

**B.TECH – INFORMATION TECHNOLOGY**

S.NO	Name of the course that include experiential learning through Project work/ Internship
1	CS6202- Programming and Data Structures I
2	CS6301- Programming and Data Structures II
3	CS6001- C# and .NET Programming
4	CS6703- Grid and Cloud Computing
5	IT6601- Mobile Computing
6	CS6551- Computer Networks
7	CS6659 - Artificial Intelligence
8	CS6701 - Cryptography and Network Security
9	IT6702- Data warehousing and Data mining
10	IT6503- Web Programming
11	CS6008 - Human Computer Interaction
12	IT6701 - Information Management
13	IT6004 -Software Testing
14	IT6801- Service Oriented Architecture
15	EC6504- Microprocessor and Microcontroller
16	CS6502- Object Oriented Analysis and Design
17	CS6402- Design and Analysis of Algorithms

  
**PRINCIPAL**  
**MOHAMED SATHAK A.J.COLLEGE OF ENGINEERING**  
34, Rajiv Gandhi Road (OMR), Siruseri, IT Park  
Chennai-603 103.

OBJECTIVES:

The student should be made to:

- Be familiar with the basics of C programming language.
- Be exposed to the concepts of ADTs
- Learn linear data structures - list, stack, and queue.
- Be exposed to sorting, searching, hashing algorithms

UNIT I C PROGRAMMING FUNDAMENTALS- A REVIEW 9

Conditional statements - Control statements - Functions - Arrays - Preprocessor - Pointers - Variation in pointer declarations - Function Pointers - Function with Variable number of arguments

UNIT II C PROGRAMMING ADVANCED FEATURES 9

Structures and Unions - File handling concepts - File read - write - binary and Stdio - File Manipulations

UNIT III LINEAR DATA STRUCTURES - LIST 9

Abstract Data Types (ADTs) - List ADT - array-based implementation - linked list implementation - singly linked lists- circularly linked lists- doubly-linked lists - applications of lists -Polynomial Manipulation - All operation (Insertion, Deletion, Merge, Traversal)

UNIT IV LINEAR DATA STRUCTURES - STACKS, QUEUES 9

Stack ADT - Evaluating arithmetic expressions- other applications- Queue ADT - circular queue implementation - Double ended Queues - applications of queues

UNIT V SORTING, SEARCHING AND HASH TECHNIQUES 9

Sorting algorithms: Insertion sort - Selection sort - Shell sort - Bubble sort - Quick sort - Merge sort - Radix sort - Searching: Linear search -Binary Search Hashing: Hash Functions - Separate Chaining - Open Addressing - Rehashing - Extendible Hashing.

TOTAL: 45 PERIODS

OUTCOMES:

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

- Use the control structures of C appropriately for problems.
- Implement abstract data types for linear data structures.
- Apply the different linear data structures to problem solutions.
- Critically analyse the various algorithms.

TEXT BOOKS:

1. Brian W. Kernighan and Dennis M. Ritchie, "The C Programming Language", 2<sup>nd</sup> Edition, Pearson Education, 1988.
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", 2<sup>nd</sup> Edition, Pearson Education, 1997.

REFERENCES:

1. Thomas H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Clifford Stein, "Introduction to Algorithms", Second Edition, Mcgraw Hill, 2002.
2. Reema Thareja, "Data Structures Using C", Oxford University Press, 2011
3. Aho, Hopcroft and Ullman, "Data Structures and Algorithms", Pearson Education, 1983.
4. Stephen G. Kochan, "Programming in C", 3rd edition, Pearson Ed.,

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MOHAMMED SAIFUL J. COLLEGE OF ENGINEERING  
EGATTUR 603 103.  
KANCHIPURAM DT.



**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

**UNIT I OBJECT ORIENTED PROGRAMMING FUNDAMENTALS**

9

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.

**UNIT II OBJECT ORIENTED PROGRAMMING CONCEPTS**

9

String Handling - Copy Constructor - Polymorphism - compile time and run time polymorphisms - function overloading - operators overloading - dynamic memory allocation - Nested classes - Inheritance - virtual functions.

**UNIT III C++ PROGRAMMING ADVANCED FEATURES**

9

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.

**UNIT IV ADVANCED NON-LINEAR DATA STRUCTURES**

9

AVL trees - B-Trees - Red-Black trees - Splay trees - Binomial Heaps - Fibonacci Heaps - Disjoint Sets - Amortized Analysis - accounting method - potential method - aggregate analysis.

**UNIT V GRAPHS**

9

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.

**OUTCOMES:**

TOTAL: 45 PERIODS

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

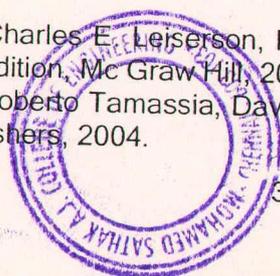
- Design problem solutions using Object Oriented Techniques.
- Apply the concepts of data abstraction, encapsulation and inheritance for problem solutions.
- Use the control structures of C++ appropriately.
- Critically analyse the various algorithms.
- Apply the different data structures to problem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



**OBJECTIVES:**

The student should be made to:

- Understand the foundations of CLR execution.
- Learn the technologies of the .NET framework.
- Know the object oriented aspects of C#.
- Be aware of application development in .NET.
- Learn web based applications on .NET (ASP.NET).

