchronous reactance – Armature reaction – Phasor diagrams of non salient pole synchronous generator connected to infinite bus – Synchronizing and parallel operation – Synchronizing torque – Change of excitation and

mechanical input- Voltage regulation – EMF, MMF, ZPF and A.S.A methods – steady state power- angle characteristics – Two reaction theory – slip test – short circuit transients – Capability Curves

**UNIT II SYNCHRONOUS MOTOR**

9

Principle of operation – Torque equation – Operation on infinite bus bars - V and Inverted V curves – Power input and power developed equations – Starting methods – Current loci for constant power input, constant excitation and constant power developed – Hunting – natural frequency of oscillations – damper windings – synchronous condenser.

**UNIT III THREE PHASE INDUCTION MOTOR**

9

Constructional details – Types of rotors – Principle of operation – Slip – cogging and crawling – Equivalent circuit – Torque-Slip characteristics – Condition for maximum torque – Losses and efficiency – Load test – No load and blocked rotor tests – Circle diagram – Separation of losses – Double cage induction motors – Induction generators – Synchronous induction motor.

**UNIT IV STARTING AND SPEED CONTROL OF THREE PHASE INDUCTION MOTOR**

9

Need for starting – Types of starters – DOL, Rotor resistance, Autotransformer and Star-delta starters – Speed control – Voltage control, Frequency control and pole changing – Cascaded connection – V/f control – Slip power recovery scheme – Braking of three phase induction motor: Plugging, dynamic braking and regenerative braking.

**UNIT V SINGLE PHASE INDUCTION MOTORS AND SPECIAL MACHINES**

9

Constructional details of single phase induction motor – Double field revolving theory and operation – Equivalent circuit – No load and blocked rotor test – Performance analysis – Starting methods of single-phase induction motors – Capacitor-start capacitor run Induction motor – Shaded pole induction motor – Linear induction motor – Repulsion motor – Hysteresis motor – AC series motor – Servo motors – Stepper motors – introduction to magnetic levitation systems.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:**

- Ability to model and analyze electrical apparatus and their application to power system

**TEXT BOOKS:**

1. A.E. Fitzgerald, Charles Kingsley, Stephen. D. Umans, 'Electric Machinery', Tata Mc Graw Hill publishing Company Ltd, 2003.
2. D.P. Kothari and I.J. Nagrath, 'Electric Machines', Tata McGraw Hill Publishing Company Ltd, 2002.
3. P.S. Bhimbhra, 'Electrical Machinery', Khanna Publishers, 2003.

**REFERENCES:**

1. M.N. Bandyopadhyay, 'Electrical Machines Theory and Practice', PHI Learning PVT LTD., New Delhi, 2009.
2. Charles A. Gross, 'Electric Machines', CRC Press, 2010.
3. K. Murugesh Kumar, 'Electric Machines', Vikas Publishing House Pvt. Ltd, 2002.
4. Syed A. Nasar, 'Electric Machines and Power Systems: Volume I', McGraw-Hill College; International ed Edition, January 1995.
5. Alexander S. Langsdorf, 'Theory of Alternating-Current Machinery', Tata McGraw Hill Publications, 2001.

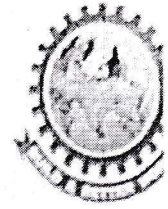
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60624  
Kallakurichi Taluk, Villupuram District





**ENERGY EFFICIENT, ECONOMICAL  
AND PORTABLE, STUDY  
ROOM INVERTER**



**A PROJECT REPORT**

*Submitted by*

**ANITHA.S**

621114105002

**JAGADESHWARI.M**

621114105007

**SURYA.S**

621114105027

**ABINAYA.T**

621114105301

*In partial fulfillment for the award of the degree*

of

**BACHELOR OF ENGINEERING**

IN

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM-606 201**

**ANNA UNIVERSITY::CHENNAI 600 025**

**APRIL 2018**

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY::CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "ENERGY EFFICIENT, ECONOMICAL, PORTABLE, STUDY ROOM INVERTER" is the bonafide work of "ANITHA.S, JAGADESHWARIM, SURYA.S, ABINAYA.T" who carried out the project work under my supervision.

  
SIGNATURE

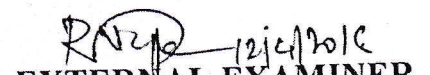
Mrs.A.YOGARANI., M.E.,  
HEAD OF THE DEPARTMENT,  
DEPARTMENT OF EEE,  
IECW,  
CHINNASALEM,  
VILLUPURAM (DT).

  
SIGNATURE

Ms.M.BENITTA MARY., M.E.,  
SUPERVISOR,  
DEPARTMENT OF EEE,  
IECW,  
CHINNASALEM,  
VILLUPURAM (DT).

Submitted for the University Examination Held on 12.04.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER  
R. N. S. P. C. A. M. A. S. / E. C.  
Lab - ATCC

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

The main aim of this project is to design an inverter using both AC supply and solar panel. This project is to harvest electrical energy that could give power supply to the load while the power is unavailable. In summer season, if the power supply is not available for some days means, at that time we are using solar energy from the solar panel to charge the battery. In winter seasons, We are rectifying the AC supply into dc supply to charge the battery. This battery gives the input to the inverter and inverter operates the load when the power supply is not available.

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- To introduce different methods of analog communication and their significance
- To introduce Digital Communication methods for high bit rate transmission
- To introduce the concepts of source and line coding techniques for enhancing rating of transmission of minimizing the errors in transmission.
- To introduce MAC used in communication systems for enhancing the number of users.
- To introduce various media for digital communication

**UNIT I ANALOG COMMUNICATION**

9

AM – Frequency spectrum – vector representation – power relations – generation of AM – DSB, DSB/SC, SSB, VSB AM Transmitter & Receiver; FM and PM – frequency spectrum – power relations : NBFM & WBFM, Generation of FM and DM, Amstrong method & Reactance modulations : FM & PM frequency.

**UNIT II DIGITAL COMMUNICATION**

9

Pulse modulations – concepts of sampling and sampling theormes, PAM, PWM, PPM, PTM, quantization and coding : DCM, DM, slope overload error. ADM, DPCM, OOK systems – ASK, FSK, PSK, BSK, QPSK, QAM, MSK, GMSK, applications of Data communication.

**UNIT III SOURCE CODES, LINE CODES & ERROR CONTROL (Qualitative only)**

9

Primary communication – entropy, properties, BSC, BEC, source coding : Shaum, Fao, Huffman coding : noiseless coding theorem, BW – SNR trade off codes: NRZ, RZ, AMI, HDBP, ABQ, MBnBcodes : Efficiency of transmissions, error control codes and applications: convolutions & blockcodes.

**UNIT IV MULTIPLE ACCESS TECHNIQUES**

9

SS&MA techniques : FDMA, TDMA, CDMA, SDMA application in wire and wireless communication : Advantages (merits) :

**UNIT V SATELLITE, OPTICAL FIBER – POWERLINE, SCADA**

9

Orbits : types of satellites : frequency used link establishment, MA techniques used in satellite communication, earth station; aperture actuators used in satellite – Intelsat and Insat: fibers – types: sources, detectors used, digital filters, optical link: power line carrier communications: SCADA

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyse, linear and digital electronic circuits.

**TEXT BOOKS:**

1. Taub & Schiling —Principles of Communication Systems| Tata McGraw Hill 2007.
2. J.Das —Principles of Digital Communication| New Age International, 1986.

**REFERENCES:**

1. Kennedy and Davis —Electronic Communication Systems| Tata McGraw hill, 4<sup>th</sup> Edition, 1993.
2. Sklar —Digital Communication Fundamentals and Applications— Pearson Education, 2001.
3. Bary le, Memuschmidt, Digital Communication, Kluwer Publication, 2004.
4. B.P.Lathi —Modern Digital and Analog Communication Systems| Oxford University Press, 1998.

*Nisemi*  
 PRINCIPAL  
 Idhaya Engineering College for Women  
 Nainarpalayam Road, CHINNASALEM-606.  
 Hallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To get an overview of different types of power semiconductor devices and their switching characteristics.
- To understand the operation, characteristics and performance parameters of controlled rectifiers.
- To study the operation, switching techniques and basic topologies of DC-DC switching regulators.
- To learn the different modulation techniques of pulse width modulated inverters and to understand harmonic reduction methods.
- To study the operation of AC voltage controller and various configurations.

**UNIT I POWER SEMI-CONDUCTOR DEVICES**

9

Study of switching devices, Diode, SCR, TRIAC, GTO, BJT, MOSFET, IGBT-Static and Dynamic characteristics - Triggering and commutation circuit for SCR- Design of Driver and snubber circuit.

**UNIT II PHASE-CONTROLLED CONVERTERS**

9

2-pulse, 3-pulse and 6-pulse converters – performance parameters – Effect of source inductance – Gate Circuit Schemes for Phase Control – Dual converters.

**UNIT III DC TO DC CONVERTER**

9

Step-down and step-up chopper-control strategy – Forced commutated chopper – Voltage commutated, Current commutated, Load commutated, Switched mode regulators - Buck, boost, buck-boost converter, Introduction to Resonant Converters.

**UNIT IV INVERTERS**

9

Single phase and three phase voltage source inverters (both  $120^\circ$  mode and  $180^\circ$  mode) – Voltage & harmonic control – PWM techniques: Sinusoidal PWM, modified sinusoidal PWM - multiple PWM – Introduction to space vector modulation – Current source inverter.

**UNIT V AC TO AC CONVERTERS**

9

Single phase and Three phase AC voltage controllers – Control strategy - Power Factor Control – Multistage sequence control - single phase and three phase cyclo converters – Introduction to Matrix converters.

**TOTAL: 45 PERIODS****OUTCOMES:**

- Ability to understand and analyse, linear and digital electronic circuits.

**TEXT BOOKS:**

1. M.H. Rashid, 'Power Electronics: Circuits, Devices and Applications', Pearson Education, PHI Third Edition, New Delhi, 2004.
2. P.S. Bimbra — Power Electronics | Khanna Publishers, third Edition, 2003.
3. L. Umanand, — Power Electronics Essentials and Applications |, Wiley, 2010.

**REFERENCES:**

1. Joseph Vithayathil, 'Power Electronics, Principles and Applications', McGraw Hill Series, 6<sup>th</sup> Reprint, 2013.
2. Ashfaq Ahmed Power Electronics for Technology Pearson Education, Indian reprint, 2003.
3. Philip T. Krein, — Elements of Power Electronics | Oxford University Press, 2004 Edition.
4. Ned Mohan, Tore. M. Undel and, William. P. Robbins, 'Power Electronics: Converters, Applications and Design', John Wiley and sons, third edition, 2003.
5. Daniel. W. Hart, — Power Electronics |, Indian Edition, Mc Graw Hill, 3<sup>rd</sup> Print, 2013.
6. M.D. Singh and K.B. Khanchandani, — Power Electronics |, Mc Graw Hill India, 2013.


  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To have an overview of power system operation and control.
- To model power-frequency dynamics and to design power-frequency controller.
- To model reactive power-voltage interaction and the control actions to be implemented for maintaining the voltage profile against varying system load.
- To study the economic operation of power system.
- To teach about SCADA and its application for real time operation and control of power systems.

**UNIT I INTRODUCTION**

9

An overview of power system operation and control - system load variation - load characteristics - load curves and load-duration curve - load factor - diversity factor - Importance of load forecasting and quadratic and exponential curve fitting techniques of forecasting - plant level and system level controls .

**UNIT II REAL POWER - FREQUENCY CONTROL**

9

Basics of speed governing mechanism and modeling - speed-load characteristics — load sharing between two synchronous machines in parallel - control area concept - LFC control of a single-area system - static and dynamic analysis of uncontrolled and controlled cases - two-area system — modeling - static analysis of uncontrolled case - tie line with frequency bias control - state variable model - integration of economic dispatch control with LFC.

**UNIT III REACTIVE POWER-VOLTAGE CONTROL**

9

Generation and absorption of reactive power - basics of reactive power control - excitation systems — modeling - static and dynamic analysis - stability compensation - methods of voltage control: tap- changing transformer, SVC (TCR + TSC) and STATCOM – secondary voltage control.

**UNIT IV UNIT COMMITMENT AND ECONOMIC DISPATCH**

9

Formulation of economic dispatch problem — I/O cost characterization — incremental cost curve - co- ordination equations without and with loss (No derivation of loss coefficients) - solution by direct method and  $\lambda$ -iteration method - statement of unit commitment problem — priority-list method - forward dynamic programming.

**UNIT V COMPUTER CONTROL OF POWER SYSTEMS**

9

Need for computer control of power systems - concept of energy control centre - functions - system monitoring - data acquisition and control - system hardware configuration — SCADA and EMS functions - network topology - state estimation — WLSE - Contingency Analysis - state transition diagram showing various state transitions and control strategies.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. Olle.I.Elgerd, 'Electric Energy Systems theory - An introduction', Tata McGraw Hill Education Pvt. Ltd., New Delhi, 34th reprint, 2010.
2. Allen. J. Wood and Bruce F. Wollenberg, 'Power Generation, Operation and Control', John Wiley & Sons, Inc., 2003.
3. Abhijit Chakrabarti, Sunita Halder, 'Power System Analysis Operation and Control', PHI learning Pvt. Ltd., New Delhi, Third Edition, 2010.

**REFERENCES:**

1. Nagrath I.J. and Kothari D.P., 'Modern Power System Analysis', Tata McGraw-Hill, Fourth Edition, 2011.
2. Kundur P., 'Power System Stability and Control, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 10th reprint, 2010.
3. Hadi Saadat, 'Power System Analysis', Tata McGraw Hill Education Pvt. Ltd., New Delhi, 21st reprint, 2010.
4. N.V.Ramana, —Power System Operation and Control, Pearson, 2011.
5. C.A.Gross, —Power System Analysis, Wiley India, 2011.

*Mansi*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606211  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To analyze the various concepts behind renewable energy resources.
- To introduce the energy saving concept by different ways of illumination.
- To understand the different methods of electric heating and electric welding.
- To introduce knowledge on Solar Radiation and Solar Energy Collectors
- To introduce concepts of Wind Energy and its utilization

**UNIT I ELECTRIC DRIVES AND TRACTION**

9

Fundamentals of electric drive - choice of an electric motor - application of motors for particular services - traction motors - characteristic features of traction motor - systems of railway electrification - electric braking - train movement and energy consumption - traction motor control - track equipment and collection gear.

**UNIT II ILLUMINATION**

9

Introduction - definition and meaning of terms used in illumination engineering - classification of light sources - incandescent lamps, sodium vapour lamps, mercury vapour lamps, fluorescent lamps — design of illumination systems - indoor lighting schemes - factory lighting halls - outdoor lighting schemes - flood lighting - street lighting - energy saving lamps, LED.

**UNIT III HEATING AND WELDING**

9

Introduction - advantages of electric heating — modes of heat transfer - methods of electric heating - resistance heating - arc furnaces - induction heating - dielectric heating - electric welding — types - resistance welding - arc welding - power supply for arc welding - radiation welding.

**UNIT IV SOLAR RADIATION AND SOLAR ENERGY COLLECTORS**

9

Introduction - solar constant - solar radiation at the Earth's surface - solar radiation geometry — estimation of average solar radiation - physical principles of the conversion of solar radiation into heat — flat-plate collectors - transmissivity of cover system - energy balance equation and collector efficiency - concentrating collector - advantages and disadvantages of concentrating collectors - performance analysis of a cylindrical - parabolic concentrating collector — Feedin Invertors.

**UNIT V WIND ENERGY**

9

Introduction - basic principles of wind energy conversion - site selection considerations - basic components of a WECS (Wind Energy Conversion System) - Classification of WECS - types of wind Turbines - analysis of aerodynamic forces acting on the blade - performances of wind.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.
- Ability to handle the engineering aspects of electrical energy generation and utilization.

**TEXT BOOKS:**

1. N.V. Suryanarayana, —Utilisation of Electric Power, Wiley Eastern Limited, New Age International Limited, 1993.
2. J.B.Gupta, —Utilisation Electric power and Electric Traction, S.K.Kataria and Sons, 2000.
3. G.D.Rai, —Non-Conventional Energy Sources, Khanna Publications Ltd., New Delhi, 1997.

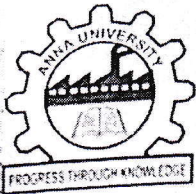
**REFERENCES:**

1. R.K.Rajput, Utilisation of Electric Power, Laxmi publications Private Limited., 2007.
2. H.Partab, Art and Science of Utilisation of Electrical Energy, Dhanpat Rai and Co., New Delhi, 2004.
3. C.L.Wadhwa, —Generation, Distribution and Utilisation of Electrical Energy, New Age International Pvt.Ltd., 2003.
4. S. Sivanagaraju, M. Balasubba Reddy, D. Srilatha, ' Generation and Utilization of Electrical Energy', Pearson Education, 2010.
5. Donald L. Steeby, ' Alternative Energy Sources and Systems', Cengage Learning, 2012.

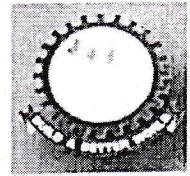
*Meeni*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-606206  
hallakurichi Taluk, Villupuram District

P775



**A NEW TOPOLOGY OF SOLAR BASED  
HIGH EFFICIENT WATER PUMPING  
SYSTEM USING CUK CONVERTER**



**A PROJECT REPORT**

*Submitted by*

<b>DELSI DAYANA MARY.F</b>	<b>621114105003</b>
<b>FAMITHA.A</b>	<b>621114105004</b>
<b>MOHANA PRIYA.P</b>	<b>621114105012</b>
<b>NAZIYA BEGUM.S</b>	<b>621114105014</b>

*In partial fulfilment for the award of the degree*

*Of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM-606201**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

i

*Principals*  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606.  
Kallakurichi Taluk, Villupuram District**



BONAFIDE CERTIFICATE

Certified that this project report titled "A NEW TOPOLOGY OF SOLAR BASED HIGH EFFICIENT WATER PUMPING SYSTEM USING CUK CONVERTER" is the bonafide work of "F.DELSI DAYANA MARY, A.FAMITHA, P.MOHANA PRIYA and S.NAZIYA BEGUM" who carried out the project work under my supervision.

  
SIGNATURE

Mrs.A.YOGARANI., M.E.,  
HEAD OF THE DEPARTMENT

Department of EEE,  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.


  
SIGNATURE

Mr.C.KUMAR., M.E.,  
INTERNAL GUIDE

Department of EEE,  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.

Submitted for the University Examination Held on 12.04.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER  
(R. NEELAN HO/EEE  
4208 - ATCE

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

A newly modified an efficient pumping system powered from photovoltaic panels, comprising a push-pull converter as well as an induction motor, is presented. Full valuation of the energy processing cycle has acceptable the formulation of a situate of propose principles and the optimization of a sensor less induction motor drive system. The technologies that are described include: Photovoltaic panel, converter circuits that process energy from one DC level to another DC level, converters that produce variable frequency from DC sources, principle of using inverter that converts DC into AC, induction motor. Hence, a pumping system based on an induction motor can be an interactive proposal where reliability and maintenance-free operation with less cost are important. The induction motor are AC motors and hence from converter, an inverter system is also required to obtain an AC voltage. The resulting presentation improvement is established experimentally. The project also covers **control of power** converters with focus on pulse width modulation control techniques. These techniques vary in many aspects as: simplicity, convergence speed, digital or analogical execution, sensors necessary, cost, range of efficiency, and in other aspects.



**OBJECTIVES:**

- To understand the concept, planning of DC power transmission and comparison with AC Power transmission.
- To analyze HVDC converters.
- To study about the HVDC system control.
- To analyze harmonics and design of filters.
- To model and analysis the DC system under study state.

**UNIT I INTRODUCTION**

9

DC Power transmission technology – Comparison of AC and DC transmission – Application of DC transmission – Description of DC transmission system – Planning for HVDC transmission – Modern trends in HVDC technology – DC breakers – Operating problems – HVDC transmission based on VSC – Types and applications of MTDC systems.

**UNIT II ANALYSIS OF HVDC CONVERTERS**

9

Line commutated converter - Analysis of Graetz circuit with and without overlap - Pulse number – Choice of converter configuration – Converter bridge characteristics – Analysis of a 12 pulse converters – Analysis of VSC topologies and firing schemes.

**UNIT III CONVERTER AND HVDC SYSTEM CONTROL**

9

Principles of DC link control – Converter control characteristics – System control hierarchy – Firing angle control – Current and extinction angle control – Starting and stopping of DC link – Power control – Higher level controllers – Control of VSC based HVDC link.

**UNIT IV REACTIVE POWER AND HARMONICS CONTROL**

9

Reactive power requirements in steady state – Sources of reactive power – SVC and STATCOM – Generation of harmonics – Design of AC and DC filters – Active filters.

**UNIT V POWER FLOW ANALYSIS IN AC/DC SYSTEMS**

9

Per unit system for DC quantities – DC system model – Inclusion of constraints – Power flow analysis – case study.

**TOTAL: 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. Padiyar, K. R., —HVDC power transmission systeml, New Age International (P) Ltd., New Delhi, Second Edition, 2010.
2. Edward Wilson Kimbark, —Direct Current Transmissionl, Vol. I, Wiley interscience, New York, London, Sydney, 1971.
3. Rakosh Das Begamudre, —Extra High Voltage AC Transmission Engineeringl, New Age International (P) Ltd., New Delhi, 1990.

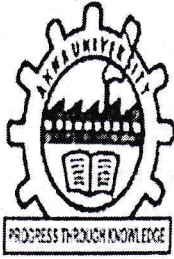
**REFERENCES:**

1. Kundur P., —Power System Stability and Controll, McGraw-Hill, 1993.
2. Colin Adamson and Hingorani NG, —High Voltage Direct Current Power Transmissionl, Garraway Limited, London, 1960.
3. Arrillaga, J., —High Voltage Direct Current Transmissionl, Peter Pregrinus, London, 1983.
4. S. Kamakshaiiah, V. Kamaraju, 'HVDC Transmission', Tata McGraw Hill Education Private Limited, 2011.

  
 PRINCIPAL

Adhaya Engineering College for Women  
 Nainarpalaym Road, CHINNASALEM-604266  
 Kallakurichi Taluk, Villupuram District

P-770



**HIGH SECURED BANKING SYSTEM**  
**USING GSM TECHNOLOGY WITH**  
**OTP GENERATOR**



A PROJECT REPORT

*Submitted by*

**C.JOSHMA JENIFER**

621114105008

**R.REVATHI**

621114105016

**K.M.ROSELIN**

621114105017

**E.SRIMATHI**

621114105701

*In partial fulfilment for the award of the degree*

*Of*

**BACHELOR OF ENGINEERING**

**In**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM-606 201**

**ANNA UNIVERSITY:: CHENNAI-600 025**

**APRIL 2018**

*[Signature]*  
**PRINCIPAL**

**Idhaya Engineering College for Women**  
**Nainarpalaym Road, CHINNASALEM-606201**  
**Kallakurichi Taluk, Villupuram District**



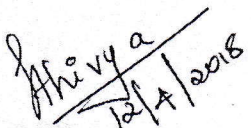
ANNA UNIVERSITY:: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "HIGH SECURED BANKING SYSTEM USING GSM TECHNOLOGY WITH OTP GENERATOR" is the bonafide work of "C.JOSHMA JENIFER, R.REVATHI, K.M.ROSELIN, E.SRIMATHI" who carried out their project work under by supervision.


  
SIGNATURE


Mrs.A.YOGARANI,M.E.,  
HEAD OF THE DEPARTMENT  
ASSISTANT PROFESSOR/EEE  
IDHAYA ENGINEERING  
COLLEGE FOR WOMEN,  
CHINNASALEM-606 201

  
SIGNATURE

Ms.S.THIVYA,M.E.,  
SUPERVISOR  
ASSISTANT PROFESSOR/EEE  
IDHAYA ENGINEERING  
COLLEGE FOR WOMEN,  
CHINNASALEM-606 201

Submitted for the university Examination Held on 12/04/2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER  
(R. NEELGANGA AP/EE  
4206-ATCC

  
PRINCIPAL  
Idhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM-6062  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The growing direct or spoofing fraudulent attacks of thieves has motivated us to focus our prime concern on the security over money transaction. The need of money can only be satisfied when you are carrying money with you that also increases the risk of getting robbed. Bank is a safest place to keep money. Bank provides Automated teller machine (ATM) which can provide money anywhere you want. ATM is an easy way to get money, you just need to insert card and password and you just got the money. But what if someone will steal your card and somehow he/she will know your password, it will grant him/her full access to your money. That raise question on present security and demands something new in the system that can provide second level of security. There is no security layer implemented in the ATM card except pin number. We monitor the location of the ATM usage, time taken for the user to accessing the ATM machine, sequence of events processed by the user and expected amount of withdrawal by the user. All these four factors are verified for the authentication purpose of the user along with password. The method proposed in this paper focuses on entering the Account Number after giving Account Number OTP which will be received in our registered mobile number. By using OTP we can Access our ATM account and after this Process registered Mobile will get the Acknowledgement.



**OBJECTIVES:**

- To introduce techniques of magnetic-circuit analysis and introduce magnetic materials
- To familiarize the constructional details, the principle of operation, prediction of performance, the methods of testing the transformers and three phase transformer connections.
- To study the working principles of electrical machines using the concepts of electromechanical energy conversion principles and derive expressions for generated voltage and torque developed in all Electrical Machines.
- To study the working principles of DC machines as Generator types, determination of their no- load/load characteristics, starting and methods of speed control of motors.
- To estimate the various losses taking place in D.C. Motor and to study the different testing methods to arrive at their performance.

**UNIT I MAGNETIC CIRCUITS AND MAGNETIC MATERIALS**

9

Magnetic circuits –Laws governing magnetic circuits - Flux linkage, Inductance and energy – Statically and Dynamically induced EMF - Torque – Properties of magnetic materials, Hysterisis and Eddy Current losses - AC excitation, introduction to permanent magnets-Transformer as a magnetically coupled circuit.

**UNIT II TRANSFORMERS**

9

Construction – principle of operation – equivalent circuit parameters – phasor diagrams, losses – testing – efficiency and voltage regulation-all day efficiency-Sumpner's test, per unit representation – inrush current - three phase transformers-connections – Scott Connection – Phasing of transformer–parallel operation of three phase transformers-auto transformer – tap changing transformers-tertiary winding.

**UNIT III ELECTROMECHANICAL ENERGY CONVERSION AND CONCEPTS IN ROTATING MACHINES**

9

Energy in magnetic system – Field energy and coenergy-force and torque equations – singly and multiply excited magnetic field systems-mmf of distributed windings – Winding Inductances-, magnetic fields in rotating machines – rotating mmf waves – magnetic saturation and leakage fluxes.

**UNIT IV DC GENERATORS**

9

Construction and components of DC Machine – Principle of operation - Lap and wave windings-EMF equations– circuit model – armature reaction –methods of excitation-commutation and interpoles - compensating winding –characteristics of DC generators.

**UNIT V DC MOTORS**

9

Principle and operations - types of DC Motors – Speed Torque Characteristics of DC Motors-starting and speed control of DC motors – Plugging, dynamic and regenerative braking- testing and efficiency – Retardation test- Swinburne's test and Hopkinson's test - Permanent magnet dc motors(PMDC)-DC Motor applications.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:**

- Ability to model and analyze electrical apparatus and their application to power system

**TEXT BOOKS:**

1. Nagrath I. J and Kothari D. P. 'Electric Machines', Fourth Edition, Tata McGraw Hill Publishing Company Ltd, 2010.
2. M.N.Bandyopadhyay, 'Electrical Machines Theory and Practice', PHI Learning PVT LTD., NewDelhi, 2009.
3. Fitzgerald. A.E., Charles Kingsely Jr, Stephen D.Umans, 'Electric Machinery', Sixth edition, Tata McGraw Hill Books Company, 2003.

**REFERENCES:**

1. P. C. Sen., 'Principles of Electrical Machines and Power Electronics', John Wiley & Sons, 1997.
2. Syed A. Nasar, 'Electric Machines and Power Systems: Volume I, Mcgraw-Hill College;International Edition, January 1995.
3. Deshpande M. V., —'Electrical Machines' PHI Learning Pvt. Ltd., New Delhi, 2011.
4. P.S. Bimbhra, 'Electric Machinery', Khanna Publishers, 2003.
5. S.Sarma & K.Pathak —'Electric Machines', Cengage Learning India (P) Ltd., Delhi, 2011.


  
PRINCIPAL

idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-600104  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To impart knowledge on Construction and performance of salient and non — salient types synchronous generators.
- To impart knowledge on Principle of operation and performance of synchronous motor.
- To impart knowledge on Construction, principle of operation and performance of induction machines.
- To impart knowledge on Starting and speed control of three-phase induction motors.
- To impart knowledge on Construction, principle of operation and performance of single phase induction motors and special machines.

**UNIT I SYNCHRONOUS GENERATOR**

9

Constructional details – Types of rotors – winding factors- emf equation – Synchronous reactance – Armature reaction – Phasor diagrams of non salient pole synchronous generator connected to infinite bus – Synchronizing and parallel operation – Synchronizing torque - Change of excitation and

mechanical input- Voltage regulation – EMF, MMF, ZPF and A.S.A methods – steady state power- angle characteristics – Two reaction theory – slip test - short circuit transients - Capability Curves

**UNIT II SYNCHRONOUS MOTOR**

9

Principle of operation – Torque equation – Operation on infinite bus bars - V and Inverted V curves – Power input and power developed equations – Starting methods – Current loci for constant power input, constant excitation and constant power developed – Hunting – natural frequency of oscillations – damper windings- synchronous condenser.

**UNIT III THREE PHASE INDUCTION MOTOR**

9

Constructional details – Types of rotors – Principle of operation – Slip – cogging and crawling- Equivalent circuit – Torque-Slip characteristics - Condition for maximum torque – Losses and efficiency – Load test - No load and blocked rotor tests - Circle diagram – Separation of losses – Double cage induction motors – Induction generators – Synchronous induction motor.

**UNIT IV STARTING AND SPEED CONTROL OF THREE PHASE INDUCTION MOTOR**

9

Need for starting – Types of starters – DOL, Rotor resistance, Autotransformer and Star-delta starters – Speed control – Voltage control, Frequency control and pole changing – Cascaded connection-V/f control – Slip power recovery scheme-Braking of three phase induction motor: Plugging, dynamic braking and regenerative braking.

**UNIT V SINGLE PHASE INDUCTION MOTORS AND SPECIAL MACHINES**

9

Constructional details of single phase induction motor – Double field revolving theory and operation – Equivalent circuit – No load and blocked rotor test – Performance analysis – Starting methods of single-phase induction motors – Capacitor-start capacitor run Induction motor- Shaded pole induction motor - Linear induction motor – Repulsion motor - Hysteresis motor - AC series motor- Servo motors- Stepper motors - introduction to magnetic levitation systems.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:**

- Ability to model and analyze electrical apparatus and their application to power system

**TEXT BOOKS:**

1. A.E. Fitzgerald, Charles Kingsley, Stephen. D.Umans, 'Electric Machinery', Tata Mc Graw Hill publishing Company Ltd, 2003.
2. D.P. Kothari and I.J. Nagrath, 'Electric Machines', Tata McGraw Hill Publishing Company Ltd, 2002.
3. P.S. Bhimbhra, 'Electrical Machinery', Khanna Publishers, 2003.

**REFERENCES:**

1. M.N.Bandyopadhyay, Electrical Machines Theory and Practice, PHI Learning PVT LTD., New Delhi, 2009.
2. Charless A. Gross, —Electric /Machines, —CRC Press, 2010.
3. K. Murugesh Kumar, 'Electric Machines', Vikas Publishing House Pvt. Ltd, 2002.
4. Syed A. Nasar, Electric Machines and Power Systems: Volume I, Mcgraw -Hill College; International ed Edition, January 1995.
5. Alexander S. Langsdorf, Theory of Alternating-Current Machinery, Tata McGraw Hill Publications, 2001.

PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM-606424  
Kallakurichi Taluk, Villupuram District





# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

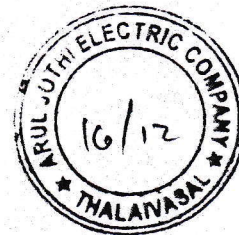
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss,P.PRADEEPA** ,lllrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company,during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. J. J.*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758  
CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

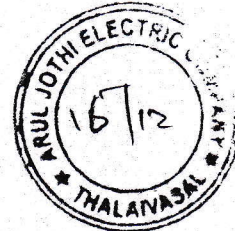
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, S.ANJU**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758  
CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

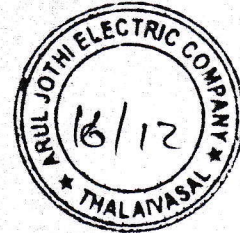
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, N.SUDHA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758

CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

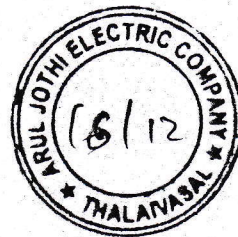
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, R.RASIKA**, IIIrd year, **B.E(E.E.E)**, student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*[Signature]*  
Proprietor 16/12

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758

CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU

Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

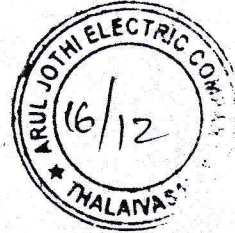
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, B. DEEPIKA**, IIIrd year, **B.E(E.E.E)**, student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

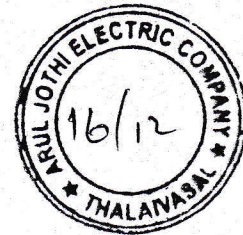
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, V.KOWSALYA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017** to **16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*[Signature]*  
Proprietor 16/12

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District





# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

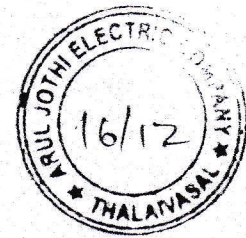
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, V.SATHYA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*Senthil*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Mainpalayam Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

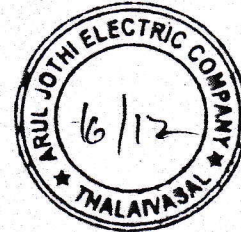
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, C.NITHIYA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Aravind*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758  
CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

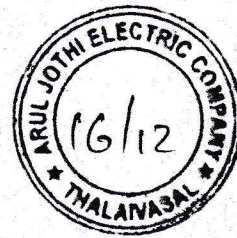
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, G. MONIKA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor. 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758  
CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

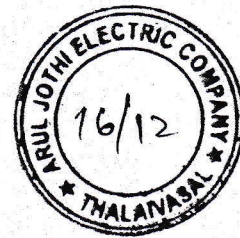
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, P. RAMYA**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To develop expressions for the computation of transmission line parameters.
- To obtain the equivalent circuits for the transmission lines based on distance and operating voltage for determining voltage regulation and efficiency. Also to improve the voltage profile of the transmission system.
- To analyse the voltage distribution in insulator strings and cables and methods to improve the same.
- To understand the operation of the different distribution schemes.

**UNIT I STRUCTURE OF POWER SYSTEM 9**

Structure of electric power system: generation, transmission and distribution; Types of AC and DC distributors – distributed and concentrated loads – interconnection – EHVAC and HVDC transmission -Introduction to FACTS.

**UNIT II TRANSMISSION LINE PARAMETERS 9**

Parameters of single and three phase transmission lines with single and double circuits - Resistance, inductance and capacitance of solid, stranded and bundled conductors, Symmetrical and unsymmetrical spacing and transposition - application of self and mutual GMD; skin and proximity effects - interference with neighboring communication circuits - Typical configurations, conductor types and electrical parameters of EHV lines, corona discharges.

**UNIT III MODELLING AND PERFORMANCE OF TRANSMISSION LINES 9**

Classification of lines - short line, medium line and long line - equivalent circuits, phasor diagram, attenuation constant, phase constant, surge impedance; transmission efficiency and voltage regulation, real and reactive power flow in lines, Power - circle diagrams, surge impedance loading, methods of voltage control; Ferranti effect.

**UNIT IV INSULATORS AND CABLES 9**

Insulators - Types, voltage distribution in insulator string, improvement of string efficiency, testing of insulators. Underground cables - Types of cables, Capacitance of Single-core cable, Grading of cables, Power factor and heating of cables, Capacitance of 3- core belted cable, D.C cables.

**UNIT V MECHANICAL DESIGN OF LINES AND GROUNDING 9**

Mechanical design of transmission line – sag and tension calculations for different weather conditions, Tower spotting, Types of towers, Substation Layout (AIS, GIS), Methods of grounding.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. D.P.Kothari , I.J. Nagarath, 'Power System Engineering', Tata McGraw-Hill Publishing Company limited, New Delhi, Second Edition, 2008.
2. C.L.Wadhwa, 'Electrical Power Systems', New Academic Science Ltd, 2009.
3. S.N. Singh, 'Electric Power Generation, Transmission and Distribution', Prentice Hall of India Pvt. Ltd, New Delhi, Second Edition, 2011.

**REFERENCES:**

1. B.R.Gupta , S.Chand, 'Power System Analysis and Design' New Delhi, Fifth Edition, 2008.
2. Luces MFualken berry ,Walter Coffe, 'Electrical Power Distribution and Transmission', Pearson Education, 2007.
3. Hadi Saadat, 'Power System Analysis', PSA Publishing; Third Edition, 2010.
4. J.Brian, Hardy and Colin R.Bayliss 'Transmission and Distribution in Electrical Engineering', Newnes; Fourth Edition, 2012.
5. G.Ramamurthy, —Handbook of Electrical power Distribution, Universities Press, 2013.

*Suevi*  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNABALEV-606623  
Kallakurichi Taluk, Villupuram District



**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION LIMITED**

Office of the Superintending Engineer,  
Kallakurichi Eelec. Distn. Circle,  
Kallakurichi-606 602.

Memo. No.894/Adm.1 / A.2 / F. Inplant Trg. /2017 , dt. // .12.2017

TO Head IEEE  
2/17/17

Sub: **Inplant Training to 230KV /SS** / by the Student of IDHAYA Engineering College for Women Chinnasalem – 606 201 on 12.12.2017 to 16.12.2017 (5 Days)  
Permission – Granted.

Ref: IDHAYA Engineering College for Women Chinnasalem – 606 201

\*\*\*\*\*

(14) No. Students BE (Electrical and Electronics Engineering) Studying in IDHAYA Engineering College for Women Chinnasalem – 606 201 are permitted to visit 230KV / SS / Ulundurpet in Kallakurichi EDC, Kallakurichi. as mentioned in the Annexure enclosed herewith as per the following conditions as in the (B.P). (Ch) No. 05.(Tech.Br.) dt.19.01.2010 & (ROU) TANGEDCO Proceedings (CMD). No.01.(TECH BR) Dated : 09.11.2010.

- a) The Trainees are not eligible for any TA or DA or leave Salary during the period of Training.
- b) They are should make there Own arrangements for their Boarding, lodging and Transport etc.
- c) They are should adhere to the Department rules and regulations during the period of Training / Project work.
- d) They are informed that the TANGEDCO will not be responsible for any accident that may be sustained during the Training period. They should furnish a declaration before joining, for absolving the TNEB of any responsibility what so ever in case of accident etc., during the Training period.
- e) They are informed that the recoveries with cartages will be effected from them for damage if any caused to Board's equipment due to their carelessness during their period of training/project work as assessed by the Officers Concerned.
- f) They are should maintain a diary giving full details regarding the work done.
- g) They are informed that this training will not carry any assurance for future employment in TANGEDCO.
- h) They are informed that request for change of training location or alteration of date of commencement of the training could not be entertained under any circumstances.
- i) Each candidate shall pay Rs.500/- for In-Plant training of the fact weather in-plant training is taken in group or individually.

  
PRINCIPAL  
Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District





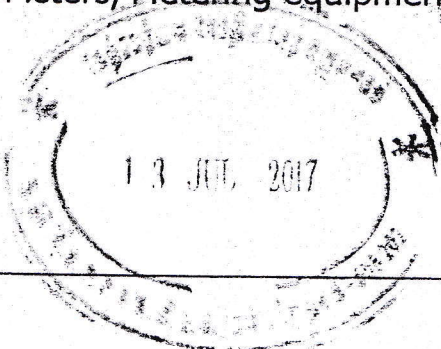
**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION  
LIMITED KALLAKURICHI ELECTRICITY DISTRIBUTION CIRCLE  
KALLAKURICHI**

**CERTIFICATE**

This is to Certify that **Selvi. K.Sheela,** III year B.E.,  
(Electrical and Electronics Engineering) Student of M/s. IDHAYA  
ENGINEERING COLLEGE FOR WOMEN, CHINNASALEM -606 201, has  
completed In-Plant Training in our Organization at Kallakurichi Electricity  
Distribution Circle. from 19.06.2017 to 23.06.2017 (5 Days).

During the training period, the above student familiarized on the  
following areas.

- 1) General arrangements of Distribution Transformers of various capacities.
- 2) General arrangement of HT 22KV Feeders'.
- 3) Familiarization of Distribution Transformers Layout
- 4) General arrangements of 110/22 KV Sub-Station
- 5) Meters, Metering equipments and Protective Relays.



**SUPERINTENDING ENGINEER,  
KEDC / KALLAKURICHI.**

*Principals*  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District**





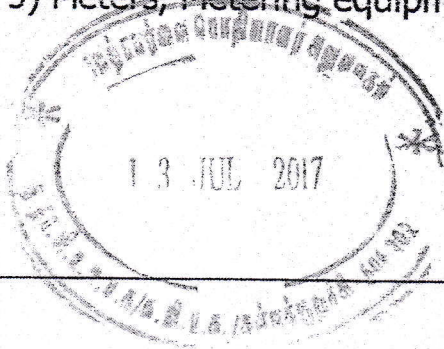
**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION  
LIMITED KALLAKURICHI ELECTRICITY DISTRIBUTION CIRCLE  
KALLAKURICHI**

**CERTIFICATE**

This is to Certify that **Selvi. R.Keerthana,** III year B.E.,  
(Electrical and Electronics Engineering) Student of M/s. IDHAYA  
ENGINEERING COLLEGE FOR WOMEN, CHINNASALEM -606 201, has  
completed In-Plant Training in our Organization at Kallakurichi Electricity  
Distribution Circle. from 19.06.2017 to 23.06.2017 (5 Days).

During the training period, the above student familiarized on  
the following areas.

- 1) General arrangements of Distribution Transformers of various capacities.
- 2) General arrangement of HT 22KV Feeders'.
- 3) Familiarization of Distribution Transformers Layout
- 4) General arrangements of 110/22 KV Sub-Station
- 5) Meters, Metering equipments and Protective Relays.



  
**SUPERINTENDING ENGINEER,  
KEDC / KALLAKURICHI.**

  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District**





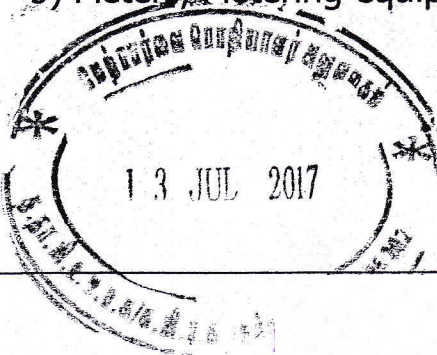
**TAMIL NADU GENERATION AND DISTRIBUTION CORPORATION  
LIMITED KALLAKURICHI ELECTRICITY DISTRIBUTION CIRCLE  
KALLAKURICHI**

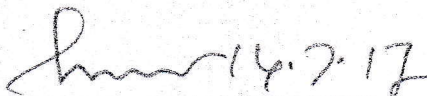
**CERTIFICATE**

This is to Certify that **Selvi. S.Pachaiyammal**, III year B.E., (Electrical and Electronics Engineering) Student of M/s. IDHAYA ENGINEERING COLLEGE FOR WOMEN, CHINNASALEM -606 201, has completed In-Plant Training in our Organization at Kallakurichi Electricity Distribution Circle. from 19.06.2017 to 23.06.2017 (5 Days).

During the training period, the above student familiarized on the following areas.

- 1) General arrangements of Distribution Transformers of various capacities.
- 2) General arrangement of HT 22KV Feeders'.
- 3) Familiarization of Distribution Transformers Layout
- 4) General arrangements of 110/22 KV Sub-Station
- 5) Meters, Metering equipments and Protective Relays.



  
**SUPERINTENDING ENGINEER,  
KEDC / KALLAKURICHI.**

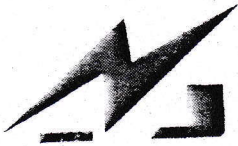
  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District**



TIN : 33843262758

CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU

Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

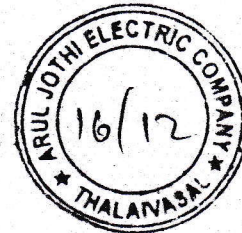
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss, S. Elizabeth**, IIIrd year, **B.E(E.E.E)**, student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Aravind*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



TIN : 33843262758  
CST No. : 1041280



# ARUL JOTHI ELECTRIC COMPANY

NO. 6/367, ARAKULAR CROSS ROAD, MUMMUDI,  
THALAIVASAL, ATTUR (SALEM) - 636 112. TAMIL NADU  
Tel : 04282 - 231232 Mobile : 99432 59018 Email : aruljothiec@gmail.com

AJEC/ITC/MRK/2017

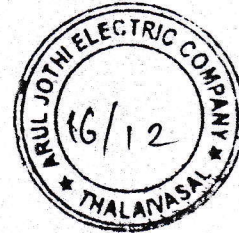
DT: 16.12.2017

## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Miss T.SELVALAKSHMI**, IIIrd year, B.E(E.E.E), student of **IDHAYA ENGINEERING COLLEGE FOR WOMEN**, undergone the internship training in our company, during the period from **02.12.2017 to 16.12.2017**.

During the period of training, She learnt different types of transformers, assembling of transformer, winding of transformers, transformer testing, oil testing, and oil filter also.

During the period of training in our company, her conduct and character is very good.



For ARUL JOTHI ELECTRIC COMPANY

*J. Jothi*  
Proprietor 16/12

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce the Building Blocks of Embedded System
- To Educate in Various Embedded Development Strategies
- To Introduce Bus Communication in processors, Input/output interfacing.
- To impart knowledge in Various processor scheduling algorithms.
- To introduce Basics of Real time operating system and example tutorials to discuss on one real-time operating system tool

**UNIT I INTRODUCTION TO EMBEDDED SYSTEMS**

9

Introduction to Embedded Systems – The build process for embedded systems- Structural units in Embedded processor , selection of processor & memory devices- DMA – Memory management methods- Timer and Counting devices, Watchdog Timer, Real Time Clock, In circuit emulator, Target Hardware Debugging.

**UNIT II EMBEDDED NETWORKING**

9

Embedded Networking: Introduction, I/O Device Ports & Buses– Serial Bus communication protocols - RS232 standard – RS422 – RS485 - CAN Bus -Serial Peripheral Interface (SPI) – Inter Integrated Circuits (I<sup>2</sup>C) –need for device drivers.

**UNIT III EMBEDDED FIRMWARE DEVELOPMENT ENVIRONMENT**

9

Embedded Product Development Life Cycle- objectives, different phases of EDLC, Modelling of EDLC; issues in Hardware-software Co-design, Data Flow Graph, state machine model, Sequential Program Model, concurrent Model, object oriented Model.

**UNIT IV RTOS BASED EMBEDDED SYSTEM DESIGN**

9

Introduction to basic concepts of RTOS- Task, process & threads, interrupt routines in RTOS, Multiprocessing and Multitasking, Preemptive and non-preemptive scheduling, Task communication- shared memory, message passing-, Inter process Communication — synchronization between processes-semaphores, Mailbox, pipes, priority inversion, priority inheritance, comparison of Real time Operating systems: Vx Works,  $\mu$ C/OS-II, RT Linux.

**UNIT V EMBEDDED SYSTEM APPLICATION DEVELOPMENT**

9

Case Study of Washing Machine- Automotive Application- Smart card System Application..

**TOTAL: 45 PERIODS****OUTCOMES:**

- Ability to understand and analyse, linear and digital electronic circuits.

**TEXT BOOKS:**

1. Rajkamal, Embedded System-Architecture, Programming, Design, Mc Graw Hill, 2013.
2. Peckol, —Embedded system Design, John Wiley & Sons, 2010
3. Lyla B Das, Embedded Systems-An Integrated Approach, Pearson, 2013

**REFERENCES:**

1. Shibu. K.V, —Introduction to Embedded Systems, Tata Mcgraw Hill, 2009.
2. Elicia White, Making Embedded Systems, O' Reilly Series, SPD, 2011.
3. Tammy Noergaard, —Embedded Systems Architecture, Elsevier, 2006.
4. Han-Way Huang, Embedded system Design Using C8051F, Cengage Learning, 2009.
5. Rajib Mall —Real-Time systems Theory and Practice, Pearson Education, 2007.

*Mansi*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60626,  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce the Building Blocks of Embedded System
- To Educate in Various Embedded Development Strategies
- To Introduce Bus Communication in processors, Input/output interfacing.
- To impart knowledge in Various processor scheduling algorithms.
- To introduce Basics of Real time operating system and example tutorials to discuss on one real-time operating system tool

**UNIT I INTRODUCTION TO EMBEDDED SYSTEMS**

9

Introduction to Embedded Systems – The build process for embedded systems- Structural units in Embedded processor, selection of processor & memory devices- DMA – Memory management methods- Timer and Counting devices, Watchdog Timer, Real Time Clock, In circuit emulator, Target Hardware Debugging.

**UNIT II EMBEDDED NETWORKING**

9

Embedded Networking: Introduction, I/O Device Ports & Buses– Serial Bus communication protocols - RS232 standard – RS422 – RS485 - CAN Bus -Serial Peripheral Interface (SPI) – Inter Integrated Circuits (I<sup>2</sup>C) –need for device drivers.

**UNIT III EMBEDDED FIRMWARE DEVELOPMENT ENVIRONMENT**

9

Embedded Product Development Life Cycle- objectives, different phases of EDLC, Modelling of EDLC; issues in Hardware-software Co-design, Data Flow Graph, state machine model, Sequential Program Model, concurrent Model, object oriented Model.

**UNIT IV RTOS BASED EMBEDDED SYSTEM DESIGN**

9

Introduction to basic concepts of RTOS- Task, process & threads, interrupt routines in RTOS, Multiprocessing and Multitasking, Preemptive and non-preemptive scheduling, Task communication- shared memory, message passing-, Inter process Communication – synchronization between processes-semaphores, Mailbox, pipes, priority inversion, priority inheritance, comparison of Real time Operating systems: Vx Works, µC/OS-II, RT Linux.

**UNIT V EMBEDDED SYSTEM APPLICATION DEVELOPMENT**

9

Case Study of Washing Machine- Automotive Application- Smart card System Application,.

**TOTAL: 45 PERIODS****OUTCOMES:**

- Ability to understand and analyse, linear and digital electronic circuits.

**TEXT BOOKS:**

1. Rajkamal, 'Embedded System-Architecture, Programming, Design', Mc Graw Hill, 2013.
2. Peckol, —'Embedded system Design', John Wiley & Sons, 2010
3. Lyla B Das, 'Embedded Systems-An Integrated Approach', Pearson, 2013

**REFERENCES:**

1. Shibu. K.V, —'Introduction to Embedded Systems', Tata Mcgraw Hill, 2009.
2. Elicia White, 'Making Embedded Systems', O' Reilly Series, SPD, 2011.
3. Tammy Noergaard, —'Embedded Systems Architecture', Elsevier, 2006.
4. Han-Way Huang, 'Embedded system Design Using C8051F', Cengage Learning, 2009.
5. Rajib Mall —'Real-Time systems Theory and Practicel Pearson Education, 2007.

*Principi*  
PRINCIPAL

Adhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60626,  
Kallakurichi Taluk, Villupuram District



## CERTIFICATE OF COMPLETION

This is to certify that M. PRIYADHARSHINI  
has done INPLANT TRAINING from 6.12.17 to 8.12.17.  
During the training period the performance of the trainee  
was found to be GOOD.

  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201, KALLAKURICHI DT.

  
Project Manager



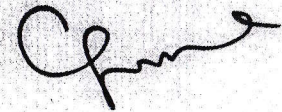
# CERTIFICATE OF COMPLETION

This is to certify that **B. FARZANA**

has done INPLANT TRAINING from 6.12.17 to 8.12.17

During the training period  
was found to be **GOOD**

*M. Ravi*  
**DR. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**





**OBJECTIVES:**

- To impart knowledge on Construction and performance of salient and non — salient types synchronous generators.
- To impart knowledge on Principle of operation and performance of synchronous motor.
- To impart knowledge on Construction, principle of operation and performance of induction machines.
- To impart knowledge on Starting and speed control of three-phase induction motors.
- To impart knowledge on Construction, principle of operation and performance of single phase induction motors and special machines.

**UNIT I SYNCHRONOUS GENERATOR**

9

Constructional details – Types of rotors – winding factors – emf equation – Synchronous reactance – Armature reaction – Phasor diagrams of non salient pole synchronous generator connected to infinite bus – Synchronizing and parallel operation – Synchronizing torque – Change of excitation and

mechanical input- Voltage regulation – EMF, MMF, ZPF and A.S.A methods – steady state power- angle characteristics – Two reaction theory – slip test – short circuit transients – Capability Curves

**UNIT II SYNCHRONOUS MOTOR**

9

Principle of operation – Torque equation – Operation on infinite bus bars – V and Inverted V curves – Power input and power developed equations – Starting methods – Current loci for constant power input, constant excitation and constant power developed – Hunting – natural frequency of oscillations – damper windings – synchronous condenser.

**UNIT III THREE PHASE INDUCTION MOTOR**

9

Constructional details – Types of rotors – Principle of operation – Slip – cogging and crawling – Equivalent circuit – Torque-Slip characteristics – Condition for maximum torque – Losses and efficiency – Load test – No load and blocked rotor tests – Circle diagram – Separation of losses – Double cage induction motors – Induction generators – Synchronous induction motor.

**UNIT IV STARTING AND SPEED CONTROL OF THREE PHASE INDUCTION MOTOR**

9

Need for starting – Types of starters – DOL, Rotor resistance, Autotransformer and Star-delta starters – Speed control – Voltage control, Frequency control and pole changing – Cascaded connection – V/f control – Slip power recovery scheme – Braking of three phase induction motor: Plugging, dynamic braking and regenerative braking.

**UNIT V SINGLE PHASE INDUCTION MOTORS AND SPECIAL MACHINES**

9

Constructional details of single phase induction motor – Double field revolving theory and operation – Equivalent circuit – No load and blocked rotor test – Performance analysis – Starting methods of single-phase induction motors – Capacitor-start capacitor run Induction motor – Shaded pole induction motor – Linear induction motor – Repulsion motor – Hysteresis motor – AC series motor – Servo motors – Stepper motors – introduction to magnetic levitation systems.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:**

- Ability to model and analyze electrical apparatus and their application to power system

**TEXT BOOKS:**

1. A.E. Fitzgerald, Charles Kingsley, Stephen. D. Umans, 'Electric Machinery', Tata Mc Graw Hill publishing Company Ltd, 2003.
2. D.P. Kothari and I.J. Nagrath, 'Electric Machines', Tata McGraw Hill Publishing Company Ltd, 2002.
3. P.S. Bhimbhra, 'Electrical Machinery', Khanna Publishers, 2003.

**REFERENCES:**

1. M.N. Bandyopadhyay, 'Electrical Machines Theory and Practice', PHI Learning PVT LTD., New Delhi, 2009.
2. Charles A. Gross, 'Electric Machines', CRC Press, 2010.
3. K. Murugesh Kumar, 'Electric Machines', Vikas Publishing House Pvt. Ltd, 2002.
4. Syed A. Nasar, 'Electric Machines and Power Systems: Volume I', McGraw-Hill College; International ed Edition, January 1995.
5. Alexander S. Langsdorf, 'Theory of Alternating-Current Machinery', Tata McGraw Hill Publications, 2001.

*Neema*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60624  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To model the power system under steady state operating condition.
- To apply numerical methods to solve the power flow problem.
- To model and analyze the system under faulted conditions.
- To model and analyze the transient behaviour of power system when it is subjected to a fault.

**UNIT I INTRODUCTION**

9

Need for system planning and operational studies – basic components of a power system.-Introduction to restructuring - Single line diagram – per phase and per unit analysis – Generator - transformer – transmission line and load representation for different power system studies.- Primitive network - construction of Y-bus using inspection and singular transformation methods – z-bus.

**UNIT II POWER FLOW ANALYSIS**

9

Importance of power flow analysis in planning and operation of power systems - statement of power flow problem - classification of buses - development of power flow model in complex variables form - iterative solution using Gauss-Seidel method - Q-limit check for voltage controlled buses – power flow model in polar form - iterative solution using Newton-Raphson method .

**UNIT III FAULT ANALYSIS – BALANCED FAULTS**

9

Importance of short circuit analysis - assumptions in fault analysis - analysis using Thevenin's theorem - Z-bus building algorithm - fault analysis using Z-bus – computations of short circuit capacity, post fault voltage and currents.

**UNIT IV FAULT ANALYSIS – UNBALANCED FAULTS**

9

Introduction to symmetrical components – sequence impedances – sequence circuits of synchronous machine, transformer and transmission lines - **sequence networks analysis of single line to ground, line to line and double line to ground faults using Thevenin's theorem** and Z-bus matrix.

**UNIT V STABILITY ANALYSIS**

9

Importance of stability analysis in power system planning and operation - classification of power system stability - angle and voltage stability – Single Machine Infinite Bus (SMIB) system: Development of swing equation - equal area criterion - determination of critical clearing angle and time– solution of swing equation by modified Euler method and Runge-Kutta fourth order method.

**TOTAL : 45 PERIODS****OUTCOMES:**

- Ability to understand and analyze power system operation, stability, control and protection.

**TEXT BOOKS:**

1. Nagrath L.J. and Kothari D.P., 'Modern Power System Analysis', Tata McGraw-Hill, Fourth Edition, 2011.
2. John J. Grainger and W.D. Stevenson Jr., 'Power System Analysis', Tata McGraw-Hill, Sixth reprint, 2010.
3. P. Venkatesh, B.V. Manikandan, S. Charles Raja, A. Srinivasan, 'Electrical Power Systems-Analysis, Security and Deregulation', PHI Learning Private Limited, New Delhi, 2012.

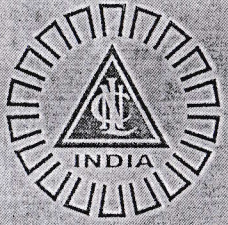
**REFERENCES:**

1. Hadi Saadat, 'Power System Analysis', Tata McGraw Hill Education Pvt. Ltd., New Delhi, 21st reprint, 2010.
2. Kundur P., 'Power System Stability and Control, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 10th reprint, 2010.
3. Pai M.A., 'Computer Techniques in Power System Analysis', Tata McGraw-Hill Publishing Company Ltd., New Delhi, Second Edition, 2007.
4. J. Duncan Glover, Mulukutla S. Sarma, Thomas J. Overbye, 'Power System Analysis & Design', Cengage Learning, Fifth Edition, 2012.
5. Olle. I Elgerd, 'Electric Energy Systems Theory — An Introduction', Tata McGraw Hill Publishing Company Limited, New Delhi, Second Edition, 2012.
6. C.A.Gross, 'Power System Analysis', Wiley India, 2011.


  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606023  
Kaliakurichi Taluk, Villupuram District



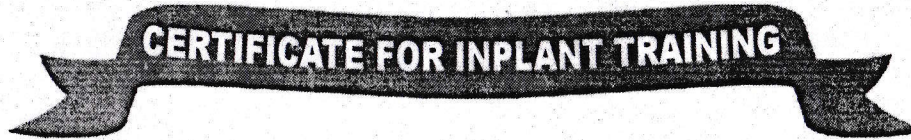
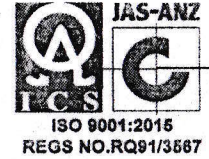


CREATING WEALTH FOR WELLBEING

# NLC India Limited

(formerly - Neyveli Lignite Corporation Ltd.,) "NAVRATNA" - Govt. of India Enterprise

## LEARNING & DEVELOPMENT CENTRE



This is to certify that Mr/Ms **SELVALAKSHMI T, III B.E. (EEE)** .....

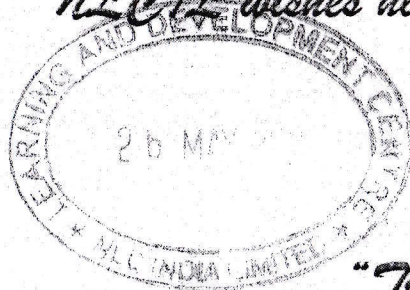
..... IDHAYA ENGINEERING COLLEGE FOR WOMAN, VILLUPURAM ..... has undergone

Inplant Training in **NLC India Limited, Neyveli** between ..... 21-May-18

and ..... 26-May-18 .....