**UNIT I INTRODUCTION TO C#**

9

Introducing C#, Understanding .NET, overview of C#, Literals, Variables, Data Types, Operators, checked and unchecked operators, Expressions, Branching, Looping, Methods, implicit and explicit casting, Constant, Arrays, Array Class, Array List, String, String Builder, Structure, Enumerations, boxing and unboxing.

**UNIT II OBJECT ORIENTED ASPECTS OF C#**

9

Class, Objects, Constructors and its types, inheritance, properties, indexers, index overloading, polymorphism, sealed class and methods, interface, abstract class, abstract and interface, operator overloading, delegates, events, errors and exception, Threading.

**UNIT III APPLICATION DEVELOPMENT ON .NET**

9

Building windows application, Creating our own window forms with events and controls, menu creation, inheriting window forms, SDI and MDI application, Dialog Box (Modal and Modeless), accessing data with ADO.NET, DataSet, typed dataset, Data Adapter, updating database using stored procedures, SQL Server with ADO.NET, handling exceptions, validating controls, windows application configuration.

**UNIT IV WEB BASED APPLICATION DEVELOPMENT ON .NET**

9

Programming web application with web forms, ASP.NET introduction, working with XML and .NET, Creating Virtual Directory and Web Application, session management techniques, web.config, web services, passing datasets, returning datasets from web services, handling transaction, handling exceptions, returning exceptions from SQL Server.

**UNIT V CLR AND .NET FRAMEWORK**

9

Assemblies, Versioning, Attributes, reflection, viewing meta data, type discovery, reflection on type, marshalling, remoting, security in .NET

TOTAL: 45 PERIODS

**OUTCOMES:**

After completing this course, the student will be able to:

- List the major elements of the .NET framework
- Explain how C# fits into the .NET platform.
- Analyze the basic structure of a C# application
- Debug, compile, and run a simple application.
- Develop programs using C# on .NET
- Design and develop Web based applications on .NET
- Discuss CLR.



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**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**  
EGATTUR-603 103.  
KANCHIPURAM DT.

**TEXT BOOKS:**

1. Herbert Schildt, "The Complete Reference: C# 4.0", Tata Mc Graw Hill, 2012.
2. Christian Nagel et al. "Professional C# 2012 with .NET 4.5", Wiley India, 2012.



**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**

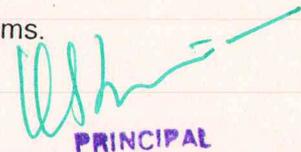
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Trust models for Grid security environment - Authentication and Authorization methods - Grid security infrastructure - Cloud Infrastructure security: network, host and application level - aspects of data security, provider data and its security, Identity 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.

  
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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANNIYAKUMARI DIST.

**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.



IT6601

MOBILE COMPUTING

LT PC 3003

**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**

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 – Reservation Based Schemes.

9

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

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.

9

**UNIT III MOBILE TELECOMMUNICATION SYSTEM**

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

9

**UNIT IV MOBILE AD-HOC NETWORKS**

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.

9

**UNIT V MOBILE PLATFORMS AND APPLICATIONS**

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.

9

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.

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR 603103.  
KANCHIPURAM DT.

**TEXT BOOK:**

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



**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

**UNIT I FUNDAMENTALS & LINK LAYER 9**

Building a network - Requirements - Layering and protocols - Internet Architecture - Network software - Performance ; Link layer Services - Framing - Error Detection - Flow control

**UNIT II MEDIA ACCESS & INTERNETWORKING 9**

Media access control - Ethernet (802.3) - Wireless LANs - 802.11 - Bluetooth - Switching and bridging - Basic Internetworking (IP, CIDR, ARP, DHCP, ICMP)

**UNIT III ROUTING 9**

Routing (RIP, OSPF, metrics) - Switch basics - Global Internet (Areas, BGP, IPv6), Multicast - addresses - multicast routing (DVMRP, PIM)

**UNIT IV TRANSPORT LAYER 9**

Overview of Transport layer - UDP - Reliable byte stream (TCP) - Connection management - Flow control - Retransmission - TCP Congestion control - Congestion avoidance (DECbit, RED) - QoS - Application requirements

**UNIT V APPLICATION LAYER 9**

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.



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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
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**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.

**UNIT I INTRODUCTION TO AI AND PRODUCTION SYSTEMS**

9

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.

**UNIT II REPRESENTATION OF KNOWLEDGE**

9

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.

**UNIT III KNOWLEDGE INFERENCE**

9

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.