*Neeraj*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**WOMENSALEM-606 201, KALLAKURICHI DT.**

*NLCIA wishes him / her Success in all future endeavours.*



**HEAD / L&D**  
**LEARNING & DEVELOPMENT CENTRE**

*"Training adding Value to Life"*



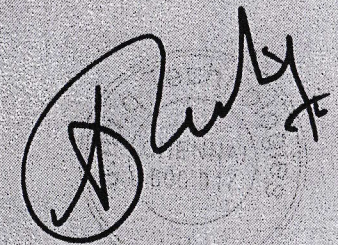
## CERTIFICATE OF COMPLETION

This is to certify that V. SUBASHINI

has done INPLANT TRAINING from 19-6-2017 to 23-06-2017

During the training period the performance of the trainee  
was found to be GOOD.

*Dr. R. Gurumani*  
DR. R. GURUMANI, M.E., Ph.D., M.B.A., MISTE., T.I.E.  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201, KALLAKURICHI DT.



Project Manager



## CERTIFICATE OF COMPLETION

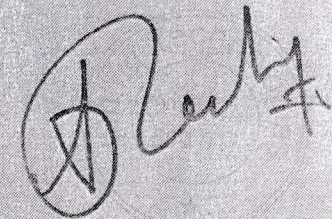
This is to certify that C. VIMALI JOVITHA

has done INPLANT TRAINING from 19-06-2017 to 23-06-2017

During the training period the performance of the trainee

was found to be GOOD

*R. Guramani*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201, KALLAKURICHI DT.



Project Manager



**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING**

**OBJECTIVES:**

- To introduce basic postulates of Boolean algebra and shows the correlation between Boolean expressions
- To introduce the methods for simplifying Boolean expressions
- To outline the formal procedures for the analysis and design of combinational circuits and sequential circuits
- To introduce the concept of memories and programmable logic devices.
- To illustrate the concept of synchronous and asynchronous sequential circuits

**UNIT I MINIMIZATION TECHNIQUES AND LOGIC GATES**

9

**Minimization Techniques:** Boolean postulates and laws – De-Morgan's Theorem - Principle of Duality - Boolean expression - Minimization of Boolean expressions — Minterm – Maxterm - Sum of Products (SOP) – Product of Sums (POS) – Karnaugh map Minimization – Don't care conditions – Quine - Mc Cluskey method of minimization.

**Logic Gates:** AND, OR, NOT, NAND, NOR, Exclusive-OR and Exclusive-NOR Implementations of Logic Functions using gates, NAND-NOR implementations – Multilevel gate implementations- Multi output gate implementations. TTL and CMOS Logic and their characteristics – Tristate gates

**UNIT II COMBINATIONAL CIRCUITS**

9

**Design procedure – Half adder – Full Adder – Half subtractor – Full subtractor –** Parallel binary adder, parallel binary Subtractor – Fast Adder - Carry Look Ahead adder – Serial Adder/Subtractor -BCD adder – Binary Multiplier – Binary Divider - Multiplexer/ Demultiplexer – decoder - encoder – parity checker – parity generators – code converters - Magnitude Comparator.

**UNIT III SEQUENTIAL CIRCUITS**

9

Latches, Flip-flops - SR, JK, D, T, and Master-Slave – Characteristic table and equation – Application table – Edge triggering – Level Triggering – Realization of one flip flop using other flip flops – serial adder/subtractor- Asynchronous Ripple or serial counter – Asynchronous Up/Down counter - Synchronous counters – Synchronous Up/Down counters – Programmable counters – Design of Synchronous counters: state diagram- State table – State minimization – State assignment - Excitation table and maps- Circuit implementation - Modulo-n counter, Registers – shift registers - Universal shift registers – Shift register counters – Ring counter – Shift counters - Sequence generators.

**UNIT IV MEMORY DEVICES**

9

**Classification of memories – ROM - ROM organization - PROM – EPROM – EEPROM – EAPROM, RAM – RAM organization – Write operation – Read operation – Memory cycle - Timing wave forms – Memory decoding – memory expansion – Static RAM Cell- Bipolar RAM cell – MOSFET RAM cell – Dynamic RAM cell – Programmable Logic Devices – Programmable Logic Array (PLA) - Programmable Array Logic (PAL) – Field Programmable Gate Arrays (FPGA) - Implementation of combinational logic circuits using ROM, PLA, PAL**

**UNIT V SYNCHRONOUS AND ASYNCHRONOUS SEQUENTIAL CIRCUITS**

9

**Synchronous Sequential Circuits:** General Model – Classification – Design – Use of Algorithmic State Machine – Analysis of Synchronous Sequential Circuits

**Asynchronous Sequential Circuits:** Design of fundamental mode and pulse mode circuits – Incompletely specified State Machines – Problems in Asynchronous Circuits – Design of Hazard Free Switching circuits. Design of Combinational and Sequential circuits using VERILOG.

**TOTAL: 45 PERIODS****OUTCOMES:****Students will be able to:**

- Analyze different methods used for simplification of Boolean expressions.
- Design and implement Combinational circuits.
- Design and implement synchronous and asynchronous sequential circuits.
- Write simple HDL codes for the circuits.

**TEXT BOOK:**

1. M. Morris Mano, "Digital Design", 4<sup>th</sup> Edition, Prentice Hall of India Pvt. Ltd., 2008 / Pearson Education (Singapore) Pvt. Ltd., New Delhi, 2003.

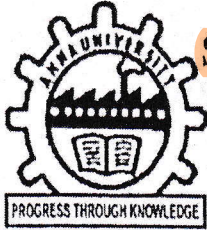
**REFERENCES:**

1. John F. Wakerly, "Digital Design", Fourth Edition, Pearson/PHI, 2008
2. John M. Yarbrough, "Digital Logic Applications and Design", Thomson Learning, 2006.
3. Charles H. Roth, "Fundamentals of Logic Design", 6<sup>th</sup> Edition, Thomson Learning, 2013.
4. Donald P. Leach and Albert Paul Malvino, "Digital Principles and Applications", 6<sup>th</sup> Edition, TMH, 2006.
5. Thomas L. Floyd, "Digital Fundamentals", 10<sup>th</sup> Edition, Pearson Education Inc, 2011
6. Donald D. Givone, "Digital Principles and Design", TMH, 2003.

*Mansi*  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASELEN  
Kallakurichi Taluk, Villupuram District





**SPECTRAL ENERGY EFFICIENCY OF  
TRADE OFF IN RELAY AIDED  
CELLULAR NETWORK**



**A PROJECT REPORT**

*Submitted by*

**AMUDHA.P**

**621114106003**

**KOWSALYA.E**

**621114106025**

**SHANMUGA PRIYA.R**

**621114106040**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FO WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI-600 025**

**APRIL 2018**

*Menei*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062  
Hallakurichi Taluk, Villupuram District



ANNA UNIVERSITY: CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "SPECTRAL-ENERGY EFFICIENCY OF TRADE OFF IN RELAY AIDED CELLULAR NETWORK" is the bonafide work of **AMUDHA.P,KOWSALY.E,SHANMUGAPRIYA.R** who carried out the project work under my supervision.

  
SIGNATURE

Mrs.P.POOVIZHI.,M.E.,

HEAD OF THE DEPARTMENT

Assistant Professor

Department of ECE,

Idhaya Engineering College

for Women,

Chinnasalem-606 201

  
SIGNATURE

Ms.P.PRINCY PUSHPA.,M.E.,

SUPERVISOR

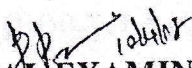
Assistant Professor

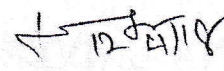
Department of ECE.

Idhaya Engineering College

for Women,

Chinnasalem-606 201

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

Cell discontinuous transmission (DTX) has been proposed as a solution to reduce energy consumption of cellular networks. It investigates the impact of congestion and collision avoid in the cellular network. The SINR distribution as a function of traffic load is derived firstly. Then sufficient condition for ignoring thermal noise and simplifying the SINR distribution is investigated. Based on the simplified SINR distribution, the network spectral and energy efficiency as functions of network traffic load are derived. It is shown that the network spectral efficiency increases monotonically in traffic load, while the optimal network energy efficiency depends on the ratio of the sleep-mode power consumption to the active-mode power consumption of base stations. If the ratio is larger than a certain threshold, the network energy efficiency increases monotonically with network traffic load and is maximized when the network is fully loaded. Otherwise, the network energy efficiency firstly increases and then decreases in network traffic load. The optimal load can be identified with a Dynamic load balancing algorithm. The aim of these algorithms is to try to reduce the difference of workload amongst processors. The power ratio threshold depends solely on the path loss exponent  $\alpha$ , e.g. 56% for  $\alpha = 4$ . All these analytic results are further validated by the numerical simulations.



PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To understand the basic properties of signal & systems and the various methods of classification
- To learn Laplace Transform & Fourier transform and their properties
- To know Z transform & DTFT and their properties
- To characterize LTI systems in the Time domain and various Transform domains

<b>UNIT I CLASSIFICATION OF SIGNALS AND SYSTEMS</b>	<b>9</b>
Continuous time signals (CT signals) - Discrete time signals (DT signals) - Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential, Classification of CT and DT signals - Periodic & Aperiodic signals, Deterministic & Random signals, Energy & Power signals - CT systems and DT systems- Classification of systems — Static & Dynamic, Linear & Nonlinear, Time-variant & Time-invariant, Causal & Noncausal, Stable & Unstable.	
<b>UNIT II ANALYSIS OF CONTINUOUS TIME SIGNALS</b>	<b>9</b>
Fourier series analysis-spectrum of Continuous Time (CT) signals- Fourier and Laplace Transforms in CT Signal Analysis - Properties.	
<b>UNIT III LINEAR TIME INVARIANT- CONTINUOUS TIME SYSTEMS</b>	<b>9</b>
Differential Equation-Block diagram representation-impulse response, convolution integrals-Fourier and Laplace transforms in Analysis of CT systems	
<b>UNIT IV ANALYSIS OF DISCRETE TIME SIGNALS</b>	<b>9</b>
Baseband Sampling - DTFT – Properties of DTFT - Z Transform – Properties of Z Transform	
<b>UNIT V LINEAR TIME INVARIANT-DISCRETE TIME SYSTEMS</b>	<b>9</b>
Difference Equations-Block diagram representation-Impulse response - Convolution sum- Discrete Fourier and Z Transform Analysis of Recursive & Non-Recursive systems	

**TOTAL (L:45+T:15): 60 PERIODS**

**OUTCOMES:**

**Upon the completion of the course, students will be able to:**


- Analyze the properties of signals & systems
- Apply Laplace transform, Fourier transform, Z transform and DTFT in signal analysis
- Analyze continuous time LTI systems using Fourier and Laplace Transforms
- Analyze discrete time LTI systems using Z transform and DTFT

**TEXT BOOK:**

1. Allan V. Oppenheim, S. Wilsky and S.H. Nawab, "Signals and Systems", Pearson, 2007.

**REFERENCES:**

1. B. P. Lathi, "Principles of Linear Systems and Signals", Second Edition, Oxford, 2009.
2. R.E. Zeimer, W.H. Tranter and R.D. Fannin, "Signals & Systems - Continuous and Discrete", Pearson, 2007.
3. John Alan Stuller, "An Introduction to Signals and Systems", Thomson, 2007.
4. M.J. Roberts, "Signals & Systems Analysis using Transform Methods & MATLAB", Tata McGrawHill, 2007.

  
 PRINCIPAL  
 Adhaya Engineering College for Women  
 Nainarpalaym Road, CHINNASALEM-60620  
 Hallakurichi Taluk, Villupuram District





**DIAGNOSING NUTRIENT DEFICIENCY  
IN PLANT LEAF USING DIGITAL  
IMAGE PROCESSING**



**A PROJECT REPORT**

*Submitted by*

- ANGEL MARTINA.S** 621114106005
- CHANDRA.D** 621114106009
- DEEPA.S** 621114106011
- SOWMIYA.S** 621114106044

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FO WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI-600 025**

**APRIL 2018**

*[Signature]*  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606 005  
Kallakurichi Taluk, Villupuram District**



**ANNA UNIVERSITY: CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "DIAGNOSING NUTRIENT DEFICIENCY IN PLANT LEAF USING DIGITAL IMAGE PROCESSING" is the bonafide work of "ANGEL MARTINA.S, CHANDRA.D, DEEPA.H, SOWMIYA.S" who carried out the project work under my supervision.

  
SIGNATURE

Mrs.P.POOVIZHI., M.E.,

HEAD OF THE DEPARTMENT

Assistant Professor

Department of ECE,

Idhaya Engineering College

for Women,

Chinnasalem-606 201

  
SIGNATURE

Dr.Sr.A.JENITTA, M.E., Ph.D.,

SUPERVISOR

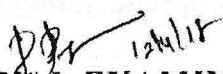
Associate Professor

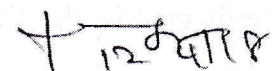
Department of ECE,

Idhaya Engineering College

for Women.

Chinnasalem-606 201

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

Plant needs nutrient for their growth. Lack of nutrients leads to affect the growth of the plant. Manual monitoring of disease do not give satisfactory result, as naked eye observation is old method requires more time for recognition also need expert hence it is non effective. To overcome the disadvantages of traditional eye observing technique, digital image processing is used for fast and accurate deficiency detection of plant. The goal is to introduce a modern technique to determine the nutrient deficiency in the affected plant much earlier than the human eye could recognize. The uploaded pictures captured by the mobile phones, smart phone and digital cameras are processed by using MATLAB software. Computer vision techniques are used for detection of affected spot from the image and their classification. The color conversion technique is used to convert RGB image into YCbCr image. Morphological method is used to segment the leaf image. Then texture, shape and color features of color image of disease spot were extracted and diagnose the deficiency level of leaf. "Probabilistic Neural Network" (PNN) is a feed forward neural network, which is widely used in classification and pattern recognition problems. This method used to analyse nutrient deficiency of leaves and provide feedback to the farmers. This will enable the farmers to adopt appropriate remedial in time.



**OBJECTIVES:**

The student should be made to

- Learn about biasing of BJTs and MOSFETs
- Design and construct amplifiers
- Construct amplifiers with active loads
- Study high frequency response of all amplifiers

<b>UNIT I</b>	<b>POWER SUPPLIES AND BIASING OF DISCRETE BJT AND MOSFET</b>	<b>9</b>
	Rectifiers with filters- DC Load line, operating point, Various biasing methods for BJT-Design- Stability-Bias compensation, Thermal stability, Design of biasing for JFET, Design of biasing for MOSFET	
<b>UNIT II</b>	<b>BJT AMPLIFIERS</b>	<b>9</b>
	Small signal Analysis of Common Emitter-AC Load line, Voltage swing limitations, Common collector and common base amplifiers — Differential amplifiers- CMRR- Darlington Amplifier- Bootstrap technique - Cascaded stages - Cascode Amplifier- <b>Large signal Amplifiers – Class A , Class B and Class C Power Amplifiers .</b>	
<b>UNIT III</b>	<b>JFET AND MOSFET AMPLIFIERS</b>	<b>9</b>
	Small signal analysis of JFET amplifiers- Small signal Analysis of MOSFET and JFET, Common source amplifier, Voltage swing limitations, Small signal analysis of MOSFET and JFET Source follower and Common Gate amplifiers, - BiMOS Cascode amplifier	
<b>UNIT IV</b>	<b>FREQUENCY ANALYSIS OF BJT AND MOSFET AMPLIFIERS</b>	<b>9</b>
	Low frequency and Miller effect, High frequency analysis of CE and MOSFET CS amplifier, Short circuit current gain, cut off frequency — $f_u$ and $f_\beta$ unity gain and Determination of bandwidth of single stage and multistage amplifiers	
<b>UNIT V</b>	<b>IC MOSFET AMPLIFIERS</b>	<b>9</b>
	IC Amplifiers- IC biasing Current steering circuit using MOSFET- MOSFET current sources- PMOS and NMOS current sources. Amplifier with active loads - enhancement load, Depletion load and PMOS and NMOS current sources load- CMOS common source and source follower- CMOS differential amplifier- CMRR.	
<b>TOTAL (L: 45+T: 15): 60 PERIODS</b>		

**OUTCOMES:**

**Upon Completion of the course, the students will be able to:**

- Design circuits with transistor biasing.
- Design simple amplifier circuits.
- Analyze the small signal equivalent circuits of transistors. Design and analyze large signal amplifiers.

**TEXT BOOK:**

1. Donald .A. Neamen, Electronic Circuit Analysis and Design –2<sup>nd</sup> Edition, Tata Mc Graw Hill, 2009.

**REFERENCES:**

1. Adel .S. Sedra, Kenneth C. Smith, “Micro Electronic Circuits”, 6<sup>th</sup> Edition, Oxford University Press, 2010.
2. David A., “Bell Electronic Devices and Circuits”, Oxford Higher Education Press, 5<sup>th</sup> Edition, 2010
3. Behzad Razavi, “Design of Analog CMOS Integrated Circuits”, Tata Mc Graw Hill, 2007.
4. Paul Gray, Hurst, Lewis, Meyer “Analysis and Design of Analog Integrated Circuits”, 4<sup>th</sup> Edition, John Willey & Sons 2005
5. Millman.J. and Halkias C.C, “Integrated Electronics”, Mc Graw Hill, 2001.
6. D.Schilling and C.Belove, “Electronic Circuits”, 3<sup>rd</sup> Edition, Mc Graw Hill, 1989.
7. Robert L. Boylestad and Louis Nasheresky, “Electronic Devices and Circuit Theory”, 10<sup>th</sup> Edition, Pearson Education / PHI, 2008.

*M. S. S.*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-686  
Kallakurichi Taluk, Villupuram Distric,



**OBJECTIVES:**

- To understand the advantages and method of analysis of feedback amplifiers.
- To understand the analysis and design of LC and RC oscillators, amplifiers, multivibrators, and time base generators.

**UNIT I FEEDBACK AMPLIFIERS**

9

General Feedback Structure – Properties of negative feedback – Basic Feedback Topologies – Feedback amplifiers – Series – Shunt, Series – Series, Shunt – Shunt and Shunt – Series Feedback – Determining the Loop Gain – Stability Problem – Nyquist Plot – Effect of feedback on amplifier poles – Frequency Compensation.

**UNIT II OSCILLATORS**

9

Classification, Barkhausen Criterion - Mechanism for start of oscillation and stabilization of amplitude, General form of an Oscillator, Analysis of LC oscillators - Hartley, Colpitts, Clapp, Franklin, Armstrong, Tuned collector oscillators, RC oscillators - phase shift - Wienbridge - Twin-T Oscillators, Frequency range of RC and LC Oscillators, Quartz Crystal Construction, Electrical equivalent circuit of Crystal, Miller and Pierce Crystal oscillators, frequency stability of oscillators.

**UNIT III TUNED AMPLIFIERS**

9

Coil losses, unloaded and loaded Q of tank circuits, small signal tuned amplifiers - Analysis of capacitor coupled single tuned amplifier – double tuned amplifier - effect of cascading single tuned and double tuned amplifiers on bandwidth – Stagger tuned amplifiers – large signal tuned amplifiers – Class C tuned amplifier – Efficiency and applications of Class C tuned amplifier - Stability of tuned amplifiers – Neutralization - Hazeltine neutralization method.

**UNIT IV WAVE SHAPING AND MULTIVIBRATOR CIRCUITS**

9

RC & RL Integrator and Differentiator circuits – Storage, Delay and Calculation of Transistor Switching Times – Speed-up Capacitor - Diode clippers, Diode comparator - Clampers, Collector coupled and Emitter coupled Astable multivibrator – Monostable multivibrator - Bistable multivibrators - Triggering methods for Bistable multivibrators - Schmitt trigger circuit

**UNIT V BLOCKING OSCILLATORS AND TIMEBASE GENERATORS**

9

UJT saw tooth waveform generator, Pulse transformers – equivalent circuit – response - applications, Blocking Oscillator – Free running blocking oscillator - Astable Blocking Oscillators with base timing – Push-pull Astable blocking oscillator with emitter timing, Frequency control using core saturation, Triggered blocking oscillator – Monostable blocking oscillator with base timing – Monostable blocking oscillator with emitter timing, Time base circuits - Voltage-Time base circuit, Current-Time base circuit - Linearization through adjustment of driving waveform.

**TOTAL: 45 PERIODS****OUTCOMES:**

Upon Completion of the course, the students will be able to

- Design and analyze feedback amplifiers.
- Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time base generators.
- Analyze performance of tuned amplifiers.

**TEXT BOOK:**

1. Sedra and Smith, "Micro Electronic Circuits"; Sixth Edition, Oxford University Press, 2011.

**REFERENCES:**

1. Robert L. Boylestad and Louis Nasheresky, "Electronic Devices and Circuit Theory", 10<sup>th</sup> Edition, Pearson Education / PHI, 2008
2. David A. Bell, "Electronic Devices and Circuits", Fifth Edition, Oxford University Press, 2008.
3. Millman J. and Taub H., "Pulse Digital and Switching Waveforms", TMH, 2000.
4. Millman and Halkias. C., Integrated Electronics, TMH, 2007.

*Mansi*  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60626  
Kallakurichi Taluk, Villupuram District



**NAVIGATION OF A BOAT USING THE FUEL  
CELL INTEGRATION AND SEA BORDER  
IDENTIFICATION**



A PROJECT REPORT

*Submitted by*

<b>FELICITA PRINCY.X</b>	621114106014
<b>KARTHIKA.V</b>	621114106021
<b>KOWSALYA.R</b>	621114106026

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60626,  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY: CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "NAVIGATION OF A BOAT USING THE FUEL CELL INTEGRATION AND SEA BORDER IDENTIFICATION" is the bonafide work of "X. FELICITA PRINCY, V.KARTHIKA, R.KOWSALYA" who carried out the project work under my supervision.

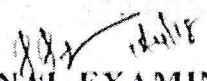
  
SIGNATURE

Mrs. P.POOVIZHI., M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering college  
For Women  
Chinnasalem-606 201



SIGNATURE

Ms. T.RADHA., M.E.,  
SUPERVISOR  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

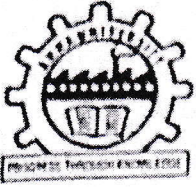
  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

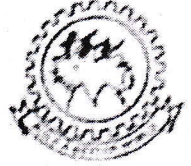
Fuel cells are environmentally sound renewable energy sources that are capable of operating at efficiencies greater than traditional energy production methods. A fuel cell based Fishing system was proposed with advanced features like border crossing, overload indication, weather information, Distress management, natural calamity warning. Fuel cell is used to run the boat up to 10 years without the usage of diesel. The main objective of our project is to help the fishermen not to navigate beyond other country's border. If a fisherman navigates beyond the country's border, an alarm is generated indicating that the fisherman has crossed the border. Additionally, a ZIGBEE transmitter interface will send a message to base station located on the sea shore indicating that a boat has crossed the border. We have developed a cost effective system for marine internet connectivity that provides around 80 km range which provides the weather information to the fisherman from the base station. Along with this, an object sensor is placed to indicate the overload of the ship. Alarm will be generated to indicate about the overload of the boat. On the whole, it is an attempt to build a suitable device for the fishermen at a reasonably low cost.





P 768

**DESIGN AND ANALYSIS OF SINGLE  
BAND MICROSTRIP PATCH ANTENNA  
FOR 5G COMMUNICATION**



A PROJECT REPORT

*Submitted by*

**KANIMOZHIL.B**

621114106020

**SAVITHA.S**

621114106039

**STEPHY EMELDA.B**

621114106045

**NIVEDHA.S**

621114106701

*in partial fulfilment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY:CHENNAI-600 025**

**APRIL 2018**

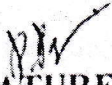
*Wani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-600  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "DESIGN AND ANALYSIS OF SINGLE BAND MICROSTRIP PATCH ANTENNA FOR 5G COMMUNICATION" is the bonafide work of **KANIMOZHI.B, SAVITHA.S, STEPHY EMELDA.B, NIVEDHA.S** who carried out their project work under my supervision.

  
SIGNATURE

Mrs.P.Poovizhi..M.E.,

HEAD OF THE DEPARTMENT

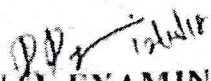
Assistant Professor / ECE,  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.

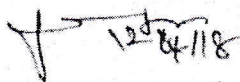
  
SIGNATURE

Ms.A.SAFANA AMALA YAZHINI ..M.E.,

SUPERVISOR

Assistant Professor / ECE,  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

The design represents a compact size of single band patch antenna for the next generation 5G communication. The compact size and structure of the antenna can be 19x19x0.708 mm including the ground plane. This antenna is designed using Rogers's 5880 substrate. Its dielectric constant is 2.2 and has thickness of 0.708 mm. This microstrip patch antenna resonates at frequency of 10.3 GHz. The design simulation is carried out with the aid of the ADS (Advanced Design System) electromagnetic simulator. The antenna provides a gain of 9.81dB; Directivity of 10.7 dB, bandwidth of an antenna is also used to check whether the microstrip patch antenna design is suitable for 5G mobile communication. The 5G technology include all types of advanced features which make 5G most dominant technologies in future. The structure of antenna and various specifications such as return loss plot, gain plot, radiation pattern plot and VSWR plot are presented and discussed.

**OBJECTIVES:**

- To introduce the concepts of various analog modulations and their spectral characteristics.
- To understand the properties of random process.
- To know the effect of noise on communication systems.
- To study the limits set by Information Theory.

**UNIT I AMPLITUDE MODULATION**

Generation and detection of AM wave-spectra-DSBSC, Hilbert Transform, Pre-envelope & complex envelope - SSB and VSB –comparison -Superheterodyne Receiver. 9

**UNIT II ANGLE MODULATION**

Phase and frequency modulation-Narrow Band and Wide band FM - Spectrum - FM modulation and demodulation – FM Discriminator- PLL as FM Demodulator - Transmission bandwidth. 9

**UNIT III RANDOM PROCESS**

Random variables, Central limit Theorem, Random Process, Stationary Processes, Mean, Correlation & Covariance functions, Power Spectral Density, Ergodic Processes, Gaussian Process, Transmission of a Random Process Through a LTI filter. 9

**UNIT IV NOISE CHARACTERIZATION**

Noise sources and types – Noise figure and noise temperature – Noise in cascaded systems. Narrowband noise – PSD of in-phase and quadrature noise –Noise performance in AM systems – Noise performance in FM systems – Pre-emphasis and de-emphasis – Capture effect, threshold effect. 9

**UNIT V INFORMATION THEORY**

Entropy - Discrete Memoryless channels - Channel Capacity -Hartley - Shannon law - Source coding theorem - Huffman & Shannon - Fano codes 9

**TOTAL: 45  
PERIODS**

**OUTCOMES:****At the end of the course, the students would**

- Design AM communication systems.
- Design Angle modulated communication systems
- Apply the concepts of Random Process to the design of Communication systems
- Analyze the noise performance of AM and FM systems

**TEXT BOOKS:**

1. J.G.Proakis, M.Salehi, "Fundamentals of Communication Systems", Pearson Education 2006.
2. S. Haykin, "Digital Communications", John Wiley, 2005.

**REFERENCES:**

1. B.P.Lathi, "Modern Digital and Analog Communication Systems", 3<sup>rd</sup> Edition, Oxford University Press, 2007.
2. B.Sklar, "Digital Communications Fundamentals and Applications", 2<sup>nd</sup> Edition Pearson Education 2007
3. H P Hsu, Schaum Outline Series - "Analog and Digital Communications" TMH 2006
4. Couch.L., "Modern Communication Systems", Pearson, 2001.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District



P760



**A HYBRID APPROACH TO  
RICE GRAIN QUALITY  
DETECTION AND ONLINE  
INFORMATION SYSTEM**



**A PROJECT REPORT**

*Submitted by*

**AKILA.T**

**621114106002**

**DAISY.A**

**621114106010**

**HELEN PRABHA.J**

**621114106015**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

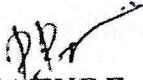
*Venini*  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM, Chinnasa-  
lem Taluk, Villupuram District**

ANNA UNIVERSITY: CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "A HYBRID APPROACH TO RICE GRAIN QUALITY DETECTION AND ONLINE INFORMATION SYSTEM" is the bonafide work of "AKILA.T, DAISY.A, HELEN PRABHA.J" who carried out the project work under my supervision.

  
SIGNATURE

Mrs. P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mrs. K.SOLAIYAMMAL, M.E.,  
SUPERVISOR  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

Rice is the most common cereal which is used all over the world as main consumable beverage. Quality of rice is mainly defined from its chemical & physical characteristics. Quality of rice grains sample is required for protecting the consumers from standard products because the samples of food materials are subjected to adulteration. In the present grain classification system, grain category and quality are rapidly assessed by visual inspection. This process is however, annoying and time consuming. The decision making capabilities of a grain inspector can be seriously affected by her/his physical condition such as eyesight and fatigue, mental state caused by biases and work pressure, and working conditions such as improper lighting, climate, etc. In This system we used Image processing and using this technique we can classify the rice grain sample with accuracy. **The morphological features such as (area, perimeter, and length) extracted from the image and are used for analysis.** This effort has been prepared to classify the appropriate quality of rice grain sample based on its parameters.

*M. S. S. S.*  
PRINCIPAL

Idhaya Engineering College for V  
Vainarpalaym Road, CHINNASALEM-606 006,  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce the basic building blocks of linear integrated circuits.
- To learn the linear and non-linear applications of operational amplifiers.
- To introduce the theory and applications of analog multipliers and PLL.
- To learn the theory of ADC and DAC.
- To introduce the concepts of waveform generation and introduce some special function ICs.

**UNIT I BASICS OF OPERATIONAL AMPLIFIERS**

Current mirror and current sources, Current sources as active loads, Voltage sources, Voltage References, BJT Differential amplifier with active loads, Basic information about op-amps — Ideal Operational Amplifier - General operational amplifier stages -and internal circuit diagrams of IC 741, DC and AC performance characteristics, slew rate, Open and closed loop configurations.

**UNIT II APPLICATIONS OF OPERATIONAL AMPLIFIERS**

Sign Changer, Scale Changer, Phase Shift Circuits, Voltage Follower, V-to-I and I-to-V converters, adder, subtractor, Instrumentation amplifier, Integrator, Differentiator, Logarithmic amplifier, Antilogarithmic amplifier, Comparators, Schmitt trigger, Precision rectifier, peak detector, clipper and clamper, Low-pass, high-pass and band-pass Butterworth filters.

**UNIT III ANALOG MULTIPLIER AND PLL**

Analog Multiplier using Emitter Coupled Transistor Pair - Gilbert Multiplier cell — Variable transconductance technique, analog multiplier ICs and their applications, Operation of the basic PLL, Closed loop analysis, Voltage controlled oscillator, Monolithic PLL IC 565, application of PLL for AM detection, FM detection, FSK modulation and demodulation and Frequency synthesizing.

**UNIT IV ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTERS**

Analog and Digital Data Conversions, D/A converter — specifications - weighted resistor type, R-2R Ladder type, Voltage Mode and Current-Mode R-2R Ladder types - switches for D/A converters, high speed sample-and-hold circuits, A/D Converters — specifications - Flash type - Successive Approximation type - Single Slope type — Dual Slope type - A/D Converter using Voltage-to-Time Conversion - Over-sampling A/D Converters.

**UNIT V WAVEFORM GENERATORS AND SPECIAL FUNCTION ICs**

Sine-wave generators, Multivibrators and Triangular wave generator, Saw-tooth wave generator, ICL8038 function generator, Timer IC 555, IC Voltage regulators — Three terminal fixed and adjustable voltage regulators - IC 723 general purpose regulator - Monolithic switching regulator, Switched capacitor filter IC MF10, Frequency to Voltage and Voltage to Frequency converters, Audio Power amplifier, Video Amplifier, Isolation Amplifier, Opto-couplers and fibre optic IC.

**TOTAL: 45 PERIODS****OUTCOMES:**

**Upon Completion of the course, the students will be able to:**

- Design linear and non linear applications of op – amps.
- Design applications using analog multiplier and PLL.
- Design ADC and DAC using op – amps.
- Generate waveforms using op – amp circuits.
- Analyze special function ICs.

**TEXT BOOKS:**

1. D.Roy Choudhry, Shail Jain, "Linear Integrated Circuits", New Age International Pvt. Ltd.,2000.
2. Sergio Franco, "Design with Operational Amplifiers and Analog Integrated Circuits", 3<sup>rd</sup> Edition, Tata Mc Graw-Hill, 2007.

**REFERENCES:**

1. Ramakant A. Gayakwad, "OP-AMP and Linear ICs", 4<sup>th</sup> Edition, Prentice Hall / Pearson Education,2001.
2. Robert F.Coughlin, Frederick F.Driscoll, "Operational Amplifiers and Linear Integrated Circuits",6<sup>th</sup> Edition, PHI, 2001.
3. B.S.Sonde, "System design using Integrated Circuits" , 2<sup>nd</sup> Edition, New Age Pub, 2001
4. Gray and Meyer, "Analysis and Design of Analog Integrated Circuits", Wiley International, 2005.
5. Michael Jacob, "Applications and Design with Analog Integrated Circuits", Prentice Hall of India,1996.
6. William D.Stanley, "Operational Amplifiers with Linear Integrated Circuits", Pearson Education,2004.
7. S.Salivahanan & V.S. Kanchana Bhaskaran, "Linear Integrated Circuits", TMH, 2008.

*Mani*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce the elements of control system and their modeling using various Techniques.
- To introduce methods for analyzing the time response, the frequency response and the stability of systems
- To introduce the state variable analysis method

**UNIT I CONTROL SYSTEM MODELING**

Basic Elements of Control System — Open loop and Closed loop systems - Differential equation - Transfer function, Modeling of Electric systems, Translational and rotational mechanical systems - Block diagram reduction Techniques - Signal flow graph

9

**UNIT II TIME RESPONSE ANALYSIS**

Time response analysis - First Order Systems - Impulse and Step Response analysis of second order systems - Steady state errors – P, PI, PD and PID Compensation, Analysis using MATLAB

9

**UNIT III FREQUENCY RESPONSE ANALYSIS**

Frequency Response - Bode Plot, Polar Plot, Nyquist Plot - Frequency Domain specifications from the plots - Constant M and N Circles - Nichol's Chart - Use of Nichol's Chart in Control System Analysis. Series, Parallel, series-parallel Compensators - Lead, Lag, and Lead Lag Compensators, Analysis using MATLAB.

9

**UNIT IV STABILITY ANALYSIS**

Stability, Routh-Hurwitz Criterion, Root Locus Technique, Construction of Root Locus, Stability, Dominant Poles, Application of Root Locus Diagram - Nyquist Stability Criterion - Relative Stability, Analysis using MATLAB

9

**UNIT V STATE VARIABLE ANALYSIS**

State space representation of Continuous Time systems – State equations – Transfer function from State Variable Representation – Solutions of the state equations - Concepts of Controllability and Observability – State space representation for Discrete time systems. Sampled Data control systems - Sampling Theorem – Sampler & Hold – Open loop & Closed loop sampled data systems.

9

**TOTAL: 45 PERIODS****OUTCOMES:****Upon completion of the course, students will be able to:**

- Perform time domain and frequency domain analysis of control systems required for stability analysis.
- Design the compensation technique that can be used to stabilize control systems.

**TEXTBOOK:**

1. J.Nagrath and M.Gopal, "Control System Engineering", New Age International Publishers, 5<sup>th</sup> Edition, 2007.

**REFERENCES:**

1. Benjamin.C.Kuo, "Automatic control systems", Prentice Hall of India, 7<sup>th</sup> Edition, 1995.
2. M.Gopal, "Control System – Principles and Design", Tata McGraw Hill, 2<sup>nd</sup> Edition, 2002.
3. Schaum's Outline Series, "Feed back and Control Systems" Tata Mc Graw-Hill, 2007.
4. John J.D'Azzo & Constantine H.Houpis, "Linear Control System Analysis and Design", Tata Mc Graw-Hill, Inc., 1995.
5. Richard C. Dorf and Robert H. Bishop, "Modern Control Systems", Addison – Wesley, 1999.

*Wani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- To know the principles of sampling & quantization
- To study the various waveform coding schemes
- To learn the various baseband transmission schemes
- To understand the various Band pass signaling schemes
- To know the fundamentals of channel coding

**UNIT I SAMPLING & QUANTIZATION**

9

Low pass sampling – Aliasing- Signal Reconstruction-Quantization - Uniform & non-uniform quantization - quantization noise - Logarithmic Companding of speech signal- PCM - TDM

**UNIT II WAVEFORM CODING**

9

Prediction filtering and DPCM - Delta Modulation - ADPCM & ADM principles-Linear Predictive Coding

**UNIT III BASEBAND TRANSMISSION**

9

Properties of Line codes- Power Spectral Density of Unipolar / Polar RZ & NRZ – Bipolar NRZ - Manchester- ISI – Nyquist criterion for distortionless transmission – Pulse shaping – Correlative coding - Mary schemes – Eye pattern - Equalization

**UNIT IV DIGITAL MODULATION SCHEME**

9

Geometric Representation of signals - Generation, detection, PSD & BER of Coherent BPSK, BFSK & QPSK - QAM - Carrier Synchronization - structure of Non-coherent Receivers - Principle of DPSK.

**UNIT V ERROR CONTROL CODING**

9

Channel coding theorem - Linear Block codes - Hamming codes - Cyclic codes-Convolutional codes - Vitterbi Decoder

**TOTAL: 45 PERIODS****OUTCOMES:**

**Upon completion of the course, students will be able to**

- Design PCM systems
- Design and implement base band transmission schemes
- Design and implement band pass signaling schemes
- Analyze the spectral characteristics of band pass signaling schemes and their noise performance
- Design error control coding schemes

**TEXT BOOK:**

1. S. Haykin, "Digital Communications", John Wiley, 2005

**REFERENCES:**

1. B. Sklar, "Digital Communication Fundamentals and Applications", 2<sup>nd</sup> Edition, Pearson Education, 2009
2. B.P.Lathi, "Modern Digital and Analog Communication Systems" 3<sup>rd</sup> Edition, Oxford University Press 2007.
3. H P Hsu, Schaum Outline Series - "Analog and Digital Communications", TMH 2006
4. J.G Proakis, "Digital Communication", 4<sup>th</sup> Edition, Tata Mc Graw Hill Company, 2001.

*Wani*  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
hallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce the various types of transmission lines and to discuss the losses associated.
- To give thorough understanding about impedance transformation and matching.
- To use the Smith chart in problem solving.
- To impart knowledge on filter theories and waveguide theories

**UNIT I TIME VARYING FIELDS AND MAXWELL'S EQUATIONS**

Motional Electromotive Force, General Expression for motional EMF, Faraday's Law of Induction, Displacement current, Maxwell's equation in the point or differential form, Maxwell's equations in Integral form, Maxwell's equations from Gauss's Law, Maxwell's equations and Boundary conditions, Poynting's theorem, Time harmonic (sinusoidal) fields, Maxwell's equations in phasor form.

9

**UNIT II TRANSMISSION LINES**

Need for Transmission Lines, Types of Transmission lines, Characterization in terms of primary and secondary constants, Characteristic impedance, General wave equation, Loss less propagation, Propagation constant, Wave reflection at discontinuities, Voltage standing wave ratio, Transmission line of finite length, The Smith Chart, Smith Chart calculations for lossy lines, Impedance matching by Quarter wave transformer, Single and double stub matching.

9

**UNIT III THE UNIFORM PLANE WAVE**

Wave propagation in free space, Wave propagation in dielectrics, Forward and Backward Travelling Wave, Poynting Theorem and Wave Power, Energy of the Radiated wave, Propagation in good conductors and good dielectrics, Skin effect, Wave polarization, Linearly, Elliptically and Circularly polarized waves,

9

**UNIT IV TRANSMISSION AND REFLECTION OF PLANE WAVES AT BOUNDARIES**

Normal incidence of Uniform Plane waves: Conductor-Conductor interface, Dielectric-Dielectric interface, Dielectric-perfect Conductor interface, Dielectric-Conductor interface. Oblique incidence on a plane boundary for perpendicular polarization, Dielectric-Dielectric interface, Dielectric-Conductor interface.

9

**UNIT V WAVE GUIDES AND CAVITY RESONATORS**

General Wave behaviours along uniform Guiding structures, Transverse Electromagnetic waves, Transverse Magnetic waves, Transverse Electric waves, TM and TE waves between parallel plates, TM and TE waves in Rectangular wave guides, Bessel's differential equation and Bessel function, TM and TE waves in Circular wave guides, Rectangular and circular cavity Resonators.

9

**TOTAL (L: 45+T:15): 60 PERIODS .****OUTCOMES:**

Upon completion of the course, students will be able to:

- Discuss the propagation of signals through transmission lines.
- Analyze signal propagation at Radio frequencies.
- Explain radio propagation in guided systems.
- Utilize cavity resonators.

**TEXT BOOK:**

1. John D Ryder, "Networks lines and fields", Prentice Hall of India, New Delhi, 2005

**REFERENCES:**

1. William H Hayt and Jr John A Buck, "Engineering Electromagnetics" Tata Mc Graw-Hill Publishing Company Ltd, New Delhi, 2008.
2. David K Cheng, "Field and Wave Electromagnetics", Pearson Education Inc, Delhi, 2004.
3. John D Kraus and Daniel A Fleisch, "Electromagnetics with Applications", Mc Graw Hill Book Co, 2005.
4. GSN Raju, "Electromagnetic Field Theory and Transmission Lines", Pearson Education, 2005.
5. Bhag Singh Guru and HR Hizioglu, "Electromagnetic Field Theory Fundamentals", Vikas Publishing House, New Delhi, 2001.
6. N. Narayana Rao, "Elements of Engineering Electromagnetics" 6<sup>th</sup> edition Prentice Hall, 2004.

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606206  
Kallakurichi Taluk, Villupuram District





**DETECTION OF BLOOD CANCER USING  
MICROSCOPIC IMAGES OF BLOOD**



A PROJECT REPORT

*Submitted by*

**DHANA PRIYA.P**

621114106012

**KAWSHIKA.R**

621114106024

**VIDHYA SREE.B**

621114106048

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN,**

**CHINNASALEM**

**ANNA UNIVERSITY:CHENNAI 600 025**

APRIL 2018

*Naveen*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY:CHENNAI 600 025

**BONAFIDE CERTIFICATE**

Certified that this project report "DETECTING OF BLOOD CANCER USING MICROSCOPIC IMAGES OF BLOOD" is the bonafide work of "P.DHANA PRIYA, R.KAWSHIKA, B.VIDHYA SREE" who carried out the project work under my supervision.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Ms.G.ANTONI GRACY, M.E.,  
SUPERVISOR  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

The microscopic images of the blood cells are observed to find out many diseases. Changes in the blood condition show the development of diseases in an individual. Leukemia can lead to death if it is left untreated. Based on some statistics it is found that the leukemia is the fifth cause of death in men and sixth cause of death in women. Leukemia originates in the bone marrow. Each bone contains a thin material inside it which is also known as a bone marrow. The components of blood are Red Blood Cells (erythrocytes), White Blood Cells (leucocytes), platelets and plasma. Leukemia is detected only by analyzing the white blood cells. So our study is focused only on the white blood cells (WBCs). The cells in the bone marrow start changing and they get infected and become leukemia or infected cells. These leukemia cells are having strange properties than the normal cells. Their growth is abnormal and survival time is more than the normal cells. They interrupt normal cells to carry out their work. After a certain amount of time normal cells die while leukemia cells don't. The old leukemia cells last for a long time and new leukemia cells produce in an abnormal way. The rate at which the leukemia cells progress is different according to the type of leukemia. In this work, automated approach of leukemia detection is proposed. In a manual method of Leukemia detection, experts check the microscopic images. This is lengthy and time taking process which depends on the person's skill.

  
PRINCIPAL



## OBJECTIVES:

- To give insight of the radiation phenomena.
- To give a thorough understanding of the radiation characteristics of different types of antennas
- To create awareness about the different types of propagation of radio waves at different frequencies

## UNIT I FUNDAMENTALS OF RADIATION

9

Definition of antenna parameters – Gain, Directivity, Effective aperture, Radiation Resistance, Band width, Beam width, Input Impedance, Matching — Baluns, Polarization mismatch, Antenna noise temperature, Radiation from oscillating dipole, Half wave dipole, Folded dipole, Yagi array.

## UNIT II APERTURE AND SLOT ANTENNAS

9

Radiation from rectangular apertures, Uniform and Tapered aperture, Horn antenna, Reflector antenna, Aperture blockage, Feeding structures, Slot antennas, Microstrip antennas — Radiation mechanism — Application, Numerical tool for antenna analysis

## UNIT III ANTENNA ARRAYS

9

N element linear array, Pattern multiplication, Broadside and End fire array — Concept of Phased arrays, Adaptive array, Basic principle of antenna Synthesis-Binomial array

## UNIT IV SPECIAL ANTENNAS

9

Principle of frequency independent antennas –Spiral antenna, Helical antenna, Log periodic. Modern antennas-Reconfigurable antenna, Active antenna, Dielectric antennas, Electronic band gap structure and applications, Antenna Measurements-Test Ranges, Measurement of Gain, Radiation pattern, Polarization, VSWR

## UNIT V PROPAGATION OF RADIO WAVES

9

Modes of propagation, Structure of atmosphere, Ground wave propagation, Tropospheric propagation, Duct propagation, Troposcatter propagation, Flat earth and Curved earth concept Sky wave propagation — Virtual height, critical frequency, Maximum usable frequency — Skip distance, Fading, Multi hop propagation

**TOTAL: 45  
PERIODS**

## OUTCOMES:

## Upon completion of the course, students will be able to:

- Explain the various types of antennas and wave propagation.
- Write about the radiation from a current element.
- Analyze the antenna arrays, aperture antennas and special antennas such as frequency independent and broad band

## TEXT BOOK:

1. John D Kraus, "Antennas for all Applications", 3<sup>rd</sup> Edition, Mc Graw Hill, 2005.

## REFERENCES:

1. Edward C.Jordan and Keith G.Balmain "Electromagnetic Waves and Radiating Systems" PrenticeHall of India, 2006
2. R.E.Collin, "Antennas and Radiowave Propagation", Mc Graw Hill 1985.
3. Constantine.A.Balanis "Antenna Theory Analysis and Design", Wiley Student Edition, 2006.
4. Rajeswari Chatterjee, "Antenna Theory and Practice" Revised Second Edition New Age International Publishers, 2006.
5. S. Drabowitch, "Modern Antennas" Second Edition, Springer Publications, 2007.
6. Robert S.Elliott "Antenna Theory and Design" Wiley Student Edition, 2006.
7. H.Sizun "Radio Wave Propagation for Telecommunication Applications", First Indian Reprint, Springer Publications, 2007.

*Amey*  
PRINCIPAL  
Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-60520  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To inculcate understanding of the basics required for circuit representation of RF networks.
- To deal with the issues in the design of microwave amplifier.
- To instill knowledge on the properties of various microwave components.
- To deal with the microwave generation and microwave measurement techniques

**UNIT I TWO PORT NETWORK THEORY**

9

Review of Low frequency parameters: Impedance, Admittance, Hybrid and ABCD parameters, Different types of interconnection of Two port networks, High Frequency parameters, Formulation of S parameters, Properties of S parameters, Reciprocal and lossless Network, Transmission matrix, RF behavior of Resistors, Capacitors and Inductors.

**UNIT II RF AMPLIFIERS AND MATCHING NETWORKS**

9

Characteristics of Amplifiers, Amplifier power relations, Stability considerations, Stabilization Methods, Noise Figure, Constant VSWR, Broadband, High power and Multistage Amplifiers, Impedance matching using discrete components, Two component matching Networks, Frequency response and quality factor, T and Pi Matching Networks, Microstrip Line Matching Networks.

**UNIT III PASSIVE AND ACTIVE MICROWAVE DEVICES**

9

Terminations, Attenuators, Phase shifters, Directional couplers, Hybrid Junctions, Power dividers, Circulator, Isolator, Impedance matching devices: Tuning screw, Stub and quarter wave transformers. Crystal and Schottky diode detector and mixers, PIN diode switch, Gunn diode oscillator, IMPATT diode oscillator and amplifier, Varactor diode, Introduction to MIC.

**UNIT IV MICROWAVE GENERATION**

9

Review of conventional vacuum Triodes, Tetrodes and Pentodes, High frequency effects in vacuum Tubes, Theory and application of Two cavity Klystron Amplifier, Reflex Klystron oscillator, Traveling wave tube amplifier, Magnetron oscillator using Cylindrical, Linear, Coaxial Voltage tunable Magnetrons, Backward wave Crossed field amplifier and oscillator.

**UNIT V MICROWAVE MEASUREMENTS**

9

Measuring Instruments : Principle of operation and application of VSWR meter, Power meter, Spectrum analyzer, Network analyzer, Measurement of Impedance, Frequency, Power, VSWR, Q- factor, Dielectric constant, Scattering coefficients, Attenuation, S-parameters.

**TOTAL: 45 PERIODS****OUTCOMES:**

**Upon completion of the course, students will be able to:**

- Explain the active & passive microwave devices & components used in Microwave communication systems.
- Analyze the multi- port RF networks and RF transistor amplifiers.
- Generate Microwave signals and design microwave amplifiers.
- Measure and analyze Microwave signal and parameters.

**TEXT BOOKS:**

1. Reinhold Ludwig and Gene Bogdanov, "RF Circuit Design: Theory and Applications", Pearson Education Inc., 2011
2. Robert E Colin, "Foundations for Microwave Engineering", John Wiley & Sons Inc, 2005

**REFERENCES:**

1. David M. Pozar, "Microwave Engineering", Wiley India (P) Ltd, New Delhi, 2008.
2. Thomas H Lee, "Planar Microwave Engineering: A Practical Guide to Theory, Measurements and Circuits", Cambridge University Press, 2004.
3. Mathew M Radmanesh, "RF and Microwave Electronics", Prentice Hall, 2000.
4. Annapurna Das and Sisir K Das, "Microwave Engineering", Tata Mc Graw Hill Publishing Company Ltd, New Delhi, 2005.

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASELEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To Facilitate the knowledge about optical fiber sources and transmission techniques
- To Enrich the idea of optical fiber networks algorithm such as SONET/SDH and optical CDMA.
- To Explore the trends of optical fiber measurement systems.

**UNIT I INTRODUCTION TO OPTICAL FIBERS**

9

Evolution of fiber optic system- Element of an Optical Fiber Transmission link-- Total internal reflection-Acceptance angle –Numerical aperture — Skew rays Ray Optics-Optical Fiber Modes and Configurations -Mode theory of Circular Wave guides- Overview of Modes-Key Modal concepts- Linearly Polarized Modes -Single Mode Fibers-Graded Index fiber structure.

**UNIT II SIGNAL DEGRADATION OPTICAL FIBERS**

9

Attenuation - Absorption losses, Scattering losses, Bending Losses, Core and Cladding losses, Signal Distortion in Optical Wave guides- Information Capacity determination -Group Delay-Material Dispersion, Wave guide Dispersion, Signal distortion in SM fibers- Polarization Mode dispersion, Intermodal dispersion, Pulse Broadening in GI fibers-Mode Coupling -Design Optimization of SM fibers- RI profile and cut-off wavelength.

**UNIT III FIBER OPTICAL SOURCES AND COUPLING**

9

Direct and indirect Band gap materials-LED structures -Light source materials -Quantum efficiency and LED power, Modulation of a LED, lasers Diodes-Modes and Threshold condition -Rate equations  
-External Quantum efficiency -Resonant frequencies -Laser Diodes, Temperature effects, Introduction to Quantum laser, Fiber amplifiers- Power Launching and coupling, Lencing schemes, Fiber -to- Fiber joints, Fiber splicing-Signal to Noise ratio , Detector response time.

**UNIT IV FIBER OPTIC RECEIVER AND MEASUREMENTS**

9

Fundamental receiver operation, Pre amplifiers, Error sources – Receiver Configuration– Probability of Error – Quantum limit.Fiber Attenuation measurements- Dispersion measurements – Fiber Refractive index profile measurements – Fiber cut- off Wave length Measurements – Fiber Numerical Aperture Measurements – Fiber diameter measurements.

**UNIT V OPTICAL NETWORKS AND SYSTEM TRANSMISSION**

9

Basic Networks – SONET / SDH – Broadcast – and –select WDM Networks –Wavelength Routed Networks – Non linear effects on Network performance –Link Power budget -Rise time budget- Noise Effects on System Performance-Operational Principles of WDM Performance of WDM + EDFA system – Solutions – Optical CDMA – Ultra High Capacity Networks.

**TOTAL: 45 PERIODS****OUTCOMES:****Upon completion of the course, students will be able to:**

- Discuss the various optical fiber modes, configurations and various signal degradation factors associated with optical fiber.
- Explain the various optical sources and optical detectors and their use in the optical communication system.
- Analyze the digital transmission and its associated parameters on system performance.

**TEXT BOOKS:**

1. Gerd Keiser, "Optical Fiber Communication" Mc Graw -Hill International, 4<sup>th</sup> Edition., 2010.
2. John M. Senior , "Optical Fiber Communication", Second Edition, Pearson Education, 2007.

**REFERENCES:**

1. Ramaswami, Sivarajan and Sasaki "Optical Networks", Morgan Kaufmann, 2009.
2. J.Senior, "Optical Communication, Principles and Practice", Prentice Hall of India, 3<sup>rd</sup> Edition, 2008.
3. J.Gower, "Optical Communication System", Prentice Hall of India, 2001

*M. S. S. S.*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nairarpalaym Road, CHINNASALEM-60620,  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

The student should be made to:

- Learn digital image fundamentals.
- Be exposed to simple image processing techniques.
- Be familiar with image compression and segmentation techniques.
- Learn to represent image in form of features.

**UNIT I DIGITAL IMAGE FUNDAMENTALS**

8

Introduction – Origin – Steps in Digital Image Processing – Components – Elements of Visual Perception – Image Sensing and Acquisition – Image Sampling and Quantization – Relationships between pixels - color models.

**UNIT II IMAGE ENHANCEMENT**

10

**Spatial Domain:** Gray level transformations – Histogram processing – Basics of Spatial Filtering– Smoothing and Sharpening  
**Spatial Filtering – Frequency Domain:** Introduction to Fourier Transform  
– Smoothing and Sharpening frequency domain filters – Ideal, Butterworth and Gaussian filters.

**UNIT III IMAGE RESTORATION AND SEGMENTATION**

9

**Noise models** – Mean Filters – Order Statistics – Adaptive filters – Band reject Filters – Band pass Filters – Notch Filters – Optimum Notch Filtering – Inverse Filtering – Wiener filtering  
**Segmentation:** Detection of Discontinuities–Edge Linking and Boundary detection – Region based segmentation- Morphological processing- erosion and dilation.

**UNIT IV WAVELETS AND IMAGE COMPRESSION**

9

Wavelets – Subband coding - Multiresolution expansions - **Compression:** Fundamentals – Image Compression models – Error Free Compression – Variable Length Coding – Bit-Plane Coding – Lossless Predictive Coding – Lossy Compression – Lossy Predictive Coding – Compression Standards.

**UNIT V IMAGE REPRESENTATION AND RECOGNITION**

9

Boundary representation – Chain Code – Polygonal approximation, signature, boundary segments –Boundary description – Shape number – Fourier Descriptor, moments- Regional Descriptors – Topological feature, Texture - Patterns and Pattern classes - Recognition based on matching.

**TOTAL: 45 PERIODS****OUTCOMES:**

Upon successful completion of this course, students will be able to:

- Discuss digital image fundamentals.
- Apply image enhancement and restoration techniques.
- Use image compression and segmentation Techniques.
- Represent features of images.

**TEXT BOOK:**

1. Rafael C. Gonzales, Richard E. Woods, "Digital Image Processing", Third Edition, Pearson Education, 2010.

**REFERENCES:**

1. Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Processing Using MATLAB", Third Edition Tata Mc Graw Hill Pvt. Ltd., 2011.
2. Anil Jain K. "Fundamentals of Digital Image Processing", PHI Learning Pvt. Ltd., 2011.
3. William K Pratt, "Digital Image Processing", John Willey, 2002.
4. Malay K. Pakhira, "Digital Image Processing and Pattern Recognition", First Edition, PHI Learning Pvt. Ltd., 2011.
5. <http://eeweb.poly.edu/~onur/lectures/lectures.html>  
<http://www.caen.uiowa.edu/~dip/LECTURE/lecture.html>

*Wani*  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

The student should be made to:

- Understand the micro-architectural design of processors
- Learn about the various techniques used to obtain performance improvement and powersavings in current processors

**UNIT I FUNDAMENTALS OF COMPUTER DESIGN**

9

Review of Fundamentals of CPU, Memory and IO – Trends in technology, power, energy and cost, Dependability - Performance Evaluation

**UNIT II INSTRUCTION LEVEL PARALLELISM**

9

ILP concepts – Pipelining overview - Compiler Techniques for Exposing ILP – Dynamic Branch Prediction – Dynamic Scheduling – Multiple instruction Issue – Hardware Based Speculation – Static scheduling - Multi-threading - Limitations of ILP – Case Studies.

**UNIT III DATA-LEVEL PARALLELISM**

9

Vector architecture – SIMD extensions – Graphics Processing units – Loop level parallelism.

**UNIT IV THREAD LEVEL PARALLELISM**

9

Symmetric and Distributed Shared Memory Architectures – Performance Issues – Synchronization – Models of Memory Consistency – Case studies: Intel i7 Processor, SMT & CMP Processors

**UNIT V MEMORY AND I/O**

9

Cache Performance – Reducing Cache Miss Penalty and Miss Rate – Reducing Hit Time – Main Memory and Performance – Memory Technology. Types of Storage Devices – Buses – RAID – Reliability, Availability and Dependability – I/O Performance Measures.

**TOTAL: 45 PERIODS****OUTCOMES:**

At the end of the course, the student should be able to:

- Evaluate performance of different architectures with respect to various parameters
- Analyze performance of different ILP techniques
- Identify cache and memory related issues in multi-processors

**TEXT BOOK:**

1. John L Hennessey and David A Patterson, "Computer Architecture A Quantitative Approach", Morgan Kaufmann/ Elsevier, Fifth Edition, 2012.

**REFERENCES:**

1. Kai Hwang and Faye Briggs, "Computer Architecture and Parallel Processing", Mc Graw-Hill International Edition, 2000.
2. Sima D, Fountain T and Kacsuk P, "Advanced Computer Architectures: A Design Space Approach", Addison Wesley, 2000.

*Weni*  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarparaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- To understand the basics of solid state physics.
- To understand the basics of display devices.
- To understand the optical detection devices.
- To understand the design of optoelectronic integrated circuits.

**UNIT I ELEMENTS OF LIGHT AND SOLID STATE PHYSICS**

9

Wave nature of light, Polarization, Interference, Diffraction, Light Source, review of Quantum Mechanical concept, Review of Solid State Physics, Review of Semiconductor Physics and Semiconductor Junction Device.

**UNIT II DISPLAY DEVICES AND LASERS**

9

Introduction, Photo Luminescence, Cathode Luminescence, Electro Luminescence, Injection Luminescence, Injection Luminescence, LED, Plasma Display, Liquid Crystal Displays, Numeric Displays, Laser Emission, Absorption, Radiation, Population Inversion, Optical Feedback, Threshold condition, Laser Modes, Classes of Lasers, Mode Locking, laser applications.

**UNIT III OPTICAL DETECTION DEVICES**

9

Photo detector, Thermal detector, Photo Devices, Photo Conductors, Photo diodes, Detector Performance.

**UNIT IV OPTOELECTRONIC MODULATOR**

9

Introduction, Analog and Digital Modulation, Electro-optic modulators, Magneto Optic Devices, Acoustoptic devices, Optical, Switching and Logic Devices.

**UNIT V OPTOELECTRONIC INTEGRATED CIRCUITS**

9

Introduction, hybrid and Monolithic Integration, Application of Opto Electronic Integrated Circuits, Integrated transmitters and Receivers, Guided wave devices.

**TOTAL: 45 PERIODS****OUTCOMES:**

Upon Completion of the course, the students will be able to

- To design display devices.
- To design optoelectronic detection devices and modulators.
- To design optoelectronic integrated circuits.

**TEXTBOOKS:**

1. Pallab Bhattacharya "Semiconductor Opto Electronic Devices", Prentice Hall of India Pvt., Ltd., New Delhi, 2006.
2. Jasprit Singh, "Opto Electronics – As Introduction to Materials and Devices", Mc Graw-Hill International Edition, 1998

**REFERENCES:**

1. S C Gupta, Opto Electronic Devices and Systems, Prentice Hal of India, 2005.
2. J. Wilson and J.Haukes, "Opto Electronics – An Introduction", Prentice Hall, 1995

*Principals*  
PRINCIPAL

rdhaya Engineering College for Women,  
Nainarpalaym Road, CHINNAsALEM-69620  
kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

The student should be made to:

- Know the characteristic of wireless channel
- Learn the various cellular architectures
- Understand the concepts behind various digital signaling schemes for fading channels
- Be familiar the various multipath mitigation techniques
- Understand the various multiple antenna systems

**UNIT I WIRELESS CHANNELS**

9

Large scale path loss – Path loss models: Free Space and Two-Ray models -Link Budget design –Small scale fading- Parameters of mobile multipath channels – Time dispersion parameters- Coherence bandwidth – Doppler spread & Coherence time, Fading due to Multipath time delay spread – flat fading – frequency selective fading – Fading due to Doppler spread – fast fading – slow fading.

**UNIT II CELLULAR ARCHITECTURE**

9

Multiple Access techniques - FDMA, TDMA, CDMA – Capacity calculations–Cellular concept- Frequency reuse - channel assignment- hand off- interference & system capacity- trunking & grade of service – Coverage and capacity improvement.

**UNIT III DIGITAL SIGNALING FOR FADING CHANNELS**

9

Structure of a wireless communication link, Principles of Offset-QPSK, p/4-DQPSK, Minimum Shift Keying, Gaussian Minimum Shift Keying, Error performance in fading channels, OFDM principle –Cyclic prefix, Windowing, PAPR.

**UNIT IV MULTIPATH MITIGATION TECHNIQUES**

9

Equalisation – Adaptive equalization, Linear and Non-Linear equalization, Zero forcing and LMS Algorithms. Diversity – Micro and Macrodiversity, Diversity combining techniques, Error probability in fading channels with diversity reception, Rake receiver,

**UNIT V MULTIPLE ANTENNA TECHNIQUES**

9

MIMO systems – spatial multiplexing -System model -Pre-coding - Beam forming - transmitter diversity, receiver diversity- Channel state information-capacity in fading and non-fading channels.

**TOTAL: 45 PERIODS****OUTCOMES:**

At the end of the course, the student should be able to:

- Characterize wireless channels
- Design and implement various signaling schemes for fading channels
- Design a cellular system
- Compare multipath mitigation techniques and analyze their performance
- Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance

**TEXTBOOKS:**

1. Rappaport, T.S., "Wireless communications", Second Edition, Pearson Education, 2010.
2. Andreas.F. Molisch, "Wireless Communications", John Wiley – India, 2006.

**REFERENCES:**

1. David Tse and Pramod Viswanath, "Fundamentals of Wireless Communication", Cambridge University Press, 2005.
2. Upena Dalal, "Wireless Communication", Oxford University Press, 2009.
3. Van Nee, R. and Ramji Prasad, "OFDM for wireless multimedia communications", ArtechHouse, 2000.

*Green*

PRINCIPAL  
Chinnasa Engineering College for Women  
Mairapalayam Road, CHINNASALESHWAR  
Kallakurichi Taluk, Villupuram District  
TAMIL NADU

**OBJECTIVES:**

- To study about Wireless networks, protocol stack and standards.
- To study about fundamentals of 3G Services, its protocols and applications.
- To study about evolution of 4G Networks, its architecture and applications.

**UNIT I WIRELESS LAN** 9

Introduction-WLAN technologies: Infrared, UHF narrowband, spread spectrum -IEEE802.11: System architecture, protocol architecture, physical layer, MAC layer, 802.11b, 802.11a – Hiper LAN: WATM, BRAN, HiperLAN2 – Bluetooth: Architecture, Radio Layer, Baseband layer, Link manager Protocol, security - IEEE802.16-WIMAX: Physical layer, MAC, Spectrum allocation for WIMAX

**UNIT II MOBILE NETWORK LAYER** 9

Introduction - Mobile IP: IP packet delivery, Agent discovery, tunneling and encapsulation, IPV6- Network layer in the internet- Mobile IP session initiation protocol - mobile ad-hoc network: Routing, Destination Sequence distance vector, Dynamic source routing

**UNIT III MOBILE TRANSPORT LAYER** 9

TCP enhancements for wireless protocols - Traditional TCP: Congestion control, fast retransmit/fast recovery, Implications of mobility - Classical TCP improvements: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, Transaction oriented TCP - TCP over 3G wireless networks.

**UNIT IV WIRELESS WIDE AREA NETWORK** 9

Overview of UTMS Terrestrial Radio access network-UMTS Core network Architecture: 3G-MSC, 3G- SGSN, 3G-GGSN, SMS-GMSC/SMS-IWMSC, Firewall, DNS/DHCP-High speed Downlink packet access (HSDPA)- LTE network architecture and protocol.

**UNIT V 4G NETWORKS** 9

Introduction — 4G vision — 4G features and challenges - Applications of 4G — 4G Technologies: Multicarrier Modulation, Smart antenna techniques, OFDM-MIMO systems, Adaptive Modulation and coding with time slot scheduler, Cognitive Radio.

**TOTAL: 45 PERIODS****OUTCOMES:**

**Upon completion of the course, the students will be able to**

- Conversant with the latest 3G/4G and WiMAX networks and its architecture.
- Design and implement wireless network environment for any application using latest wireless protocols and standards.
- Implement different type of applications for smart phones and mobile devices with latest network strategies.

**TEXT BOOKS:**

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education 2012.(Unit I,II,III)
2. Vijay Garg, "Wireless Communications and networking", First Edition, Elsevier 2007.(Unit IV,V)

**REFERENCES:**

1. Erik Dahlman, Stefan Parkvall, Johan Skold and Per Beming, "3G Evolution HSPA and LTE for Mobile Broadband", Second Edition, Academic Press, 2008.
2. Anurag Kumar, D.Manjunath, Joy kuri, "Wireless Networking", First Edition, Elsevier 2011.
3. Simon Haykin, Michael Moher, David Koilpillai, "Modern Wireless Communications", First Edition, Pearson Education 2013

*[Signature]*  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606266  
Kallakurichi Taluk Villupuram District







**RETHINKING TRANSIT TIME BY REAL TIME  
PASSENGER FOR PREDICTION BY USING  
ZIGBEE TECHNOLOGY**



A PROJECT REPORT

*Submitted by*

**AKILA.K**

621114106001

**ISHWARYA.B**

621114106016

**OOVIYA.M**

621114106032

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

*Neeraj*  
PRINCIPAL

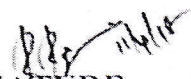
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

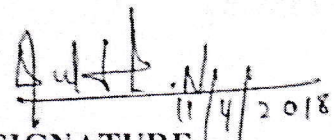


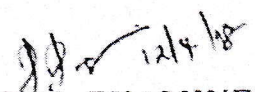
ANNA UNIVERSITY: CHENNAI 600 025


BONAFIDE CERTIFICATE

Certified that this project report "RETHINKING TRANSIT TIME BY REAL TIME PASSENGER FOR PREDICTION USING ZIGBEE TECHNOLOGY" is the bonafide work of "K.AKILA, B.ISHWARYA, M.OOVIYA" who carried out the project work under my supervision.

  
SIGNATURE  
Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE  
Mrs.N.HEMALATHA, M.E.,  
SUPERVISOR  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

As population is burgeoning, there is an increase in the number of vehicles on the road and hence an upsurge in the problems associated with traffic management, especially the public transport. The futile long wait long wait for a bus to arrive can be avoided by Intelligent Public Transportation System. With the increase of personal trip and vehicles in urban area, traffic problems has become a gradually important issue. It is one of the principal problems which should be settled by government. If board is appropriate, passengers can find quickly the right bus line. A smart information system has been proposed where the travellers get prior information system about current location, next location of bus and crowd level inside the bus. This system is designed using **ARDUINO UNO, IR sensor and GPS module.** An Intelligent Transportation System (ITS) removes the barriers for public transport usage and creates the positive impact about the bus journey.





**AUTOMATIC MOPPING SYSTEM USING  
NANO FIBER CLOTH WITH MANUAL  
MODES OF OPERATION**



A PROJECT REPORT

*Submitted by*

**ANISHA.D**

621114106006

**MEERA.P.C**

621114106030

**OVIYA.N**

621114106033

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

*Neeraj*  
PRINCIPAL

Idhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "AUTOMATIC MOPPING SYSTEM USING NANO FIBER CLOTH WITH MANUAL MODES OF OPERATION" is the bonafide work of "ANISHA.D, MEERA.P.C, OVIYA.N" who carried out the project work under my supervision.

  
SIGNATURE

Mrs.P.POOVIZHI.,M.E.,  
HEAD OF THE DEPARTMENT


Assistant professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Ms.V.DHIVYAPRIYA.,M.Tech.,  
SUPERVISOR

Assistant professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Cleaning house, institution and offices are required as the first work of the day. Periodic or sometimes throughout the day cleaning is required in industries due to dirt generated during the manufacturing process. Our proposed system is an efficient approach to do the cleaning process automatically. It is equipped with automatic/manual cleaning and it works in real time. It keeps on moving and cleaning the floor. Once it finds an obstacle it moves back and again follows the path. We can even control it using our mobile phones. **Atmega 328 P-Pu** is used as a Microcontroller. Direct implementation is possible as we can implement floor cleaner, soapy water, water tank etc. System is implemented on a big unbreakable body and wheels of 10 cm diameter. Manual mode works when we control the robot with mobile phone and it switches automatically to Automatic mode when we don't control robot.



PRINCIPAL



**POLLUTION CONTROLLED ECU DEVICE FOR  
ANALYZING PERSONAL EXPOSURE OF  
VEHICLES USING ENVIROSENSOR AND GSM**



**A PROJECT REPORT**

*Submitted by*

**ANITHA.A**

621114106007

**DIVYA.S**

621114106013

**KAVIYA.R**

621114106023

*In partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

*M. S. S.*  
PRINCIPAL


Idhaya Engineering College for Women  
Nainarpalayam Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District

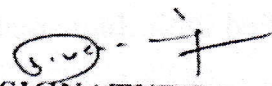


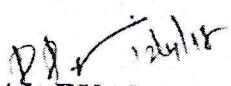
ANNA UNIVERSITY: CHENNAI 600 025


BONAFIDE CERTIFICATE

Certified that this project report "POLLUTION CONTROLLED ECU DEVICE FOR ANALYZING PERSONAL EXPOSURE OF VEHICLES USING ENVIROSENSOR AND GSM" is the bonafide work of "A.ANITHA, S.DIVYA, R.KAVIYA" who carried out the project work under my supervision.

  
SIGNATURE  
Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

  
SIGNATURE  
Mr.M.MAHESH, M.Tech.,  
SUPERVISOR  
Assistant Professor,  
Department of ECE,  
Idhaya Engineering College  
for Women,  
Chinnasalem-606 201.

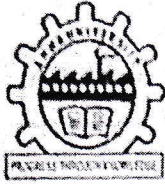
  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

The hardware developments in a wearable air quality sensor assembly for analyzing personal exposure to air pollution. According to the World Health Organization, exposure to air pollution is now the largest single environmental health risk globally, leading to approximately 7 million deaths in 2012 alone. Portable air quality sensors have the potential to fill in the gap left by traditional air pollution monitoring. Air pollution sensor technology is decreasing in cost and size, meaning it is now tenable to use low-cost portable air pollution sensors. The data collected by the air quality sensor assembly. The air quality in cities is degrading as a result of a complex interaction between natural and artificial environmental conditions. With the increase in urbanization and industrialization and lack of control on emissions and use of catalytic converters, a great amount of particulate and toxic gases are produced. The objective of the project is to monitor air pollution on roads and track vehicles which cause pollution over a specified limit. Increased use of automobiles is a serious problem that has been around for a very long time. This paper gives survey of different systems used to monitor vehicular pollution and proposes use GSM to address this problem.





**FINGERPRINT AUTHENTICATION**

**BASED DRIVING LICENSE**

**SYSTEM**



A PROJECT REPORT

*Submitted by*

**ANUSHIYA.G**

621114106008

**SABITHA.S**

621114106037

**SOUNDHARYA.H**

621114106043

*in partial fulfilment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*IN*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FO WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

*Meeni*  
**PRINCIPAL**

**Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District.**

ANNA UNIVERSITY: CHENNAI 600 025

## BONAFIDE CERTIFICATE

Certified that this project report "FINGERPRINT AUTHENTICATION  
BASED DRIVING LICENSE SYSTEM" is the bonafide work of,  
"G.ANUSHIYA, S.SABITHA and H.SOUNDHARYA" who carried out  
the project under my supervision

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,

HEAD OF THE DEPARTMENT

Assistant Professor

Department of ECE,

Idhaya Engineering College

For Women,

Chinnasalem - 606 201

  
INTERNAL EXAMINER

for SIGNATURE

Sr.CATHERINA MARY, ME.,

SUPERVISOR

Assistant Professor

Department of ECE,


Idhaya Engineering College

For Women,

Chinnasalem - 606 201

EXTERNAL EXAMINER

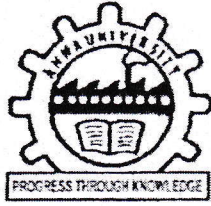
||

  
PRINCIPAL  
Idhaya Engineering College for women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

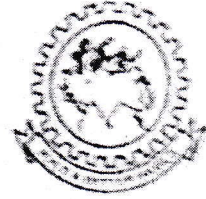


## ABSTRACT

There are so many people who are not having their original driving license with them, instead they are maintaining fake license. Due to this, the ratio of accident is increasing now days. The objective of this project is to find out the fake license ID and to avoid the unexpected accidents and to save the life of many .The fake licenses ID is processed by using the finger print reader. To find a man with fake driving license is a difficult task to the RTOs and the police officers. In order to avoid this situation and to overcome the problems, the proposed system will provide the driving license verification using Arduino microcontroller with fingerprint reader. With the help of the finger print reader, users Finger print will be taken and relevant information regarding driving license database like license Identification number, photo, and Aadhar card number. Driving license database is maintaining with the help of Arduino microcontroller. Whenever the Officers want to check the driving license of the vehicle users, the verification system is used to authenticate the liability of the users.



**GLAUCOMA DETECTION  
USING PRINCIPAL  
COMPONENT ANALYSIS**



A PROJECT REPORT

*Submitted by*

**KAJAL.S**

**621114106019**

**RAAMALAKSHMI.G**

**621114106035**

**SNEHA.S**

**621114106042**

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2018**

*Neeraj*  
**PRINCIPAL**

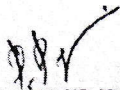
**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District**



ANNA UNIVERSITY: CHENNAI 600 025


**BONAFIDE CERTIFICATE**

Certified that this project report "GLAUCOMA DETECTION USING PRINCIPAL COMPONENT ANALYSIS" is the bonafide work of "KAJAL.S, RAAMALAKSHMI.G, SNEHA.S" who carried out their project work under my supervision.



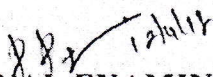
SIGNATURE

Mrs.P.Poovizhi., M.E.,  
HEAD OF THE DEPARTMENT  
Assistant Professor  
Department of ECE  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.

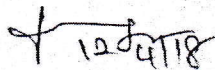


SIGNATURE

Ms.J.SHINYCHRISTOBEL.,M.E  
SUPERVISOR  
Assistant Professor  
Department of ECE  
Idhaya Engineering College  
For Women,  
Chinnasalem-606 201.



INTERNAL EXAMINER



EXTERNAL EXAMINER



PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606 201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

Glaucoma is one of the second leading retinal diseases after Cataract in the world. As the glaucoma progresses, the optic nerve is lost and the optic cup grows which leads to loss of eye sight. So, early detection is very important. The input images are taken from the Structured Analysis of the Retina (STARE) database and the healthy images are taken from the database MESSIDOR. A new approach is proposed by preprocessing the retinal image by dilation, enhancement using Contrast Limited Adaptive Histogram Equalization method and extracting useful features from the retinal images using Principal Component Analysis (PCA). The extracted features are classified using Support Vector Machine (SVM), Naive Bayes and K-Nearest Neighbor (K-NN) classifiers. The Naive Bayes classifier gives high accuracy of 95% accuracy. This demonstrates the effectiveness of the feature extraction method PCA and Naive Bayes as a classifier and compared with other classifiers.





**AUTOMATIC HIGHWAY LAMP  
INTENSITY CONTROL AND  
IRRIGATION SYSTEM USING  
MICROCONTROLLER**



A PROJECT REPORT

*Submitted by*

<b>MAHALAKSHMI.P</b>	621114106027
<b>SANDHIYA.R</b>	621114106038
<b>SIVASAKTHI.C</b>	621114106041
<b>UMAAMBIGAI.M</b>	621114106047

*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**ANNA UNIVERSITY: CHENNAI-600 025**

**APRIL 2018**

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60624  
Kallakurichi Taluk, Villupuram District

ANNA UNIVERSITY: CHENNAI-600 025

BONAFIDE CERTIFICATE

Certified that this project report "AUTOMATIC HIGHWAY LAMP INTENSITY CONTROL AND IRRIGATION SYSTEM USING MICROCONTROLLER" is the bonafide work of "P.MAHALAKSHMI, R.SANDHIYA, C.SIVASAKTHI, M.LUMAAMBIGAI" who carried out their project work under my supervision.

  
SIGNATURE

Mrs.P.POOVIZHI,M.E.,

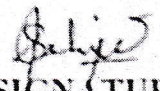
HEAD OF THE DEPARTMENT

Assistant Professor,

Department of ECE,

Idhaya engineering college for women,

Chinnasalem-606 201.

  
SIGNATURE

Ms.W. SELVI, M.E.,

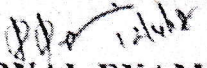
SUPERVISOR

Assistant Professor,

Department of ECE,

Idhaya engineering college for Women.

Chinnasalem-606 201.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



## ABSTRACT

Energy consumption in metropolitan cities is increasing day by day. In every city, considerable amount of electricity is being used for the purpose of street lighting system. Some areas of the city may have low frequency of passerby, but it's observed that the amount of energy the street lights consume in these areas is same as that of areas with high frequency passerby. As a result enormous amount of energy is wasted without being used. In the proposed system, high intensity discharge lamps are replaced by LED's which can alter its intensity based on the need. Movement of vehicles is sensed using object sensor and weather conditions are detected by humidity sensor and the intensity of the street light is reduced when not in use. The system also detects moisture content of the soil present along the street lights plants and irrigates they switches on the water valve so that proper watering is done to plants present in near the highway street light lamps.

**DEPARTMENT OF INFORMATION  
TECHNOLOGY**



**OBJECTIVES:****The student should be made to:**

- Understand the technologies used in Web Programming.
- Know the importance of object oriented aspects of Scripting.
- Understand creating database connectivity using JDBC.
- Learn the concepts of web based application using sockets.

**UNIT I SCRIPTING.**

9

Web page Designing using HTML, Scripting basics- Client side and server side scripting. Java Script- Object, names, literals, operators and expressions- statements and features- events - windows - documents - frames - data types - built-in functions- Browser object model - Verifying forms.-HTML5- CSS3- HTML 5 canvas - Web site creation using tools.

**UNIT II JAVA**

9

Introduction to object oriented programming-Features of Java – Data types, variables and arrays –Operators – Control statements – Classes and Methods – Inheritance. Packages and Interfaces – Exception Handling – Multithreaded Programming – Input/Output – Files – Utility Classes – String Handling.

**UNIT III JDBC**

9

JDBC Overview – JDBC implementation – Connection class – Statements - Catching Database Results, handling database Queries. Networking– InetAddress class – URL class- TCP sockets - UDP sockets, Java Beans –RMI.

**UNIT IV APPLETS**

9

Java applets- Life cycle of an applet – Adding images to an applet – Adding sound to an applet. Passing parameters to an applet. Event Handling. Introducing AWT: Working with Windows Graphics and Text. Using AWT Controls, Layout Managers and Menus. Servlet – life cycle of a servlet. The Servlet API, Handling HTTP Request and Response, using Cookies, Session Tracking. Introduction to JSP.

**UNIT V XML AND WEB SERVICES**

9

Xml – Introduction-Form Navigation-XML Documents- XSL – XSLT- Web services-UDDI-WSDL-Java web services – Web resources.

**TOTAL (L:45+T:15): 60 PERIODS****OUTCOMES:****Upon Completion of the course, the students will be able to**

- Design web pages.
- Use technologies of Web Programming.
- Apply object oriented aspects to Scripting.
- Create databases with connectivity using JDBC.
- Build web based application using sockets.

**TEXT BOOKS:**

1. Harvey Deitel, Abbey Deitel, Internet and World Wide Web: How To Program 5<sup>th</sup> Edition.
2. Herbert Schildt, Java - The Complete Reference, 7<sup>th</sup> Edition. Tata McGraw- Hill Edition.
3. Michael Morrison XML Unleashed Tech media SAMS.

**REFERENCES:**

1. John Pollock, Javascript - A Beginners Guide, 3<sup>rd</sup> Edition – Tata McGraw-Hill Edition.
2. Keyur Shah, Gateway to Java Programmer Sun Certification, Tata McGraw Hill, 2002.

  
 PRINCIPAL

Idhaya Engineering College for Women  
 Nainarpalayam Road, CHINNASALEM-60621  
 Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

The student should be made to:

- Learn Java Programming.
- Understand different Internet Technologies.
- Be exposed to java specific web services architecture.

**UNIT I JAVA PROGRAMMING**

9

An overview of Java – Data Types – Variables and Arrays – Operators – Control Statements – Classes – Objects – Methods – Inheritance – Packages – Abstract classes – Interfaces and Inner classes – Exception handling - Introduction to Threads – Multithreading – String handling – Streams and I/O – Applets.

**UNIT II WEBSITES BASICS, HTML 5, CSS 3, WEB 2.0**

8

**Web 2.0:** Basics-RIA Rich Internet Applications - Collaborations tools - **Understanding websites and web servers:** Understanding Internet – Difference between websites and web server- Internet technologies Overview –Understanding the difference between internet and intranet; **HTML and CSS:** HTML 5.0 , XHTML, CSS 3.

**UNIT III CLIENT SIDE AND SERVER SIDE PROGRAMMING**

11

**Java Script:** An introduction to JavaScript–JavaScript DOM Model-Date and Objects,-Regular Expressions- Exception Handling- Validation-Built-in objects-Event Handling- DHTML with JavaScript. **Servlets:** Java Servlet Architecture- Servlet Life Cycle- Form GET and POST actions- Session Handling- Understanding Cookies- Installing and Configuring Apache Tomcat Web Server;- **DATABASE CONNECTIVITY:** JDBC perspectives, JDBC program example - **JSP:** Understanding Java Server Pages-JSP Standard Tag Library(JSTL)-Creating HTML forms by embedding JSP code.

**UNIT IV PHP and XML**

8

**An introduction to PHP:** PHP- Using PHP- Variables- Program control- Built-in functions-Connecting to Database — Using Cookies- Regular Expressions; **XML:** Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation, News Feed (RSS and ATOM).

**UNIT V INTRODUCTION TO AJAX and WEB SERVICES**

9

**AJAX:** Ajax Client Server Architecture-XML Http Request Object-Call Back Methods; **Web Services:** Introduction- Java web services Basics — Creating, Publishing ,Testing and Describing a Web services (WSDL)-Consuming a web service, Database Driven web service from an application — SOAP.

**TOTAL (L:45+T:15): 60 PERIODS**

**OUTCOMES:**

At the end of the course, the student should be able to:

- Implement Java programs.
- Create a basic website using HTML and Cascading Style Sheets.
- Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
- Design rich client presentation using AJAX.
- Design and implement simple web page in PHP, and to present data in XML format.
- Design and implement server side programs using Servlets and JSP.

**TEXT BOOKS:**

1. Deitel and Deitel and Nieto, "Internet and World Wide Web - How to Program", Prentice Hall, 5<sup>th</sup> Edition, 2011.
2. Herbert Schildt, "Java-The Complete Reference", Eighth Edition, Mc Graw Hill Professional, 2011.

**REFERENCES:**

1. Stephen Wynkoop and John Burke "Running a Perfect Website", QUE, 2<sup>nd</sup> Edition, 1999.
2. Chris Bates, Web Programming – Building Intranet Applications, 3<sup>rd</sup> Edition, Wiley Publications, 2009.
3. Jeffrey C and Jackson, "Web Technologies A Computer Science Perspective", Pearson Education, 2011.
4. Gopalan N.P. and Akilandeswari J., "Web Technology", Prentice Hall of India, 2011.
5. Paul Dietel and Harvey Deitel, "Java How to Program", 8<sup>th</sup> Edition Prentice Hall of India.
6. Mahesh P. Matha, "Core Java A Comprehensive Study", Prentice Hall of India, 2011.
7. Uttam K. Roy, "Web Technologies", Oxford University Press, 2011

*Principals*  
PRINCIPAL

Adhaya Engineering College for Women,  
Nainarpalayam Road, CHINNASELEM-606,  
Kallakurichi Taluk, Villupuram District



## CERTIFICATE OF MERIT

This is to certify that SHERLY MERTILDA DENNIS (Reg No. 621115205012) has successfully completed the internship in JAVA Application Development in our concern from 6/12/14 to 8/12/14.

During the internship period, the performance of the intern was found to be GOOD.

*D. Jayarami-C*  
Program Coordinator

*(Signature)*  
Jt.R.GURUMANN,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201. KALLAKURICHI DT.

*M. K. Srinivas*  
HR Head



## CERTIFICATE OF MERIT

This is to certify that T. GHAYATHRI (Reg No. 6241115205005) has  
successfully completed the internship in JAVA Application Development in our  
concern from 6/10/19 to 8/12/19.

During the internship period, the performance of the intern was found to be Good.

*Dr. R. Guramani*

Program Coordinator

*Heaven*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.I.S.T.E., F.I.E.  
PRINCIPAL  
WOMEN'S EMPOWERMENT CELL

*M. K. Kalyan*

HR Head



## CERTIFICATE OF MERIT

This is to certify that KRISTAWATI SRI (Reg No. 6211115205201) has  
successfully completed the internship in JAVA Application Development in our  
concern from 5/12/2017 to 18/12/17.  
During the internship period, the performance of the intern was found to be Good.

*Indra Laminic*  
Program Coordinator

*Princip*  
Dr.R.GURUMANI, M.E., Ph.D., M.B.A., M.I.S.T.E., F.I.E.,  
PRINCIPAL  
COLLEGE FOR WOMEN

*M. Anuraj*  
HR Head



## CERTIFICATE OF MERIT

This is to certify that S. PRAVITHA (Reg No. 621115205009) has  
successfully completed the internship in JAVA Application Development in our  
concern from 6-12-17 to 8-12-17.

During the internship period, the performance of the intern was found to be GOOD.

*Divyami - C*  
Program Coordinator

*Dr. R. Gurumani*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM 606 291, KALLAKURICHI DT.

*M. K...*  
HR Head



# **M.E-COMMUNICATION SYSTEMS**

**OBJECTIVES:**

- To understand the basics of signal-space analysis and digital transmission.
- To understand the coherent and noncoherent receivers and its impact on different channel characteristics.
- To understand the different Equalizers
- To understand the different block coded and convolutional coded digital communications systems.
- To understand the basics of Multicarrier and Multiuser Communications.

**UNIT I COHERENT AND NON-COHERENT COMMUNICATION 9**

Coherent receivers – Optimum receivers in WGN – IQ modulation & demodulation – Noncoherent receivers in random phase channels; MFSK receivers – Rayleigh and Rician channels – Partially coherent receivers – DPSK; M-PSK; M-DPSK-BER Performance Analysis. Carrier Synchronization-Bit synchronization.

**UNIT II EQUALIZATION TECHNIQUES 9**

Band Limited Channels- ISI – Nyquist Criterion- Controlled ISI-Partial Response signals- Equalization algorithms – Viterbi Algorithm – Linear equalizer – Decision feedback equalization – Adaptive Equalization algorithms.

**UNIT III BLOCK CODED DIGITAL COMMUNICATION 9**

Architecture and performance – Binary block codes; Orthogonal; Biorthogonal; Transorthogonal – Shannon's channel coding theorem; Channel capacity; Matched filter; Concepts of Spread spectrum communication – Coded BPSK and DPSK demodulators – Linear block codes; Hamming; Golay; Cyclic; BCH; Reed – Solomon codes. Space time block codes.

**UNIT IV CONVOLUTIONAL CODED DIGITAL COMMUNICATION 9**

Representation of codes using Polynomial, State diagram, Tree diagram, and Trellis diagram – Decoding techniques using Maximum likelihood, Viterbi algorithm, Sequential and Threshold methods  
– Error probability performance for BPSK and Viterbi algorithm, Turbo Coding.

**UNIT V MULTICARRIER AND MULTIUSER COMMUNICATIONS 9**

Single Vs multicarrier modulation, orthogonal frequency division multiplexing (OFDM), Modulation and demodulation in an OFDM system, An FFT algorithmic implementation of an OFDM system, Bit and power allocation in multicarrier modulation, Peak-to-average ratio in multicarrier modulation. Introduction to CDMA systems, multiuser detection in CDMA systems – optimum multiuser receiver, suboptimum detectors, successive interference cancellation.

**TOTAL : 45 PERIODS**

**OUTCOMES:****Upon Completion of the course, the students will be able to:**

- Develop the ability to understand the concepts of signal space analysis for coherent and non-coherent receivers.
- Conceptually appreciate different Equalization techniques
- Possess knowledge on different block codes and convolutional codes.
- Comprehend the generation of OFDM signals and the techniques of multiuser detection.

**REFERENCES:**

1. Bernard Sklar, "Digital Communications", second edition, Pearson Education, 2001.
2. John G. Proakis, "Digital Communication", Fifth Edition, Mc Graw Hill Publication, 2008.
3. M.K.Simon, S.M.Hinedi and W.C.Lindsey, "Digital communication techniques; Signal Design and Detection", Prentice Hall of India, New Delhi, 1995.
4. Richard Van Nee & Ramjee Prasad, "OFDM for Multimedia Communications" Artech House Publication, 2001.
5. Stephen G. Wilson, "Digital Modulation and Coding", First Indian Reprint, Pearson Education, 2003.
6. Simon Haykin, "Digital communications", John Wiley and sons, 1993.

**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**





**RADIO ACCESS NETWORK AND  
SPECTRUM SHARING IN MOBILE  
NETWORK USING NASH PSO ALGORITHM**



A THESIS

*Submitted by*

**A.KEERTHANA**

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN  
CHINNASALEM  
DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Keerthi*  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this report titled "RADIO ACCESS NETWORK AND SPECTRUM SHARING IN MOBILE NETWORK USING NASH PSO ALGORITHM" is the bonafide work of **KEERTHANA.A (621116403004)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

SIGNATURE

Mrs.P.POOVIZHI M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem.

SIGNATURE

MS. T. RADHA M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem.

Submitted for the Project Phase II viva voce held on 11.06.18

INTERNAL EXAMINER

EXTERNAL EXAMINER

PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Next generation mobile networks will depend more heavily on resource sharing. Study the sharing of radio access network and spectrum among mobile operators. Assess the impact of sharing these two types of resources on the performance of spatially distributed mobile networks. Apply stochastic geometry to observe the combined effect of spatial clustering among the deployed base stations, the shared network size, or the coordination in shared spectrum use on network coverage and expected user data rate. Uncover some complex effects of mobile network resource sharing which involve non-linearly scaling gains and performance trade-offs related to the sharing scenario or the spatial clustering level.

*Muni*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062,  
Kallakurichi Taluk, Villupuram District



**SIGNATURE BASED  
AUTHENTICATION KEY USING BAC  
LOGIC FOR IOT APPLICATIONS**



A THESIS

*Submitted by*

**S.SUBA BHARATHI**

*in partial fulfillment for the award of the degree of*

MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS



IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM

DEPARTMENT OF ELECTRONICS AND

COMMUNICATION ENGINEERING

ANNA UNIVERSITY, CHENNAI

JUNE 2018

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606206,  
Kallakurichi Taluk, Villupuram District

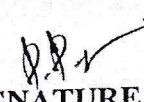


**ANNA UNIVERSITY, CHENNAI****BONAFIDE CERTIFICATE**

Certified that this Thesis titled "SIGNATURE BASED AUTHENTICATION KEY USING BAC LOGIC FOR IOT APPLICATIONS" is the bonafide work of **S.SUBA BHARATHI (621116403010)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

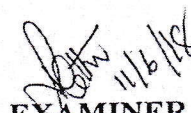
  
SIGNATURE

Mrs.P.POOVIZHI,M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg.College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mrs.P.POOVIZHI,M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg.College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11-06-18

  
INTERNAL EXAMINER  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District.

## ABSTRACT

Internet of Things (IoT) is a network of all devices that can be accessed through the internet. These devices can be remotely accessed and controlled using existing network infrastructure, thus allowing a direct integration of computing systems with the physical world. This also reduces human involvement along with improving accuracy, efficiency and resulting in economic benefit. The devices in IoT facilitate the day to day life of people. However, IoT has an enormous threat to security and privacy due to its heterogeneous and dynamic nature. Authentication is one of the most challenging security requirements in IoT environment, where a user (external party) can directly access information from the devices, provided the mutual authentication between user and devices happens. A new signature-based authenticated key establishment scheme has been presented for IoT environment. The proposed scheme is tested for security with the help of the widely-used **Burrows-Abadi-Needham logic (BAN logic)**, informal security analysis, and also the formal security verification using the broadly-accepted Automated Validation of Internet Security Protocols and Applications (AVISPA) tool. The proposed scheme is also implemented using the widely-accepted NS2 simulator, and the simulation results demonstrate the practicability of the scheme. Finally, the proposed scheme provides more functionality features, and its computational and communication costs are also comparable with other existing approaches.

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-6062,  
Vallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To understand the image fundamentals.
- To understand the various image segmentation techniques.
- To extract features for image analysis.
- To introduce the concepts of image registration and image fusion.
- To illustrate 3D image visualization.

**UNIT I FUNDAMENTALS OF DIGITAL IMAGE PROCESSING**

9

Elements of visual perception, brightness, contrast, hue, saturation, mach band effect, 2D image transforms-DFT, DCT, KLT,SVD. Image enhancement in spatial and frequency domain, Review of Morphological image processing.

**UNIT II SEGMENTATION**

9

Edge detection, Thresholding, Region growing, Fuzzy clustering, Watershed algorithm, Active contour models, Texture feature based segmentation, Graph based segmentation, Wavelet based Segmentation - Applications of image segmentation.

**UNIT III FEATURE EXTRACTION**

9

First and second order edge detection operators, Phase congruency, Localized feature extraction - detecting image curvature, shape features, Hough transform, shape skeletonization, Boundary descriptors, Moments, Texture descriptors- Autocorrelation, Co-occurrence features, Runlength features, Fractal model based features, Gabor filter, wavelet features.

**UNIT IV REGISTRATION AND IMAGE FUSION**

9

Registration - Preprocessing, Feature selection - points, lines, regions and templates Feature correspondence - Point pattern matching, Line matching, Region matching, Template matching. Transformation functions - Similarity transformation and Affine Transformation. Resampling — Nearest Neighbour and Cubic Splines. Image Fusion - Overview of image fusion, pixel fusion, wavelet based fusion -region based fusion.

**UNIT V 3D IMAGE VISUALIZATION**

9

Sources of 3D Data sets, Slicing the Data set, Arbitrary section planes, The use of color, Volumetric display, Stereo Viewing, Ray tracing, Reflection, Surfaces, Multiple connected surfaces, Image processing in 3D, Measurements on 3D images.

**TOTAL: 45 PERIODS****OUTCOMES:**

Upon Completion of the course, the students will be able to

- Explain the fundamentals digital image processing.
- Describe image various segmentation and feature extraction techniques for image analysis.
- Discuss the concepts of image registration and fusion.
- Explain 3D image visualization.

**REFERENCES:**

1. Ardeshir Goshtasby, " 2D and 3D Image registration for Medical, Remote Sensing and Industrial Applications", John Wiley and Sons, 2005.
2. Anil K. Jain, 'Fundamentals of Digital Image Processing', Pearson Education, Inc., 2002.
3. John C. Russ, "The Image Processing Handbook", CRC Press, 2007.
4. Mark Nixon, Alberto Aguado, "Feature Extraction and Image Processing", Academic Press, 2008.
5. Rafael C. Gonzalez, Richard E. Woods, 'Digital Image Processing', Pearson, Education, Inc., Second Edition, 2004.
6. Rick S. Blum, Zheng Liu, "Multisensor image fusion and its Applications", Taylor & Francis, 2006.

*Therese*  
Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,  
PRINCIPAL  
IDHAYA ENGG. COLLEGE FOR WOMEN  
CHINNASALEM-606 201. KALLAKURICHI DT.

**ACHIEVE SECURE HANDOVER SESSION KEY  
MANAGEMENT VIA MOBILE RELAY  
IN LTE - ADVANCED**

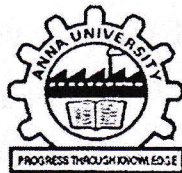
A THESIS

*Submitted by*

**VS.KIRUTHIKA**

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING  
IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*M. S. S.*  
PRINCIPAL  
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM - 600 080,  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this report titled "ACHIEVE SECURE HANDOVER SESSION KEY MANAGEMENT VIA MOBILE RELAY IN LTE-ADVANCED" is the bonafide work of **KIRUTHIKA.VS (621116403005)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mrs.MOHANA M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,

Submitted for the Project Phase II viva voce held on 11.06.2018

INTERNAL EXAMINER

EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The Goal of 3GPP Long Term Evolution/System Architecture Evolution (LTE/SAE) is to move mobile cellular wireless technology into its fourth generation. One of the unique challenges of fourth-generation technology is how to close a security gap through which a single compromised or malicious device can jeopardize an entire mobile network because of the open nature of these networks. Handover key management in the 3GPP LTE/SAE has been designed to revoke any compromised key(s) and as a consequence isolate corrupted network devices.

However, identifies and details the vulnerability of this handover key management to what are called resynchronization attacks; such attacks jeopardize secure communication between users and mobile networks. Although periodic updates of the root key are an integral part of handover key management, our work here emphasizes how essential these updates are to minimizing the effect of de-synchronization attacks that, as of now, cannot be effectively prevented.

Our main contribution, however, is to explore how network operators can determine for themselves an optimal interval for updates that minimizes the signaling load they impose while protecting the security of user traffic.



PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- The student comprehends mathematical description and modelling of discrete time random signals.
- The student is conversant with important theorems and random signal processing algorithms.
- The student learns relevant figures of merit such as power, energy, bias and consistency.
- The student is familiar with estimation, prediction, filtering, multirate concepts and techniques.

**UNIT I DISCRETE RANDOM SIGNAL PROCESSING 9+6**

Discrete random processes – Ensemble averages – Wide sense stationary process – Properties - Ergodic process – Sample mean & variance - Auto-correlation and Auto-correlation matrices- Properties – White noise process – Weiner Khitchine relation - Power spectral density – Filtering random process – Spectral Factorization Theorem – Special types of Random Processes – AR, MA, ARMA Processes – Yule-Walker equations.

**UNIT II SPECTRUM ESTIMATION 9+6**

Bias and Consistency of estimators - Non-Parametric methods – Periodogram – Modified Periodogram – Barlett's method – Welch's method – Blackman-Tukey method – Parametric methods – AR, MA and ARMA spectrum estimation - Performance analysis of estimators.

**UNIT III SIGNAL MODELING AND OPTIMUM FILTERS 9+6**

Introduction- Least square method – Pade approximation – Prony's method – Levinson Recursion – Lattice filter - FIR Wiener filter – Filtering – Linear Prediction – Non Causal and Causal IIR Wiener Filter – Mean square error – Discrete Kalman filter.

**UNIT IV ADAPTIVE FILTERS 9+6**

FIR Adaptive filters - Newton's steepest descent method – Widrow Hoff LMS Adaptive algorithm – Convergence – Normalized LMS – Applications – Noise cancellation - channel equalization – echo canceller – Adaptive Recursive Filters - RLS adaptive algorithm – Exponentially weighted RLS- sliding window RLS.

**UNIT V MULTIRATE SIGNAL PROCESSING 9+6**

Decimation - Interpolation – Sampling Rate conversion by a rational factor I/D – Multistage implementation of sampling rate conversion – Polyphase filter structures – Applications of multirate signal processing.

**TOTAL 45+30: 75 PERIODS****OUTCOMES:**

- Formulate time domain and frequency domain description of Wide Sense Stationary process in terms of matrix algebra and relate to linear algebra concepts.
- State W-K theorem, spectral factorization theorem, spectrum estimation, bias and consistency of estimators.
- Wiener filtering, LMS algorithms, Levinson recursion algorithm, applications of adaptive filters
- Decimation, interpolation, Sampling rate conversion, Applications of multirate signal processing

**REFERENCES:**

1. John G. Proakis, Dimitris G. Manolakis, "Digital Signal Processing", Prentice Hall of India, New Delhi, 2005.
2. Monson H. Hayes, "Statistical Digital Signal Processing and Modeling", John Wiley and Sons Inc., New York, 2006.
3. P. P. Vaidyanathan, "Multirate Systems and Filter Banks", Prentice Hall, 1992.
4. S. Kay, "Modern spectrum Estimation theory and application", Prentice Hall, Englewood Cliffs, NJ 1988.
5. Simon Haykin, "Adaptive Filter Theory", Prentice Hall, Englewood Cliffs, NJ 1986.
6. Sophocles J. Orfanidis, "Optimum Signal Processing", McGraw-Hill, 2000.

*R. Gurumani*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**

**FOG REMOVAL TECHNIQUE WITH IMPROVED  
QUALITY USING STRUCTURAL PRESERVATIVE**

**PRIOR**

**A THESIS**

*Submitted by*

**K.VIMALA TAMIL SELVI**

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND**

**COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

  
**PRINCIPAL**

**Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District**



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this report titled "FOG REMOVAL TECHNIQUE WITH IMPROVED QUALITY USING STRUCTURAL PRESERVATION PRIOR" is the bonafide work of **VIMALA TAMIL SELVI K (621116403013)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs. P. POOVIZHI M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Ms. J. SHINY CHRISTOBEL M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project phase II viva voce held on 11-06-2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

## ABSTRACT

Images and videos are the important things in the 4<sup>th</sup> generation. In the road or railway track or traffic analysis image and videos is main thing for the analysis process. But images are taken in the open environment it will suffer under the environment problems. For that the conventional techniques are not enough for the analysis process. The cloudy and foggy or hazy weather conditions result as low quality images and videos that are not identified clearly. This paper proposes fast and efficient fog removal techniques with quality enhancement techniques. The fog is removed from the foggy images or videos and enhances the quality of the image or video. With the help of the FFT (Fast Fourier Transform) the unwanted noise is erased and the clarity of the image and video is improved. The fog removal algorithms are extended for video by making the temporal correlation present among the frames. Temporal redundancy removal is an essential step of any video coding standard. This is very useful and excellent method for air lines and traffic analysis and car driving and many industries that includes the image as the key point.



**IMPROVING SAFETY ON HIGHWAYS BY  
CUSTOMIZING VEHICULAR ADHOC  
NETWORKS**

A THESIS

*Submitted by*

**RANJITHA R**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE - 2018**

*Meen*  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainaralaym Road, CHINNASALEM 60626  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "IMPROVING SAFETY ON HIGHWAYS BY CUSTOMIZING VEHICULAR ADHOC NETWORKS" is the bonafide work of **RANJITHA.R (621116403007)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Ms.A.SAFNA AMALA YAZHINI, M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



### ABSTRACT

The necessity for individualizing vehicular communications so as to enhance safety for highway situation. Adapting a vehicular adhoc network to each its individual driver's characteristic and traffic conditions allows it to transmit in very good manner to alternative vehicles. This radical improvement currently attributable is being created in vehicular adhoc network (VANET). Have a tendency to first derive the packet success chance for a sequence of vehicles by taking multi-user interference. Then, by considering the delay constraints and kinds of potential collisions, we have a tendency to approximate the best channel access chances. Lastly, we have a tendency to propose associate degree formula for customizing channel access chances in VANET. Our town simulation results show that this approach achieves quite twenty fifth reduction in traffic collision chance compared with the case with equal channel access possibilities in its best vary. Therefore, it's an enormous advantage over alternative non-optimal systems.

*Mveni*

PRINCIPAL  
Sadhya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

**SMART ELECTRONIC VOTER ID PROOF  
VERIFICATION USING BIOMETRICS**

A THESIS

*Submitted by*

**P.THAMIZHAZHAGI**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND**

**COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "SMART ELECTRONIC VOTER ID PROOF VERIFICATION USING BIOMETRICS" is the bonafide work of **THAMIZHAZHAGI.P (621116403012)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

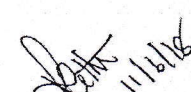
  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.


  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11-06-2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The biometric is a technology of measuring; science and it analyze the biological data. In the modern communications approximately it has accessible electronically, users of computer technology, it has increment in electronic services and with the security system. It improves in the election system with the help of new technologies in voting process. The information about election data is stored, recorded and processed the above information as a digital information. In olden days the information security is with the help of military and instructions of the government. The human body characteristic like DNA, fingerprints, voice patterns and hand measurements is used for authentication purpose.

This microcontroller has the ability of finger print recognition and control complete voting machine system. A Finger print sensor used to take finger algorithm of Adhaar card and identify that this user is valid voter for that region. If the citizen is valid and also didn't vote then the person will be allowed to submit his/her vote.. As the user is identified his/her finger print will be sent to a specific ballot for voting. Each voting machine is networked with the central control unit for voting identification system. After that information will be update into IOT server .As the thumb impression of every individual is unique, it helps in minimizing the error. Further that the elections would are no longer a tedious and expensive job.

PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-6062  
Kallakurichi Taluk, Villupuram District



**Scalable Source Transmission with Unequal Frequency  
Reuse in MIMO Cellular Networks**

A THESIS

*Submitted by*

**K.SHANTHINI**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Praveen*  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "SCALABLE SOURCE TRANSMISSION WITH UNEQUAL FREQUENCY REUSE IN MIMO CELLULAR NETWORKS" is the bonafide work of **K.SHANTHINI (621116403008)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

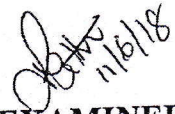
  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

 M.MAHESH, M.TECH.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11-06-2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER


  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

The optimal frequency reuse for the transmission of multimedia scalable sources, such as embedded images or scalable video. First we analyze the crossover of the outage probabilities for full and partial frequency reuse cases in terms of the data rate. We prove that we can find a crossover of the outage probability curves for a data rate lower than a given threshold, which is a function of the parameters such as the partial frequency reuse factor and the user location in the cell. On the other hand, for a data rate higher than or equal to the threshold, there is no crossover; for all SNRs, the outage probability of full frequency reuse is lower than that of partial frequency reuse. Further, the results hold, regardless of the numbers of transmit and receive antennas in the multiple-input multiple-output systems of orthogonal space-time block codes. The numerical results show that the peak-signal-to-noise ratio performance improves when a sequence of scalable packets is transmitted at the sub bands governed by unequal frequency reuse in cellular networks.

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60624  
Kallakurichi Taluk, Villupuram District

**ANDROID MOBILE PHONE FINGER PRINT  
SENSOR RECOGNITION BASED CAR LOCK  
SYSTEM BY USING WIFI TECHNOLOGY**

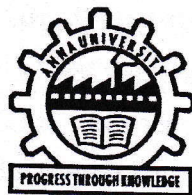
**A THESIS**

*Submitted by*

**R.S. VINOThAASREE**

*in partial fulfilment for the award of the degree of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEM**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND**

**COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Neeraj*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Report titled "ANDROID MOBILE PHONE FINGER PRINT SENSOR RECOGNITION BASED CAR LOCK SYSTEM BY USING WIFI TECHNOLOGY" is the bonafide work of **R.S. VINOHAASREE** (621116403014) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation based on which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

**Mrs.P.POOVIZHI., ME.,**  
**HEAD OF THE DEPARTMENT**  
Assistant Professor  
Department of ECE,  
Idhaya Engg. College for Women,  
Chinna Salem – 606201.

  
SIGNATURE

**Ms.P.PRINCY PUSHPA., ME.,**  
**SUPERVISOR**  
Assistant Professor  
Department of ECE,  
Idhaya Engg. Collège for Women,  
Chinna Salem - 606201.

Submitted for the Project Phase II viva voce held on ..11.06.2018.

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The use of vehicle is a must for everyone. In the same way, safeguarding the vehicle against theft is also very essential. Impediment of vehicle theft can be done remotely by an authorized person. Wireless with Embedded computing technology is an emergent field used in all the areas. A competent automotive security system is implemented using embedded system along with Wi-Fi and android mobile Fingerprint Recognition. The survey mainly emphasizes on major approaches for automatic person identification, namely fingerprint recognition and various existing vehicle security system. The security system can be implemented using Microcontroller. Making use of advanced technologies like biometric systems protected digital locks is the demand of the time. Using biometric systems for security lays more emphasis not on what all you know about the security of the place but who you are with respect to the place. In juxtaposition with the normal lock and key system, the advantages of Biometric security systems are umpteen, but the biometric security system alone cannot provide us with a pragmatic security system. In this project, elaborate the idea of using a Biometric Protected System for the security of a place, viz. car.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



**AN EFFICIENT JOB SCHEDULING MODEL  
FOR REDUCING BURDEN IN TRAFFIC  
RESOURCE ENVIRONMENT**

A THESIS

*Submitted by*

**M.DURKADEVI**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

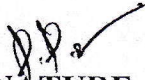
*Meni*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "AN EFFICIENT JOB SCHEDULING MODEL FOR REDUCING BURDEN IN TRAFFIC RESOURCE ENVIRONMENT" is the bonafide work of **DURKADEVLM** (621116403002) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Sr.J.CATHERINA MARY,M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.6.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

High energy consumption of wireless sensor network is a matter of great concern and a new virtual machine (VM) placement algorithm named ATEA (adaptive three-threshold energy-aware algorithm). In ATEA, according to the load handled, data center hosts are divided into four classes: hosts with little load, hosts with light load, hosts with moderate load, and hosts with heavy load. ATEA migrates VMs on heavily loaded or little-loaded hosts to lightly loaded hosts, while the VMs on lightly loaded and moderately loaded hosts remain unchanged.

Then, on the basis of ATEA, two kinds of adaptive three-threshold algorithm and three kinds of VMs selection policies are proposed. A VM consolidation approach uses live migration of VMs so that some of the under-loaded Physical Machines (PMs) can be switched-off or put into a low-power mode. Dynamic consolidation is a technique that transparently migrates only the working set of an idle VM and support switching data deliver computing by optimizing the number of servers in use. To use the maximum precedence algorithm to reduce the burden in virtual machine. A set of heuristics is developed, that prevent burden in the system effectively while saving energy used. Virtual Machine Placement on hosts is the main concept which carried out during Virtual Machine migrations in data centers. Experimental results on real workload traces show that reduces energy consumption while maintaining the required performance levels in a wireless sensor network. The state of the art in data center energy optimization is focusing only on job distribution between computing servers based on workload. It outperforms existing VM consolidation approaches in terms of energy consumption, number of Dynamic consolidations, and QoS requirements concerning performance. Energy aware Virtual Machine consolidation has proven to be one of the most effective solutions for tackling this problem.

P789

**A CONVOLUTIONAL NEURAL NETWORK  
APPROACH FOR AUTOMATIC IMAGE  
ANNOTATION AND REFINEMENT**

PHASE II REPORT

*Submitted by*

**ARULJOTHI.E**

(Registration Number: 621116403001)

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*[Signature]*  
PRINCIPAL

idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-605 005  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this project titled "A CONVOLUTIONAL NEURAL NETWORK APPROACH FOR AUTOMATIC IMAGE ANNOTATION AND REFINEMENT" is the bonafide work of **ARULJOTHI.E (621116403001)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI., M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg.College for Women ,  
Chinnasalem-606 201.


  
SIGNATURE

Sr. JENITTA, M.E., (Ph.D)  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg.College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.6.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

An infrastructure build in the digital image processing platform of correlated vector classification which is reliable to challenge the commercial and non-commercial IT development communities of data streams in high dimensional data cluster modeling. Scene images usually involve semantic correlations, particularly when considering large-scale image data sets. This project proposes a novel generative image representation, correlated topic vector, to model such semantic correlations. Oriented from the correlated topic model, correlated topic vector intends to naturally utilize the correlations among topics, which are seldom considered in the conventional feature encoding, but do exist in scene images. It is expected that the involvement of correlations can increase the discriminative capability of the learned generative model and consequently improve the recognition accuracy. Incorporated with the Fisher kernel method, correlated topic vector inherits the advantages of Fisher vector. The contributions to the topics of visual words have been further employed by incorporating the Fisher kernel framework to indicate the differences among scenes. Combined with the deep convolutional neural network (CNN) features and Gibbs sampling solution, correlated topic vector shows great potential when processing large-scale and complex scene image data sets.

*Principals*  
PRINCIPAL



**AREA/ENERGY-EFFICIENT GAMMATONE  
FILTERS USING STOCHASTIC  
COMPUTATION**

A THESIS

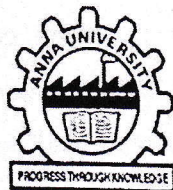
*Submitted by*

**YOGESHWARI K**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM  
DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Principi*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "AREA/ENERGY-EFFICIENT GAMMATONE FILTERS USING STOCHASTIC COMPUTATION" is the bonafide work of **YOGESHWARI.K (621116403015)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mrs.N.HEMALATHA, M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.18

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



### ABSTRACT

This method introduces area/energy-efficient gammatone filters based on stochastic computation. The gammatone filter well expresses the performance of human auditory peripheral mechanism and has a potential of improving advanced speech communications systems, especially hearing assisting devices and noise robust speech-recognition systems. Using stochastic computation, a power-and-area hungry multiplier used in a digital filter is replaced by a simple logic gate, leading to area efficient hardware. However, a straightforward implementation of the stochastic gammatone filter suffers from significantly low accuracy in computation, which results in a low dynamic range (a ratio of the maximum to minimum magnitude) due to a small value of a filter gain. To improve the computation accuracy, gain-balancing techniques are presented that represent the original gain as the product of multiple larger gains introduced at the second-order sections. In addition, dynamic scaling techniques are proposed that scales up small values only on stochastic domain in order to reduce the number of stochastic bits required while maintaining the computation accuracy. For performance comparisons, the proposed stochastic gammatone filters. They are implemented to the Xilinx system generator.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60620  
Kallakurichi Taluk, Villupuram District

**DESIGN AND IMPLEMENTATION OF A  
DIGITAL SECURE CODE-SHIFTED  
REFERENCE UWB TRANSMITTER AND  
RECEIVER**

A THESIS

*Submitted by*

**SINDHUJA V**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM  
DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI  
JUNE 2018**

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-600261  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "DESIGN AND IMPLEMENTATION OF A DIGITAL SECURE CODE-SHIFTED REFERENCE UWB TRANSMITTER AND RECEIVER" is the bonafide work of **SINDHUJA.V (621116403009)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mrs.W.SELVI, M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11-06-18

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The first compact hardware implementation of a digital code-shifted reference (CSR) ultra-wideband (UWB) transceiver. The security of the transmission is based on changing the physical properties of the transmission without the use of higher level security options. The software models of the designed transceiver are simulated and verified in both floating-point and fixed-point numerical representations. The synthesizable Verilog description of the transceiver architecture is simulated and verified against its fixed-point simulation model. The secure transceiver is implemented on our custom-developed field-programmable gate array (FPGA) board. The characteristic and implementation results of the secure transceiver architecture on the FPGA are presented. The bit error rate performance of the transceiver is measured in real time on the FPGA using an accurate on-chip Gaussian noise generator and is compared with that of the software simulation model. An ASIC architecture of the CSR-UWB transceiver is estimated to occupy  $0.019 \text{ mm}^2$  and dissipate  $0.63 \text{ mW}$  from a  $1.0 \text{ V}$  supply while operating at  $82 \text{ MHz}$  in a standard  $32\text{-nm}$  CMOS technology.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



**PHYSICAL LAYER SECURITY IN  
HETEROGENEOUS CELLULAR NETWORKS**

A THESIS

*Submitted by*

**ISHWARYA A**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM  
DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

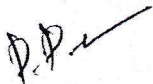
*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Mainarpalaym Road, CHINNASALEM-606206  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled “ **PHYSICAL LAYER SECURITY IN HETEROGENEOUS CELLUAR NETWORKS**” is the bonafide work of **ISHWARYA.A (621116403003)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



**SIGNATURE**

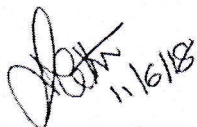
**Mrs.P.POOVIZHI, M.E.,**  
**HEAD OF THE DEPARTMENT,**  
 Assistant Professor,  
 Department of Electronics &  
 Communication Engineering  
 Idhaya Engg. College for Women,  
 Chinnasalem-606 201.



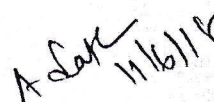
**SIGNATURE**

**Ms.ANTONY GRACY, M.E.,**  
**SUPERVISOR,**  
 Assistant Professor,  
 Department of Electronics &  
 Communication Engineering  
 Idhaya Engg. College for Women,  
 Chinnasalem-606 201.

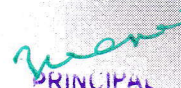
Submitted for the Project Phase II viva voce held on 11-06-2018



**INTERNAL EXAMINER**



**EXTERNAL EXAMINER**



**PRINCIPAL**  
 Idhaya Engineering College for Women,  
 Nainarpalaym Road, CHINNASALEM-606,  
 Kallakurichi Taluk, Villupuram District



## ABSTRACT

Routing network often support sensitive applications. These applications may require that user's identity, location, and correspondents be kept secret. This is a challenge in a RN because of the cooperative nature of the network and broadcast nature of the communication media. In this paper, we propose a privacy preserving communication system (PPCS) which provides a comprehensive solution to anonymize communication end-points, keep the location and identifier of a node un-linkable, and mask the existence of communication flows. There are a number of directions that worth studying in the future. In particular, in this paper, we assume that the global eavesdropper will not compromise sensor nodes; he only performs traffic analysis without looking at the content of the packet. However, in practice, the global eavesdropper may be able to compromise a few sensor nodes in the field and perform traffic analysis with additional knowledge from insiders. This presents interesting challenges for both of our approaches. In addition, we are also interested in the implementation of our methods in real sensor platforms and the experimental results from real sensor applications.

*Principi*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNAsALEM-60620  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

The students should be made to be

- Learn M2M developments and satellite applications
- Understand Satellite Communication In Ipv6 Environment

**UNIT I OVERVIEW OF SATELLITE COMMUNICATION**

9

Overview of satellite communication and orbital mechanics Link budget Parameters, Link budget calculations, Auxiliary Equations, Performance Calculations.

**UNIT II M2M DEVELOPMENTS AND SATELLITE APPLICATIONS**

9

Overview of the Internet of Things and M2M- M2M Applications Examples and Satellite Support- Satellite Roles Context and Applications- Antennas for Satellite M2M Applications- M2M Market Opportunities for Satellite Operators- Ultra HD Video/TV and Satellite Implications- High Throughput Satellites (HTS) and Ka/Ku Spot Beam Technologies- Aeronautical, Maritime and other Mobility Services.

**UNIT III SATELLITE COMMUNICATION IN IPV6 ENVIRONMENT**

9

Overview of IPv6 and its benefits for Satellite Networks - Migration and Coexistence--Implementation scenarios and support- Preparations for IPv6 in Satellite communication- Satellite specific Protocol issues in IPv6 — Impact of IPv6 on Satellite Network architecture and services-Detailed transitional plan- IPv6 demonstration over satellites - Key results and recommendations.

**UNIT IV SATELLITE NAVIGATION AND GLOBAL POSITIONING SYSTEM**

9

Over view of Radio and Satellite Navigation, GPS Principles, Signal model and Codes, Satellite Signal Acquisition, Mathematical model of GPS observables, Methods of processing GPS data , GPS Receiver Operation and Differential GPS. IRNSS, GAGAN, GLONASS and Galileo.

**UNIT V DEEP SPACE NETWORKS AND INTER PLANETARY MISSIONS**

9

Introduction — Functional description - Design procedure and performance criterion-Mars exploration Rover- Mission and space craft summary-Telecommunication subsystem overview-Ground Subsystem-Telecom subsystem and Link performance Telecom subsystem Hardware and software Chandrayaan-1 Mission - Mission and space craft summary-Telecommunication subsystem overview- Ground Subsystem-Telecom subsystem and Link performance. Mangalyaan Mission - Mission and space craft summary-Telecommunication subsystem overview- Ground Subsystem-Telecom subsystem and Link performance.

**OUTCOMES:**

At the end of this course, the student should be able to:

- Discuss satellite navigation and global positioning system
- Outline deep space networks and inter planetary missions

**REFERENCES:**

1. Adimurthy.V, " Concept design and planning of India's first interplanetary mission" CurrentScience, VOL. 109, NO. 6, 1054 25 SEPTEMBER 2015.
2. Anil K. Maini, Varsha Agrawal, 'Satellite Technology: Principles and Applications', Third Edition, Wiley, 2014.
3. Daniel Minoli' "Innovations in Satellite Communication and Satellite Technology" Wiley, 2015
4. Daniel Minoli, "Satellite Systems Engineering in an IPv6 Environment", CRC Press, First Edition, 2009.
5. Hofmann-Wellenhof B., Lichtenegger H., and Elmar Wasle, "Global Navigational Satellite Systems" Springer-Verlag, 2008.
6. Jim Taylor, " Deep Space Communications" John Wiley & Sons, 2016.
7. Louis J. Ippolito, Jr. "Satellite Communications Systems Engineering: Atmospheric Effects, Satellite Link Design and System Performance", Second Edition, 2017
8. <http://www.isro.gov.in/pslv-c25-mars-orbiter-mission>
9. [https://en.wikipedia.org/wiki/Mars\\_Orbiter\\_Mission](https://en.wikipedia.org/wiki/Mars_Orbiter_Mission)
10. <https://en.wikipedia.org/wiki/Chandrayaan-1>

*Renu*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**



# **NODE FAILURE RECOVERY IN WIRELESS NETWORK BY REBROADCAST TECHNIQUES**

A THESIS

*Submitted by*

**PRIYA.K**

*in partial fulfillment for the award of the degree  
of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN  
CHINNASALEM  
DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Went*  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-600  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis titled "NODE FAILURE RECOVERY IN WIRELESS NETWORK BY REBROADCAST TECHNIQUES" is the bonafide work of **PRIYA.K (621116403006)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

*for* Mr.M.MAHESH, M.TECH.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.6.2018

  
INTERNAL EXAMINER

*A Sar*  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60-  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Due to the rapid development of wireless sensor devices in terms of low power and inexpensive data-relaying has been partially achieved because of the rapid progress in integrated circuits and radio transceiver designs and device technology. Because of this, the wireless sensor devices are able to gather information, process them if required and send them to the next sensor device. The resource constrained ad hoc wireless sensor network is versatile yet vulnerable to attacks. The communication infrastructure with less sensor networks may interact with the sensitive data in the hostile environment where the nodes may fail and new nodes may join the network, which may leads to the susceptibility to many kinds of security attacks. An adversary can eavesdrop on all the messages within the emission area, by operating in promiscuous mode. So, it is imperative that the protection of the network routing from the adversaries for the wireless ad hoc sensor network must be adopted for critical missions.

Mobile Ad-Hoc Network (MANET) is a wireless ad-hoc network comprising of mobile devices which undergo peer to peer routing, to provide network connectivity instead of pre-existing network infrastructure. Despite its simplicity of network infrastructure, however it poses challenges of variable link capacity, dynamic topology, exhaustible battery power of nodes and limited physical security. In MANET, broadcasting is a conventional mechanism carried out to deliver messages from source node to all other nodes in MANET. Flooding is commonly used method for broadcasting of Route Request (RREQ) packet which is prone to broadcast storm problem.

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-60620,  
Kallakurichi Taluk, Villupuram District



**SPECTRAL AND ENERGY  
EFFICIENCY IN FULL-DUPLEX  
USING PARTICLE SWARM OPTIMIZATION  
ALGORITHM**

A THESIS

*Submitted by*

**S.RANJITHA**

*in partial fulfillment for the award of the degree of*

MASTER OF ENGINEERING IN

COMMUNICATION SYSTEMS



IDHAYA ENGINEERING COLLEGE FOR WOMEN

CHINNASALEM

DEPARTMENT OF ELECTRONICS AND

COMMUNICATION ENGINEERING

ANNA UNIVERSITY, CHENNAI

JUNE 2018

*Ranajitha*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606202  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Thesis titled "SPECTRAL AND ENERGY EFFICIENCY IN FULL-DUPLEX USING PARTICLE SWARM OPTIMIZATION ALGORITHM" is the bonafide work of **S.RANJITHA (621116403016)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

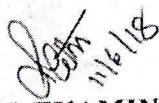
  
SIGNATURE

Mrs.P.POOVIZHI,M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.


  
SIGNATURE

Ms.V.DHIVYA PRIYA,M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

This paper is considered consisting of a full-duplex (FD) multiple-antenna base station (BS) and multiple single antenna downlink users (DLUs) and single-antenna uplink users (ULUs), where the latter need to harvest energy for transmitting information to the BS. The communication is thus divided into two phases. In the first phase, the BS uses all available antennas for conveying information to DLUs and wireless energy to ULUs via information and energy beam forming, respectively. In the second phase, ULUs send their independent information to the BS using their harvested energy while the BS transmits the information to the DLUs. In the both phases, the communication is operated at the same time and over the same frequency band. The aim is to maximize the sum rate and energy efficiency under ULU achievable information throughput constraints by jointly designing beam formers and time allocation. The utility functions of interest are nonconcave and involved constraints are nonconvex, so these problems are computationally troublesome. To address them, particle swarm optimization algorithms are proposed to arrive at least at local optima. The proposed algorithms iteratively improve the objectives with convergence guaranteed. Simulation results demonstrate that they achieve fast convergence rate and outperform conventional solution.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNAsALEM-60620  
Kallakurichi Taluk, Villupuram District



**OPTICAL MIMO-OFDM WITH  
GENERALIZED LED INDEX MODULATION**

A THESIS

*Submitted by*

**SUBHASHINI A**

*in partial fulfillment for the award of the degree*

*of*

**MASTER OF ENGINEERING IN  
COMMUNICATION SYSTEMS**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN**

**CHINNASALEM**

**DEPARTMENT OF ELECTRONICS AND**

**COMMUNICATION ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Mani*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

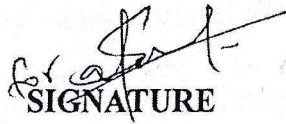
## BONAFIDE CERTIFICATE

Certified that this thesis titled "OPTICAL MIMO-OFDM WITH GENERALIZED LED INDEX MODULATION" is the bonafide work of **SUBHASHINI.A (621116403011)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



SIGNATURE

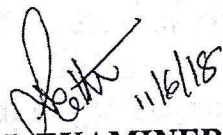
Mrs.P.POOVIZHI, M.E.,  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.



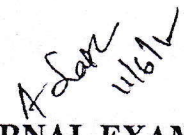
SIGNATURE

Mrs.K.SOLAIYAMMAL, M.E.,  
SUPERVISOR,  
Assistant Professor,  
Department of Electronics &  
Communication Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.2018



INTERNAL EXAMINER



EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

The next generation of wireless communication systems as Visible light communications (VLC) is a new technology. This project offer a new trade for light emitting diode (LED) index modulation method for multiple-input-multiple-output orthogonal frequency division multiplexing (MIMO-OFDM) based Visible Light Communication systems. OFDM signals are shaped with the help of time and frequency domain to avoid spectrum efficiency losses due to this proposed scheme. This is obtain by applying spatial multiplexing onward with LED index modulation. The real and imaginary components of the complex time domain OFDM signals are separated first, then resulting bipolar signals are transmitted over a VLC channel by encoding sign information in LED indexes. As a criterion determine the performance analysis of our proposed system. The proposed scheme achieves better bit error ratio (BER) vs. signal-to noise-ratio (SNR) performance than the existing VLC-MIMO OFDM systems that use the same number of transmit and receive units (LEDs and photo diodes (PDs)). MIMO configuration is better performance in optical OFDM (DCOOFDM)system compared to single input single-output (SISO).

*Praveen*  
PRINCIPAL  
Sadhya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- To give fundamental concepts related to broadband access technologies.
- To understand the current and emerging wired and wireless access technologies.
- To acquire knowledge about cable modems and fiber access technologies.
- To have an exposure to different systems standards for next generation broadband access networks.

**UNIT I REVIEW OF ACCESS TECHNOLOGIES 5**  
 Phone-Line modem, cable-access, ISDN, Emerging Broad band Technologies, Cable DSL, Fiber and Wireless, Standards for access network.

**UNIT II DIGITAL SUBSCRIBER LINES 10**  
 Asymmetric Digital subscriber lines (ADSL) — Rate Adaptive subscriber line (RADSL)-ISDN Digital subscriber line (IDSL) - High bit rate DSL (HDSL)-Single line DSL (SDSL) - very high bit rate DSL (VDSL) - Standards for XDSL & Comparison.

**UNIT III CABLE MODEM 10**  
 Cable Modem, DOCSIS – Physical Cabling, Dual Modem Operation, Hub Restriction, Upstream Operation – Downstream operation – Access control – framing Security sub layer – Data link layer – LLC & Higher layers – ATM centric VS IP – centric cable modem.

**UNIT IV FIBER ACCESS TECHNOLOGIES 10**  
 Optical Fiber in access networks, Architecture and Technologies- Hybrid fiber — Coax (HFC) system, Switched Digital Video (SDV) – Passive optical networks (PON) – FTTX (FTTH, FTTB, FTTC, FTT cab) comparison, Broadband PON , Gigabit-Capable PON.

**UNIT V BROAD BAND WIRELESS 10**  
 Fixed Wireless, Direct Broadcast Satellite (DBS), Multi channel multi point distribution services (MMDS), Local multi point distribution services (LMDS), and Wideband integrated Digital Interactive Services (WIDIS), Mobile Wireless 3G — IMT 2000, Introduction to LTE-A.

**TOTAL : 45 PERIODS**

**OUTCOMES:**

- To able to design systems meeting out the requirements of the recent standards.
- To meet out the industry requirements for man power in next generation networks.
- To be able to contribute towards the enhancement of the existing wireless technologies.

**REFERENCES:**

1. Dennis J. Rauschmayer, "ADSL/VDSL Principles: A Practical and Precise Study of Asymmetric Digital Subscriber Lines and Very High Speed Digital Subscriber Lines", Macmillan Technology Series, 1998.
2. Gilbert Held, "Next Generation Modems: A Professional Guide to DSL and Cable Modems", John Wiley & Sons, 2000.
3. Leonid G. Kazovsky, Ning Cheng, Wei-Tao Shaw, David Gutierrez, Shing-Wa Wong, "Broadband Optical Access Networks", John Wiley and Sons, New Jersey, 2011.
4. Martin P. Clarke, "Wireless Access Network: Fixed Wireless Access and WLL Network Design and Operation", John Wiley & Sons 2000.
5. Niel Ransom and Albert A. Azzam, "Broadband Access Technologies: ADSL, VDSL Cable Modem, Fiber and LMDS", McGraw Hill, 1999.
6. Sassan Ahmadi, "LTE-Advanced – A practical systems approach to understanding the 3GPP LTE Releases 10 and 11 radio access technologies", Elsevier, 2014.
7. Walter J Woralski, "ADSL and DSL Technologies", McGraw Hill Computer Communication Series, Second Edition Oct 2001.
8. William Webb, "Introduction to Wireless Local Loop Broadband and Narrow Band System", Mobile Communication Series, Artech House Publishers, Second Edition 2000.

*meera*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**



**OBJECTIVES:**

The students should be made to understand:

- Optical system components like optical amplifiers, wavelength converters.
- Up-to-date survey of development in Optical Network Architectures.
- Packet switching.
- Network design perspectives.
- Different Optical Network management techniques and functions.

**UNIT I**

9

Introduction to Optical Networks: Telecommunications Networks Architecture, Services, circuit switching and packet switching, Optical Networks: Multiplexing Techniques, Second generation Optical Networks, Optical Packet Switching, Transmission Basics: Wavelength, frequencies, and channel spacing, Wavelength standards, Optical power and loss, Network Evolution, Nonlinear Effects: Self-phase Modulation, Cross-phase Modulation, Four Wave mixing, Solitons. Components: Couplers, Isolators and Circulators, Multiplexers and Filters, Optical Amplifiers, Transmitters, Detectors, Switches, Wavelength Converters.

**UNIT II**

9

Transmission System Engineering: System Model, Power Penalty, Transmitter, Receiver, Optical Amplifiers, Crosstalk, Dispersion, Wavelength Stabilization, Overall Design Considerations. Optical Internets: Migration to IP optical networking, IP and Optical backbone, IP Routing table, MPLS and optical cross connect table, Protocol stack Alternatives, Internetworking SS7 and Legacy Transport, Internet transport network protocol stack.

**UNIT III**

9

SONET, SDH and Optical Transport Networks (OTNs): SONET and SDH: SONET multiplexing hierarchy, Frame structure, Functional Component, problem detection, concatenation. Architecture of Optical Transport Networks (OTNs): Digital wrapper, in-band and out-of band control signalling, Importance of Multiplexing and multiplexing hierarchies, SONET multiplexing hierarchies, SDH multiplexing hierarchies, New Optical Transport, OTN layered Model, Generic Framing Procedure (GFP)

**UNIT IV**

9

WDM, Network topologies, MPLS and Optical Networks: WDM: WDM operation, Dense Wavelength Division Multiplexing (DWDM), Erbium-doped Fiber (EDF), WDM amplifiers, Add-Drop Multiplexers, Wavelength Continuity Property, Higher dispersion for DWDM, Tunable DWDM Lasers.

**UNIT V**

9

Network topologies and protection schemes: Robust networks, Line and path protection switching, Types of topology, Point to point topology, bi-directional line-switched ring (BLSR), meshed topology, Passive optical networks, Metro optical networks 28 MPLS and Optical Networks: IS label switching, Forwarding equivalence class (FEC), Types of MPLS nodes, Label distribution and binding, label swapping and traffic forwarding, MPLS support of Virtual Private Networks (VPN), MPLS traffic engineering, Multi protocol Lambda switching (MPIS).

**TOTAL : 45 PERIODS****OUTCOMES:**

At the end of the course, the student should be able to:

- Design and Analyze Network Components
- Assess and Evaluate optical networks

**REFERENCES:**

1. Rajiv Ramaswami and Kumar Sivarajan, "Optical Networks – Practical Perspective", 3<sup>rd</sup> Edition, Morgan - Kaufmann Publishers.
2. Optical Networks, Third Generation Transport Systems, Uyles Black, Pearson

*Ramani*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**

**OBJECTIVES:**

- To understand the usage of algorithms in computing.
- To learn and use hierarchical data structures and its operations
- To learn the usage of graphs and its applications.
- To select and design data structures and algorithms that is appropriate for problems.
- To study about NP Completeness of problems.

**UNIT I           ROLE OF ALGORITHMS IN COMPUTING**

12

Algorithms – Algorithms as a Technology- Insertion Sort – Analyzing Algorithms – Designing Algorithms- Growth of Functions: Asymptotic Notation – Standard Notations and Common Functions- Recurrences: The Substitution Method – The Recursion-Tree Method

**UNIT II           HIERARCHICAL DATA STRUCTURES**

12

Binary Search Trees: Basics – Querying a Binary search tree – Insertion and Deletion- Red-Black trees: Properties of Red-Black Trees – Rotations – Insertion – Deletion -B-Trees: Definition of B-trees – Basic operations on B-Trees – Deleting a key from a B-Tree- Fibonacci Heaps: structure – Mergeable-heap operations- Decreasing a key and deleting a node-Bounding the maximum degree.

**UNIT III          GRAPHS**

12

Elementary Graph Algorithms: Representations of Graphs – Breadth-First Search – Depth-First Search – Topological Sort – Strongly Connected Components- Minimum Spanning Trees: Growing a Minimum Spanning Tree – Kruskal and Prim- Single-Source Shortest Paths: The Bellman-Ford algorithm – Single-Source Shortest paths in Directed Acyclic Graphs – Dijkstra's Algorithm; All-Pairs Shortest Paths: Shortest Paths and Matrix Multiplication – The Floyd- Warshall Algorithm;

**UNIT IV          ALGORITHM DESIGN TECHNIQUES**

12

Dynamic Programming: Matrix-Chain Multiplication – Elements of Dynamic Programming – Longest Common Subsequence- Greedy Algorithms: An Activity-Selection Problem – Elements of the Greedy Strategy- Huffman Codes.

**UNIT V          NP COMPLETE AND NP HARD**

12

NP-Completeness: Polynomial Time – Polynomial-Time Verification – NP- Completeness and Reducibility – NP-Completeness Proofs – NP-Complete Problems

**TOTAL: 60 PERIODS****OUTCOMES:****Upon the completion of the course the students should be able to:**

- Design data structures and algorithms to solve computing problems
- Design algorithms using graph structure and various string matching algorithms to solve real-life problems
- Apply suitable design strategy for problem solving

**REFERENCES:**

1. Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, —Data Structures and AlgorithmsI, Pearson Education, Reprint 2006.
2. Robert Sedgewick and Kevin Wayne, —ALGORITHMSI, Fourth Edition, Pearson Education.
3. S.Sridhar, IDesign and Analysis of AlgorithmsI, First Edition, Oxford University Press. 2014
4. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein, —Introduction to Algorithms, Third Edition, Prentice-Hall, 2011.

*M. S. Srinivasan*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**



**OBJECTIVES:**

- To understand the principles required for network design
- To explore various technologies in the wireless domain
- To study about 3G and 4G cellular networks
- To understand the paradigm of Software defined networks

**UNIT I NETWORK DESIGN**

10

Advanced multiplexing – Code Division Multiplexing, DWDM and OFDM – Shared media networks – Switched networks – End to end semantics – Connectionless, Connection oriented, Wireless Scenarios – Applications, Quality of Service – End to end level and network level solutions, LAN cabling topologies – Ethernet Switches, Routers, Firewalls and L3 switches – Remote Access Technologies and Devices – Modems and DSLs – SLIP and PPP – Core networks, and distribution networks.

**UNIT II WIRELESS NETWORKS**

9

IEEE802.16 and WiMAX – Security – Advanced 802.16 Functionalities – Mobile WiMAX -802.16e – Network Infrastructure – WLAN – Configuration – Management Operation – Security – IEEE 802.11e and WMM – QoS – Comparison of WLAN and UMTS – Bluetooth – Protocol Stack – Security – Profiles

**UNIT III CELLULAR NETWORKS**

9

GSM – Mobility Management and call control – GPRS – Network Elements – Radio Resource Management – Mobility Management and Session Management – Small Screen Web Browsing over GPRS and EDGE – MMS over GPRS – UMTS – Channel Structure on the Air Interface – UTRAN – Core and Radio Network Mobility Management – UMTS Security

**UNIT IV 4G NETWORKS**

9

LTE – Network Architecture and Interfaces – FDD Air Interface and Radio Networks – Scheduling – Mobility Management and Power Optimization – LTE Security Architecture – Interconnection with UMTS and GSM – LTE Advanced (3GPP Release 10) – 4G Networks and Composite Radio Environment – Protocol Boosters – Hybrid 4G Wireless Networks Protocols – Green Wireless Networks – Physical Layer and Multiple Access – Channel Modelling for 4G

**UNIT V SOFTWARE DEFINED NETWORKS**

9

Introduction – Centralized and Distributed Control and Data Planes – Open Flow – SDN Controllers – General Concepts – VLANs – NVGRE – Open Flow – Network Overlays – Types – Virtualization – Data Plane – I/O – Design of SDN Framework

**TOTAL : 45 PERIODS****OUTCOMES:**

Upon completion of this course, the students should be able to

- Identify the components required for designing a network
- Design a network at a high-level using different networking technologies
- Analyze the various protocols of wireless and cellular networks
- Discuss the features of 4G and 5G networks
- Experiment with software defined networks

**REFERENCES:**

*Ruani*  
**Dr.R.GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**

**OBJECTIVES:**

- To understand the architecture of embedded processor, microcontroller and peripheral devices.
- To interface memory and peripherals with embedded systems.
- To study the embedded network environment.
- To understand challenges in Real time operating systems.
- To study, analyze and design applications on embedded systems.

**UNIT I EMBEDDED PROCESSORS**

9

Embedded Computers - Characteristics of Embedded Computing Applications - Challenges in Embedded Computing System Design - Embedded System Design Process- Formalism for System Design - Structural Description - Behavioural Description - ARM Processor - Intel ATOM Processor.

**UNIT II EMBEDDED COMPUTING PLATFORM**

9

CPU Bus Configuration - Memory Devices and Interfacing - Input/Output Devices and Interfacing - System Design - Development and Debugging - Emulator - Simulator - JTAG Design Example - Alarm Clock - Analysis and Optimization of Performance - Power and Program Size.

**UNIT III EMBEDDED NETWORK ENVIRONMENT**

9

Distributed Embedded Architecture - Hardware And Software Architectures - Networks for Embedded Systems - I2C - CAN Bus - SHARC Link Supports - Ethernet - Myrinet - Internet - Network-based Design - Communication Analysis - System Performance Analysis - Hardware Platform Design - Allocation and Scheduling - Design Example - Elevator Controller.

**UNIT IV REAL-TIME CHARACTERISTICS**

9

Clock Driven Approach - Weighted Round Robin Approach - Priority Driven Approach - Dynamic versus Static Systems - Effective Release Times and Deadlines - Optimality of the Earliest Deadline First (EDF) Algorithm - Challenges in Validating Timing Constraints in Priority Driven Systems - Off-Line versus On-Line Scheduling.

**UNIT V SYSTEM DESIGN TECHNIQUES**

9

Design Methodologies - Requirement Analysis - Specification - System Analysis and Architecture Design - Quality Assurance - Design Examples - Telephone PBX - Ink jet printer - Personal Digital Assistants - Set-Top Boxes.

**TOTAL: 45 PERIODS****OUTCOME:****Upon completion of the course, the students should be able to**

- Understand different architectures of embedded processor, microcontroller and peripheral devices. Interface memory and peripherals with embedded systems.
- Work with embedded network environment.
- Understand challenges in Real time operating systems.
- Design and analyze applications on embedded systems.

**REFERENCES:**

1. Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things" Wiley Publication, First edition, 2013
2. Andrew N Sloss, D. Symes, C. Wright, "ARM system developers guide", MorganKauffman/Elsevier, 2006.
3. Arshdeep Bahga, Vijay Madisetti, "Internet of Things: A Hands-on-Approach" VPT First Edition, 2014
4. C. M. Krishna and K. G. Shin, "Real-Time Systems", McGraw-Hill, 1997
5. Frank Vahid and Tony Givargis, "Embedded System Design: A Unified Hardware/Software Introduction", John Wiley & Sons.
6. Jane W.S. Liu, "Real-Time systems", Pearson Education Asia.
7. Michael J. Pont, "Embedded C", Pearson Education, 2007.
8. Muhammad Ali Mazidi, Sarmad Naimi, Sepehr Naimi, "The AVR Microcontroller and Embedded Systems: Using Assembly and C" Pearson Education, First edition, 2014
9. Steve Heath, "Embedded System Design", Elsevier, 2005
10. Wayne Wolf, "Computers as Components: Principles of Embedded Computer System Design", Elsevier, 2006.

*Gweni*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**



**COMPLEX NETWORK THEORY FOR WIRELESS  
SENSOR NETWORKS**

PHASE II REPORT

*Submitted by*

**A.SHOBA**

(Register No: 621116405013)

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING  
IN  
Computer Science and Engineering**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Thesis titled "COMPLEX NETWORK THEORY FOR WIRELESS SENSOR NETWORKS" is the bonafide work of **A.SHOBA** (**Register No: 621116405013**) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.



SIGNATURE


Mr. S. JAYAPRAKASH M.E.,(Ph.D)  
 HEAD OF THE DEPARTMENT,  
 Assistant Professor,  
 Department of Computer Science and  
 Engineering  
 Idhaya Engg. College for Women,  
 Chinnasalem-606 201.



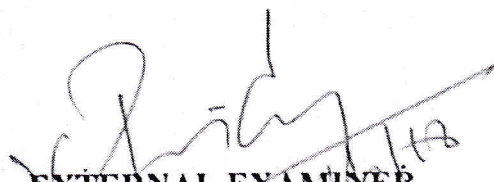
SIGNATURE

Mr.A.JosephSelvakumar, M.E.,  
 SUPERVISOR,  
 Assistant Professor,  
 Department of Information  
 Technology,  
 Idhaya Engg. College for Women,  
 Chinnasalem-606 201.


Submitted for the Project Phase II viva voice held on 11-06-2018



INTERNAL EXAMINER



EXTERNAL EXAMINER

  
 PRINCIPAL  
 Idhaya Engineering College for w.  
 Nainarpalaym Road, CHINNASALEM  
 Kallakurichi Taluk, Villupuram District.



## ABSTRACT

Due to the recent proliferation of cyber-attacks, improving the robustness of wireless sensor networks (WSNs), so that they can withstand node failures has become a critical issue. Scale-free WSNs are important, because they tolerate random attacks very well; however, they can be vulnerable to malicious attacks, which particularly target certain important nodes. Wireless sensor networks are mostly deployed in remote working environment. Our main objective is to increase the network lifetime and make it as incomplete connectivity into complete connectivity by using energy efficient clustering algorithm. To transmit the data, by using the probabilistic search optimization technique. Therefore a performance of network lifetime is increased by connected domination set and makes it as complete network.

  
PRINCIPAL

Madhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District

**MALWARE DETECTION OF GAME WITH MOBILE  
DEVICE USING CLOUD TECHNOLOGY**

PROJECT REPORT

*Submitted by*

**S. DEEPA**

(Register No: 621116405003)

*In partial fulfillment for the award of the degree of*

MASTER OF ENGINEERING

IN

Computer Science and Engineering



IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ANNA UNIVERSITY, CHENNAI

JUNE 2018



PRINCIPAL

Idhaya Engineering College for Women,  
Vainarpalaym Road, CHINNASALEM-621  
Kallakurichi Taluk, Villupuram District,



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Thesis titled "MALWARE DETECTION OF GAME WITH MOBILE DEVICE USING CLOUD TECHNOLOGY" is the bonafide work of Certified further that to the best of my knowledge the work reported herein **S.DEEPA(Register No: 621116405003)** who carried out the work under my supervision. Does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mr. S. JAYAPRAKASH M.E.,(Ph.D.)

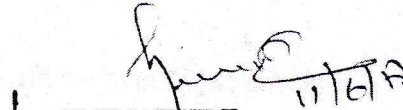
HEAD OF THE DEPARTMENT,

Assistant Professor,

Department of Computer Science and  
Engineering

Idhaya Engg. College for Women,

Chinnasalem-606 201.

  
SIGNATURE 11/6/18

MRS. P.MOHANAVALLI M.E.,

SUPERVISOR,

Assistant Professor,


Department of Computer Science  
and Engineering

Idhaya Engg. College for Women

Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER 11/6/18

  
EXTERNAL EXAMINER 11/6/18

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606 201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

As accurate malware detection on Mobile devices requires fast process of a large number of application traces, cloud-based malware detection can utilize the data sharing and powerful computational resources of security servers to improve the detection performance. In this project, I investigate the cloud-based malware detection game, in which Mobile devices offload their application traces to security servers via base stations or access points in dynamic networks. I derive the Nash equilibrium (NE) of the static malware detection game and present the existence condition of the NE, showing how Mobile devices share their application traces at the security server to improve the detection accuracy, and compete for the limited radio bandwidth, the computational and Communication resources of the server. I design a malware detection scheme with Q-learning for a Mobile device to derive the optimal offloading rate without knowing the trace generation and the radio bandwidth model of other Mobile devices. The detection Performance is further improved with the Dyna architecture, in which a Mobile device learns from the hypothetical experience to increase its convergence rate. We also design a post-decision state learning-based scheme that utilizes the known radio channel model to accelerate the reinforcement learning process in the malware detection. Simulation results show that the proposed schemes improve the detection accuracy, reduce the detection delay and increase the utility of a Mobile device in the dynamic malware detection game, compared with the benchmark strategy.

*[Handwritten Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To introduce students to the basic concepts and techniques of Machine Learning.
- To have a thorough understanding of the Supervised and Unsupervised learning techniques
- To study the various probability based learning techniques
- To understand graphical models of machine learning algorithms

**UNIT I INTRODUCTION 9**

Learning – Types of Machine Learning – Supervised Learning – The Brain and the Neuron – Design a Learning System – Perspectives and Issues in Machine Learning – Concept Learning Task – Concept Learning as Search – Finding a Maximally Specific Hypothesis – Version Spaces and the Candidate Elimination Algorithm – Linear Discriminants – Perceptron – Linear Separability – Linear Regression.

**UNIT II LINEAR MODELS 9**

Multi-layer Perceptron – Going Forwards – Going Backwards: Back Propagation Error – Multi-layer Perceptron in Practice – Examples of using the MLP – Overview – Deriving Back-Propagation – Radial Basis Functions and Splines – Concepts – RBF Network – Curse of Dimensionality – Interpolations and Basis Functions – Support Vector Machines.

**UNIT III TREE AND PROBABILISTIC MODELS 9**

Learning with Trees – Decision Trees – Constructing Decision Trees – Classification and Regression Trees – Ensemble Learning – Boosting – Bagging – Different ways to Combine Classifiers – Probability and Learning – Data into Probabilities – Basic Statistics – Gaussian Mixture Models – Nearest Neighbor Methods – Unsupervised Learning – K means Algorithms – Vector Quantization – Self Organizing Feature Map

**UNIT IV DIMENSIONALITY REDUCTION AND EVOLUTIONARY MODELS 9**

Dimensionality Reduction – Linear Discriminant Analysis – Principal Component Analysis – Factor Analysis – Independent Component Analysis – Locally Linear Embedding – Isomap – Least Squares Optimization – Evolutionary Learning – Genetic algorithms – Genetic Offspring: - Genetic Operators – Using Genetic Algorithms – Reinforcement Learning – Overview – Getting Lost Example – Markov Decision Process

**UNIT V GRAPHICAL MODELS 9**

Markov Chain Monte Carlo Methods – Sampling – Proposal Distribution – Markov Chain Monte Carlo – Graphical Models – Bayesian Networks – Markov Random Fields – Hidden Markov Models – Tracking Methods

**TOTAL: 45 PERIODS****OUTCOMES:**

**Upon completion of this course, the students will be able to:**

- Distinguish between, supervised, unsupervised and semi-supervised learning
- Apply the appropriate machine learning strategy for any given problem
- Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem
- Design systems that uses the appropriate graph models of machine learning
- Modify existing machine learning algorithms to improve classification efficiency

**REFERENCES:**

- 1 Ethem Alpaydin, —Introduction to Machine Learning 3e (Adaptive Computation and Machine Learning Series)I, Third Edition, MIT Press, 2014
- 2 Jason Bell, —Machine learning – Hands on for Developers and Technical ProfessionalsI, First Edition, Wiley, 2014
- 3 Peter Flach, —Machine Learning: The Art and Science of Algorithms that Make Sense of DataI, First Edition, Cambridge University Press, 2012.
- 4 Stephen Marsland, —Machine Learning — An Algorithmic PerspectiveI, Second Edition, Chapman and Hall/CRC Machine Learning and Pattern Recognition Series, 2014.

*R. Gurumani*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M.ISTE., F.I.E.;**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201. KALLAKURICHI DT.**

**CLOUD SECURITY ASSESSMENT MODEL FOR INFRASTRUCTURE**

**PROJECT REPORT**

*Submitted by*

**T.LEONILA**

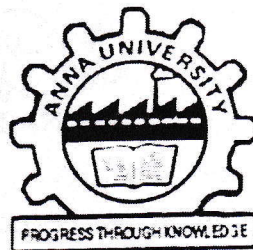
(Register No: 621116405009)

*In partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING**

**IN**

**Computer Science and Engineering**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,**

**CHINNASALEM**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*[Signature]*  
**PRINCIPAL**  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60626  
Hallakurichi Taluk, Villupuram District



ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Report titled "CLOUD SECURITY ASSESSMENT MODEL FOR INFRASTRUCTURE " is the bonafide work of **T.LEONILA** (621116405009) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.


  
SIGNATURE

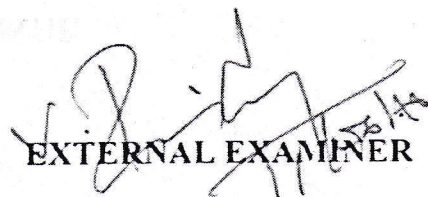
Mr.S.JAYAPRAKASH.,M.E.,(Ph.D)  
Head of the Department,  
Computer Science and Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem – 606201.

  
SIGNATURE

Ms.ABINAYA.,M.E.  
Assistant Professor,  
Computer Science and Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem – 606201.

Submitted for the Project Phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The vulnerability of cloud computing systems (CCSs) to advanced persistent threats (APTs) is a significant concern to government and industry. We present a cloud architecture reference model that incorporates a wide range of security controls and best practices, and a cloud security assessment model—Cloud-Trust—that estimates high level security metrics to quantify the degree of confidentiality and integrity offered by a CCS or cloud service provider (CSP). Cloud-Trust is used to assess the security level of four multi-tenant IaaS cloud architectures equipped with alternative cloud security controls. Results show the probability of CCS penetration (high value data compromise) is high if a minimal set of security controls are implemented. CCS penetration probability drops substantially if a cloud defense in depth security architecture is adopted that protects virtual machine (VM) images at rest, strengthens CSP and cloud tenant system administrator access controls, and which employs other network security controls to minimize cloud network surveillance and discovery of live VMs

*M. Mani*  
PRINCIPAL

Adhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-636  
Kallakurichi Taluk, Villupuram District



**ENHANCED STEGANOGRAPHY USING REVERSIBLE TEXTURE  
SYNTHESIS METHOD FOR EMBEDDING DATA**

PHASE II REPORT

*Submitted by*

**K.AMSAMANI**

( Register No: 621116405002 )

*in partial fulfilment for the award of the degree of*

MASTER OF ENGINEERING

IN

Computer Science and Engineering



IDHAYA ENGINEERING COLLEGE FOR WOMEN,

CHINNASALEM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ANNA UNIVERSITY, CHENNAI

JUNE 2018

ANNA UNIVERSITY, CHENNAI

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606 001,  
Kallakurichi Taluk, Villupuram District

## BONAFIDE CERTIFICATE

Certified that this Report titled **ENHANCED STEGANOGRAPHY USING REVERSIBLE TEXTURE SYNTHESIS METHOD FOR EMBEDDING DATA** is the bonafide work of **K.AMSAMANI** (621116405002) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

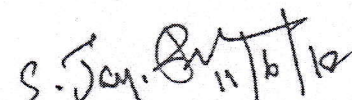
  
SIGNATURE

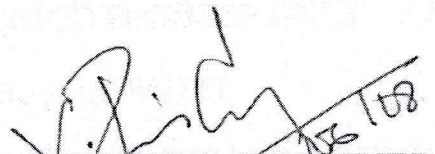
  
SIGNATURE-11/6/18


Mr.S.JAYAPRAKASH.,M.E.,(Ph.D)  
Head of the Department,  
Computer Science and Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem – 606201.

Mrs.K.GANDHIMATHI.,M.E.,  
Assistant Professor,  
Computer Science and Engineering,  
Idhaya Engg. College for Women,  
Chinnasalem – 606201.

Submitted for the Project Phase II viva voce held on 11:06:2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

This project proposes a novel approach for steganography using a reversible texture synthesis. A texture synthesis process resamples a smaller texture image, which synthesizes a new texture image with a similar local appearance and an arbitrary size. This project weaves the texture synthesis process into steganography to conceal secret messages. In contrast to using an existing cover image to hide messages, our algorithm conceals the source texture image and embeds secret messages through the process of texture synthesis. This allows us to extract the secret messages and source texture from a stego synthetic texture. This approach offers three distinct advantages. First, our scheme offers the embedding capacity that is proportional to the size of the stego texture image. Second, a steganalytic algorithm is not likely to defeat our steganographic approach. Third, the reversible capability inherited from our scheme provides functionality, which allows recovery of the source texture. Experimental results have verified that our proposed algorithm can provide various numbers of embedding capacities, produce a visually plausible texture images, and recover the source texture.

  
PRINCIPAL  
Sadhya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606211  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- To understand the fundamentals of Internet of Things
- To learn about the basics of IOT protocols
- To build a small low cost embedded system using Raspberry Pi.
- To apply the concept of Internet of Things in the real world scenario.

**UNIT I INTRODUCTION TO IoT**

9

Internet of Things - Physical Design- Logical Design- IoT Enabling Technologies - IoT Levels & Deployment Templates - Domain Specific IoTs - IoT and M2M - IoT System Management with NETCONF-YANG- IoT Platforms Design Methodology

**UNIT II IoT ARCHITECTURE**

9

M2M high-level ETSI architecture - IETF architecture for IoT - OGC architecture - IoT reference model - Domain model - information model - functional model - communication model - IoT reference architecture

**UNIT III IoT PROTOCOLS**

9

Protocol Standardization for IoT – Efforts – M2M and WSN Protocols – SCADA and RFID Protocols – Unified Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol – Modbus– Zigbee Architecture – Network layer – 6LowPAN - CoAP - Security

**UNIT IV BUILDING IoT WITH RASPBERRY PI & ARDUINO**

9

Building IOT with RASPBERRY PI- IoT Systems - Logical Design using Python – IoT Physical Devices & Endpoints - IoT Device -Building blocks -Raspberry Pi -Board - Linux on Raspberry Pi - Raspberry Pi Interfaces -Programming Raspberry Pi with Python - Other IoT Platforms - Arduino.

**UNIT V CASE STUDIES AND REAL-WORLD APPLICATIONS**

9

Real world design constraints - Applications - Asset management, Industrial automation, smartgrid, Commercial building automation, Smart cities - participatory sensing - Data Analytics for IoT – Software & Management Tools for IoT Cloud Storage Models & Communication APIs - Cloud for IoT - Amazon Web Services for IoT.

**TOTAL : 45 PERIODS****OUTCOMES:**

Upon completion of this course, the students should be able to:

- Analyze various protocols for IoT
- Develop web services to access/control IoT devices.
- Design a portable IoT using Raspberry Pi
- Deploy an IoT application and connect to the cloud.
- Analyze applications of IoT in real time scenario

**REFERENCES:**

1. Arshdeep Bahga, Vijay Madiseti, —Internet of Things – A hands-on approach, Universities Press, 2015
2. Dieter Uckelmann, Mark Harrison, Michahelles, Florian (Eds), —Architecting the Internet of Things, Springer, 2011.
3. Honbo Zhou, —The Internet of Things in the Cloud: A Middleware Perspective, CRC Press, 2012.
4. Jan Ho" ller, Vlasios Tsiatsis , Catherine Mulligan, Stamatis , Karnouskos, Stefan Avesand. David Boyle, "From Machine-to-Machine to the Internet of Things - Introduction to a New Age of Intelligence", Elsevier, 2014.
5. Olivier Hersent, David Boswarthick, Omar Elloumi , —The Internet of Things – Key applications and Protocols, Wiley, 2012

  
**PRINCIPAL**  
 Adhaya Engineering College for Women  
 Vainarpalayam Road, CHINNASALEM-606211  
 Kallakurichi Taluk, Villupuram District



**DETECTING MALWARE AND FINDING**

**RANKS IN GOOGLE PLAY**

PHASE II REPORT

*Submitted by*

**V.HEMALATHA**

(Register No: 621116405006)

*In partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING**

IN

**COMPUTER SCIENCE AND ENGINEERING**



**IDHAYA ENGINEERING COLLEGE FOR**

**WOMEN, CHINNASALEM**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

  
PRINCIPAL


Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-607  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

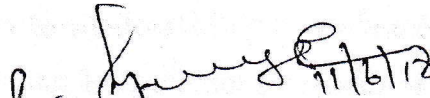
## BONAFIDE CERTIFICATE

Certified that this thesis report "SEARCH RANK FRAUD AND MALWARE DETECTION IN GOOGLE PLAY" is the bonafide work of **HEMALATHA.V**(621116405006) who carried out the work under my supervision.

Certified further that to the best of my knowledge the work report here in does not from part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.


  
SIGNATURE


Mr. S. JAYAPRAKASH M.E.,(Ph.D)  
HEAD OF THE DEPARTMENT,  
Assistant Professor,  
Department of Computer Science and  
Engineering  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.


  
SIGNATURE

Mr.S.JAYASUNDAR M.E.,(Ph.D)  
SUPERVISOR,  
Assistant Professor,  
Department of Information technology  
Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the project phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Fraudulent behaviors in Google Play, the most popular Android app market, fuel search rank abuse and malware proliferation. To identify malware, previous work has focused on app executable and permission analysis. In this paper, we introduce FairPlay, a novel system that discovers and leverages traces left behind by fraudsters, to detect both malware and apps subjected to search rank fraud. FairPlay correlates review activities and uniquely combines detected review relations with linguistic and behavioral signals gleaned from Google Play app data (87K apps, 2.9M reviews, and 2.4M reviewers, collected over half a year), in order to identify suspicious apps. FairPlay achieves over 95% accuracy in classifying gold standard datasets of malware, fraudulent and legitimate apps. We show that 75% of the identified malware apps engage in search rank fraud. FairPlay discovers hundreds of fraudulent apps that currently evade Google Bouncer's detection technology. FairPlay also helped the discovery of more than 1,000 reviews, reported for 193 apps, that reveal a new type of "coercive" review campaign: users are harassed into writing positive reviews, and install and review other apps.



PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-646  
Kallakurichi Taluk, Villupuram District

**STRUCTURAL VIEW ON EDUCATIONAL  
SYSTEM USING DATA MINING**

PROJECT REPORT

*Submitted by*

**M.KALAIVANI**

(Register No: 621116405007)

*In partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING**

IN

**Computer Science and Engineering**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,**

**CHINNASALEM**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-621116  
Kallakurichi Taluk, Villupuram District



# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this thesis report "STRUCTURAL VIEW ON EDUCATIONAL DATA MINING" is the bonafide work of who carried out the work under my supervision. Certified further that to the best of my knowledge the work report here in **M.KALAIVANI** (Reg no: 621116405007) does not from part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mr.S.JAYAPRAKASH, M.E.,(Ph.D.)

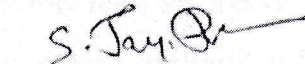
HEAD OF THE DEPARTMENT,

Assistant professor,

Department of computer science and  
and Engineering

Idhaya Engg. College for Women

Chinnasalem-606 201.

  
SIGNATURE

Mrs.P.SUMATHI, M.E.,

SUPERVISOR,

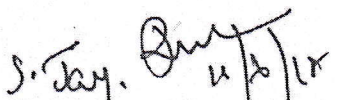
Assistant professor,

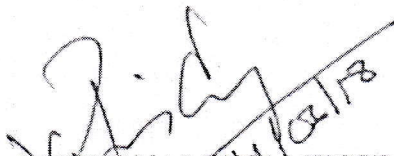
Department of computer science and  
and Engineering

Idhaya Engg. College for Women,

Chinnasalem-606 201.

Submitted for the project phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606 201  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

Presently educational institutions compile and store huge volumes of data such as student enrolment and attendance records, as well as their examination results. Mining such data yields stimulating information that serves its handlers well. Rapid growth in educational data points to the fact that distilling massive amounts of data requires a more sophisticated set of algorithms. This issue led to the emergence of the field of Educational Data Mining (EDM). Traditional data mining algorithms cannot be directly applied to educational problems, as they may have a specific objective and function. This implies that a preprocessing algorithm has to be enforced first and only then some specific data mining methods can be applied to the problems. One such preprocessing algorithm in EDM is Clustering. Many studies on EDM have focused on the application of various data mining algorithms to educational attributes. Therefore, this project provides over three decades long systematic literature review on clustering algorithm and its applicability and usability in the context of EDM. Future insights are outlined based on the literature reviewed, and avenues for further research are identified.

  
PRINCIPAL  
Sri Jayadeva Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606202  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To understand the competitive advantages of big data analytics
- To understand the big data frameworks
- To learn data analysis methods
- To learn stream computing
- To gain knowledge on Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data analytics

**UNIT I****INTRODUCTION TO BIG DATA**

7

Big Data – Definition, Characteristic Features – Big Data Applications - Big Data vs Traditional Data - Risks of Big Data - Structure of Big Data - Challenges of Conventional Systems - Web Data – Evolution of Analytic Scalability - Evolution of Analytic Processes, Tools and methods - Analysis vs Reporting - Modern Data Analytic Tools

**UNIT II****HADOOP FRAMEWORK**

9

Distributed File Systems - Large-Scale File System Organization – HDFS concepts - MapReduce Execution, Algorithms using MapReduce, Matrix-Vector Multiplication – Hadoop YARN

**UNIT III****DATA ANALYSIS**

13

Statistical Methods: Regression modelling, Multivariate Analysis - Classification: SVM & Kernel Methods - Rule Mining - Cluster Analysis, Types of Data in Cluster Analysis, Partitioning Methods, Hierarchical Methods, Density Based Methods, Grid Based Methods, Model Based Clustering Methods, Clustering High Dimensional Data - Predictive Analytics – Data analysis using R.

**UNIT IV****MINING DATA STREAMS**

7

Streams: Concepts – Stream Data Model and Architecture - Sampling data in a stream - Mining Data Streams and Mining Time-series data - Real Time Analytics Platform (RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions.

**UNIT V****BIG DATA FRAMEWORKS**

9

Introduction to NoSQL – Aggregate Data Models – Hbase: Data Model and Implementations – Hbase Clients – Examples – Cassandra: Data Model – Examples – Cassandra Clients – Hadoop Integration. Pig – Grunt – Pig Data Model – Pig Latin – developing and testing Pig Latin scripts. Hive – Data Types and File Formats – HiveQL Data Definition – HiveQL Data Manipulation – HiveQL Queries

**TOTAL: 45 PERIODS****OUTCOMES:**

At the end of this course, the students will be able to:

- Understand how to leverage the insights from big data analytics
- Analyze data by utilizing various statistical and data mining approaches
- Perform analytics on real-time streaming data
- Understand the various NoSQL alternative database models

**REFERENCES:**

1. Bill Franks, —Taming the Big Data Tidal Wave: Finding Opportunities in Huge DataStreams with Advanced Analytics, Wiley and SAS Business Series, 2012.
2. David Loshin, "Big Data Analytics: From Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph", 2013.
3. Michael Berthold, David J. Hand, —Intelligent Data Analysis, Springer, Second Edition, 2007.
4. Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley, 2013.
5. P. J. Sadalage and M. Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence", Addison-Wesley Professional, 2012.
6. Richard Cotton, "Learning R – A Step-by-step Function Guide to Data Analysis, , O'Reilly Media, 2013.

*Principals*  
**PRINCIPAL**  
 Vidhya Engineering College for Women  
 Mainarpalayam Road, CHINNASALEM-606201  
 Kallakurichi Taluk, Villupuram District

**IMPROVING PERFORMANCES OF COLOUR TO  
GRAY CONVERSION IN DOCUMENT IMAGE  
BINARIZATION**

**A THESIS**

*Submitted by*

**SINDHU BHARATHI.G**

(Register NO:621116405014)

*In partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING  
IN  
COMPUTER SCIENCE AND ENGINEERING**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,**

**CHINNASALEM**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*[Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-626 001  
Kallakurichi Taluk, Villupuram District



ANNA UNIVERSITY, CHENNAI

BONAFIDE CERTIFICATE

Certified that this Project report titled "IMPROVING PERFORMANCES OF COLOUR TO GRAY CONVERSION IN DOCUMENT IMAGE BINARIZATION" is the bonafide work of **SINDHU BHARATHI.G**(621116405014)who carried out the research under my supervision.Certified further, that to the best of my knowledge the work reported here in does not from part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mr.S.JAYAPRAKASH, M.E.,(Ph.D)

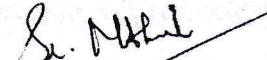
HEAD OF THE DEPARTMENT,

Assistant Professor,

Department Of CSE,

Idhaya Engg.College for women,

Chinnasalem-606 201

  
SIGNATURE

Sr.I.MARIA ANAND MILANI M.E

SUPERVISOR,


Assistant Professor,

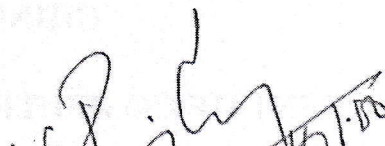
Department of CSE,

Idhaya Engg College for women,

Chinnasalem-606 201

Submitted for the Project Phase-II Viva-Voce held on 11-06-2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL  
Idhaya Engineering College for women,  
Vainarpalaym Road, CHINNASALEM,  
Kallakurichi Taluk, Villupuram District.

## ABSTRACT

Historical documents have its own importance in the social sciences and humanities. They are the memory of human cultures, their history, their achievements, their lifestyles and their individual and social behaviors. The ancient documents do not have multiple copies ,each one is unique. Hence it is mandatory to preserve the ancient documents. It is difficult to extract the text from the document that is affected by physiological factors such as noise, dust which leads to degradation. Some of the existing techniques to retrieve the data from documents are color to gray conversion, otsu method and sauvolo binarization. To improve the resolution of the image three step approach is used in the proposed system. The approaches are mean-shift algorithm, weighed encoding algorithm and discrete wavelet transform. These techniques when combined together extract the data from the degraded document more efficiently than the previous techniques.

  
PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-60621  
Kallakurichi Taluk, Villupuram District



**OBJECTIVES:**

- To understand the concepts of virtualization and virtual machines
- To gain expertise in server, network and storage virtualization.
- To understand and deploy practical virtualization solutions and enterprise solutions
- To gain knowledge on the concept of virtualization that is fundamental to cloud computing
- To understand the various issues in cloud computing
- To be able to set up a private cloud
- To understand the security issues in the grid and the cloud environment

**UNIT I VIRTUALIZATION 9**

Basics of Virtual Machines - Process Virtual Machines – System Virtual Machines – Emulation – Interpretation – Binary Translation - Taxonomy of Virtual Machines. Virtualization – Management Virtualization – Hardware Maximization – Architectures – Virtualization Management – Storage Virtualization – Network Virtualization

**UNIT II VIRTUALIZATION INFRASTRUCTURE 9**

Comprehensive Analysis – Resource Pool – Testing Environment – Server Virtualization – Virtual Workloads – Provision Virtual Machines – Desktop Virtualization – Application Virtualization – Implementation levels of virtualization – virtualization structure – virtualization of CPU, Memory and I/O devices – virtual clusters and Resource Management – Virtualization for data center automation.

**UNIT III CLOUD PLATFORM ARCHITECTURE 9**

Cloud deployment models: public, private, hybrid, community – Categories of cloud computing: Everything as a service: Infrastructure, platform, software- A Generic Cloud Architecture Design – Layered cloud Architectural Development – Virtualization Support and Disaster Recovery – Architectural Design Challenges - Public Cloud Platforms : GAE, AWS – Inter-cloud Resource Management

**UNIT IV PROGRAMMING MODEL 9**

Introduction to Hadoop Framework - Mapreduce, Input splitting, map and reduce functions, specifying input and output parameters, configuring and running a job – Developing Map Reduce Applications - Design of Hadoop file system – Setting up Hadoop Cluster - Cloud Software Environments - Eucalyptus, Open Nebula, Open Stack, Nimbus

**UNIT V CLOUD SECURITY 9**

Cloud Infrastructure security: network, host and application level – aspects of data security, provider data and its security, Identity and access management architecture, IAM practices in the cloud, SaaS, PaaS, IaaS availability in the cloud - Key privacy issues in the cloud – Cloud Security and Trust Management

**TOTAL : 45 PERIODS****OUTCOMES:**

**Upon completion of this course, the students should be able to:**

- Employ the concepts of storage virtualization, network virtualization and its management
- Apply the concept of virtualization in the cloud computing
- Identify the architecture, infrastructure and delivery models of cloud computing
- Develop services using Cloud computing
- Apply the security models in the cloud environment

**REFERENCES:**

1. Danielle Ruest, Nelson Ruest, —Virtualization: A Beginner's Guide, McGraw-Hill Osborne Media, 2009.
2. Jim Smith, Ravi Nair, "Virtual Machines: Versatile Platforms for Systems and Processes", Elsevier/Morgan Kaufmann, 2005
3. John W. Rittinghouse and James F. Ransome, "Cloud Computing: Implementation, Management, and Security", CRC Press, 2010.
4. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, "Distributed and Cloud Computing, From Parallel Processing to the Internet of Things", Morgan Kaufmann Publishers, 2012.
5. Tim Mather, Subra Kumaraswamy, and Shahed Latif, "Cloud Security and Privacy", O'Reilly Media, Inc., 2009.
6. Toby Velte, Anthony Velte, Robert Elsenpeter, "Cloud Computing, A Practical Approach", McGraw-Hill Osborne Media, 2009.

**A METHOD FOR DETECTING AND FILTERING DRIFTED  
TWITTER SPAM USING STATISTICAL FEATURES**

**PHASE II REPORT**

*Submitted by*

**S. ROJA**

(Register No: 621116405011)

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING**

**IN**

**Computer Science and Engineering**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,**

**CHINNASALEM**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Principals*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalaym Road, CHINNASALEM-606201  
Kallakurichi Taluk, Villupuram District



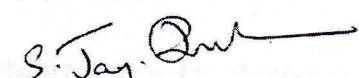
# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Thesis titled "A METHOD FOR DETECTING AND FILTERING DRITED TWITTER SPAM USING STASISTICAL FEATURES" is the bonafide work of **S.ROJA (Register No: 621116405011)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.


  
SIGNATURE

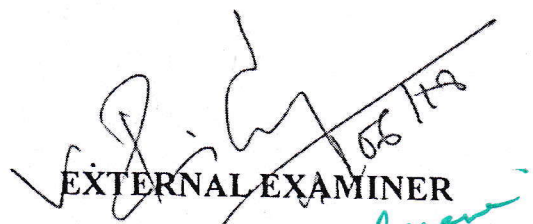
Mr. S. JAYAPRAKASH M.E.,(PhD)  
HEAD OF THE DEPARTMENT,  
Department of Computer Science and  
Engineering  
Idhaya Egg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Mr. S. JAYAPRAKASH M.E.,(PhD)  
SUPERVISOR,  
Department of Computer  
Science and Engineering  
Idhaya Egg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.18

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

PRINCIPAL  
Idhaya Engineering College for Women,  
Vainarpalaym Road, CHINNASALEM-606,  
Kallakurichi Taluk, Villupuram District

## ABSTRACT

The article gives an overview of some of the most popular Machine Learning methods (Bayesian classification, k-NN, ANNs, SVMs) and of their applicability to the problem of spam-filtering. Brief descriptions of the algorithms are presented, which are meant to be understandable by a reader not familiar with them before. A most trivial sample implementation of the named techniques was made by the author, and the comparison of their performance on the PU1 spam corpus is presented. Finally, some ideas are given of how to construct a practically useful spam filter using the discussed techniques. The article is related to the author's first attempt of applying the machine-learning techniques in practice, and may therefore be of interest primarily to those getting acquainted with machine-learning.



PRINCIPAL

Idhaya Engineering College for Women  
Nainarpalaym Road, CHINNASALEM-606 101  
Kallakurichi Taluk, Villupuram District



P-785

**MULTI-KEYWORD TOP-K SEARCH OVER  
ENCRYPTED DATA**

PROJECT REPORT

*Submitted by*

**T. SUDHA**

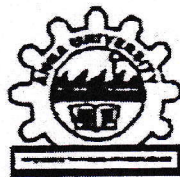
(Register No: 621116405015)

*in partial fulfillment for the award of the degree of*

MASTER OF ENGINEERING

IN

Computer Science and Engineering



IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

ANNA UNIVERSITY:CHENNAI-600 025

JUNE 2018

*[Handwritten Signature]*  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM  
Kallakurichi Taluk, Villupuram District

# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this project report "MULTI-KEYWORD TOP-K SEARCH OVER ENCRYPTED DATA" is the bonafide work of **T.SUDHA** (Register No: 621116405015) who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mr. S. JAYAPRAKASH M.E.,(Ph.D)

HEAD OF THE DEPARTMENT,

Assistant Professor,

Department of Computer Science and  
Engineering

Idhaya Engg. College for Women,  
Chinnasalem-606 201.

  
SIGNATURE

Sr. C. Jansi Sophia Mary M.E.,

SUPERVISOR,

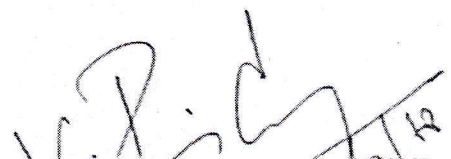
Assistant Professor,

Department of Computer Science and  
Engineering

Idhaya Engg. College for Women,  
Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.6.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606 201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Data sets in many applications contains sensitive information like e-mails, electronic health records and financial transaction records, when the data owner outsourcing such sensitive data to the cloud servers which are considered to be partially trusted. Hence the Data Owners need effective, scalable and privacy-preserving services before releasing their data to the cloud. The Data Owner constructs an encrypted searchable index and outsources both the encrypted document collection and the encrypted searchable index to cloud, and shares the secret key of trapdoor generation and document decryption to authorized data users with secure channels. The Data User generates the Trapdoor to search and then submits the trapdoor to cloud server for query processing. The Cloud Server process the query, calculates the relevance scores between trapdoor and the documents in index and returns documents using Multi-keyword Top-k Search using Random Traversal Algorithm with the highest scores to the Data User.

  
PRINCIPAL

Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606001,  
Kallakurichi Taluk, Villupuram District

**OBJECTIVES:**

- Understand system requirements for mobile applications.
- Generate suitable design using specific mobile development frameworks.
- Generate mobile application design.
- Implement the design using specific mobile development frameworks.
- Deploy the mobile applications in marketplace for distribution.

**UNIT I INTRODUCTION 5**

Introduction to mobile applications – Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications.

**UNIT II BASIC DESIGN 8**

Introduction – Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures – Achieving quality constraints – performance, usability, security, availability and modifiability.

**UNIT III ADVANCED DESIGN 8**

Designing applications with multimedia and web access capabilities – Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications.

**UNIT IV ANDROID 12**

Introduction – Establishing the development environment – Android architecture – Activities and views – Interacting with UI – Persisting data using SQLite – Packaging and deployment – Interaction with server side applications – Using Google Maps, GPS and Wifi – Integration with social media applications.

**UNIT V IOS 12**

Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi - iPhone marketplace.

**TOTAL :45 PERIODS****OUTCOMES:****Upon completion of the course, the students should be able to:**

- Describe the requirements for mobile applications.
- Explain the challenges in mobile application design and development.
- Develop design for mobile applications for specific requirements.
- Implement the design using Android SDK.
- Implement the design using Objective C and iOS.
- Deploy mobile applications in Android and iPhone marketplace for distribution.

*Ramani*  
**Dr. R. GURUMANI, M.E., Ph.D., M.B.A., M. ISTE., F.I.E.,**  
**PRINCIPAL**  
**IDHAYA ENGG. COLLEGE FOR WOMEN**  
**CHINNASALEM-606 201, KALLAKURICHI DT.**



**PREDICTING WORKFLOW TASK EXECUTION TIME IN THE  
CLOUD**

**PHASE II REPORT**

*Submitted by*

**G.MEENA**

(Register No: 621116405010)

*in partial fulfillment for the award of the degree of*

**MASTER OF ENGINEERING**

**IN**

**Computer Science and Engineering**



**IDHAYA ENGINEERING COLLEGE FOR WOMEN,  
CHINNASALEM  
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
ANNA UNIVERSITY, CHENNAI**

**JUNE 2018**

*Meena*  
**PRINCIPAL**  
Idhaya Engineering College for Women,  
Nainarpalaym Road, CHINNASALEM-606201,  
Kallakurichi Taluk, Villupuram District

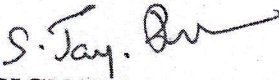
# ANNA UNIVERSITY, CHENNAI

## BONAFIDE CERTIFICATE

Certified that this Thesis titled "PREDICTING WORKFLOW TASK EXECUTION TIME IN THE CLOUD" is the bonafide work of **G.MEENA**

(Register No: 621116405010) who carried out the work under my supervision.

Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

  
SIGNATURE

Mr. S. JAYAPRAKASH M.E.,(PhD)

HEAD OF THE DEPARTMENT,

Assistant Professor,

Department of Computer Science and  
Engineering

Idhaya Egg. College for Women,

Chinnasalem-606 201.

  
SIGNATURE

Mr. S.PRABAKARAN M.E.,

SUPERVISOR,

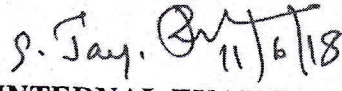
Assistant Professor,

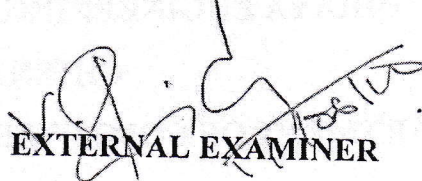
Department of Computer  
Science and Engineering

Idhaya Egg. College for Women,

Chinnasalem-606 201.

Submitted for the Project Phase II viva voce held on 11.06.2018

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER

  
PRINCIPAL

Idhaya Engineering College for Women  
Vainarpalayam Road, CHINNASALEM-606 201  
Kallakurichi Taluk, Villupuram District



## ABSTRACT

Industries and individuals outsource database to realize convenient and low-cost applications and services. In order to provide sufficient functionality for queries, many Task execution time schemes have been proposed. However, such schemes are vulnerable to privacy leakage to cloud server. The main reason is that database is hosted and processed in cloud server, which is beyond the control of data owners. For the numerical range query (“>”, “<”, etc.), those schemes cannot provide sufficient privacy protection against practical challenges, e.g., privacy leakage of statistical properties, access pattern. Furthermore, increased number of queries will inevitably leak more information to the cloud server. In this paper, we propose a two-stage machine learning architecture for Task execution time, with a series of intersection protocols that provide privacy preservation to various numeric- related range queries. Security analysis shows that privacy of numerical information is strongly protected against cloud providers in our proposed scheme.

**M.E-COMPUTER SCIENCE  
ENGINEERING**