**UNIT IV PLANNING AND MACHINE LEARNING**

9

Basic plan generation systems - Strips -Advanced plan generation systems - K strips -Strategic explanations -Why, Why not and how explanations. Learning- Machine learning, adaptive Learning.

**UNIT V EXPERT SYSTEMS**

9

Expert systems - Architecture of expert systems, Roles of expert systems - Knowledge Acquisition - Meta knowledge, Heuristics. Typical expert systems - MYCIN, DART, XOOM, 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 II)

**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.



**OBJECTIVES:**

The student should be made to:

- Understand OSI security architecture and classical encryption techniques.
- Acquire fundamental knowledge on the concepts of finite fields and number theory.
- Understand various block cipher and stream cipher models.
- Describe the principles of public key cryptosystems, hash functions and digital signature.

**UNIT I INTRODUCTION & NUMBER THEORY**

10

Services, Mechanisms and attacks-the OSI security architecture-Network security model-Classical Encryption techniques (Symmetric cipher model, substitution techniques, transposition techniques, steganography).FINITE FIELDS AND NUMBER THEORY: Groups, Rings, Fields-Modular arithmetic-Euclid's algorithm-Finite fields- Polynomial Arithmetic -Prime numbers-Fermat's and Euler's theorem-Testing for primality -The Chinese remainder theorem- Discrete logarithms.

**UNIT II BLOCK CIPHERS & PUBLIC KEY CRYPTOGRAPHY**

10

Data Encryption Standard-Block cipher principles-block cipher modes of operation-Advanced Encryption Standard (AES)-Triple DES-Blowfish-RC5 algorithm. **Public key cryptography:** Principles of public key cryptosystems-The RSA algorithm-Key management - Diffie Hellman Key exchange-Elliptic curve arithmetic-Elliptic curve cryptography.

**UNIT III HASH FUNCTIONS AND DIGITAL SIGNATURES**

8

Authentication requirement - Authentication function - MAC - Hash function - Security of hash function and MAC -MD5 - SHA - HMAC - CMAC - Digital signature and authentication protocols - DSS - El Gamal - Schnorr.

**UNIT IV SECURITY PRACTICE & SYSTEM SECURITY**

8

Authentication applications - Kerberos - X.509 Authentication services - Internet Firewalls for Trusted System: Roles of Firewalls - Firewall related terminology- Types of Firewalls - Firewall designs - SET for E-Commerce Transactions. Intruder - Intrusion detection system - Virus and related threats - Countermeasures - Firewalls design principles - Trusted systems - Practical implementation of cryptography and security.

**UNIT V E-MAIL, IP & WEB SECURITY**

9

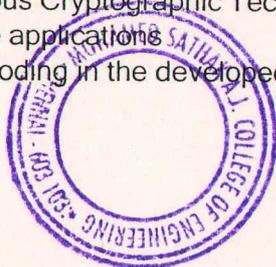
**E-mail Security:** Security Services for E-mail-attacks possible through E-mail - establishing keys privacy-authentication of the source-Message Integrity-Non-repudiation-Pretty Good Privacy-S/MIME. **IPSecurity:** Overview of IPSec - IP and IPv6-Authentication Header-Encapsulation Security Payload (ESP)-Internet Key Exchange (Phases of IKE, ISAKMP/IKE Encoding). **Web Security:** SSL/TLS Basic Protocol-computing the keys- client authentication-PKI as deployed by SSLAttacks fixed in v3-Exportability-Encoding-Secure Electronic Transaction (SET).

TOTAL: 45 PERIODS

**OUTCOMES:**

Upon Completion of the course, the students should be able to:

- Compare various Cryptographic Techniques
- Design Secure applications
- Inject secure coding in the developed applications



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EGATTUR-603103.  
KANCHIPURAM DT.

**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.
- Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
- Develop meaningful user interface.

**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).
3. Bill Scott and Theresa Neil, "Designing Web Interfaces", First Edition, O'Reilly, 2009.(UNIT-V).



IT6702

## DATA WAREHOUSING AND DATA MINING

LT PC 3 (

### OBJECTIVES:

The student should be made to:

- Be familiar with the concepts of data warehouse and data mining,
- Be acquainted with the tools and techniques used for Knowledge Discovery in Databases.

### UNIT I DATA WAREHOUSING

Data warehousing Components – Building a Data warehouse – Mapping the Data Warehouse to a Multiprocessor Architecture – DBMS Schemas for Decision Support – Data Extraction, Cleanup, and Transformation Tools – Metadata.

9

### UNIT II BUSINESS ANALYSIS

Reporting and Query tools and Applications – Tool Categories – The Need for Applications – Cognos Impromptu – Online Analytical Processing (OLAP) – Need – Multidimensional Data Model – OLAP Guidelines – Multidimensional versus Multirelational OLAP – Categories of Tools – OLAP Tools and the Internet.

9

### UNIT III DATA MINING

Introduction – Data – Types of Data – Data Mining Functionalities – Interestingness of Patterns – Classification of Data Mining Systems – Data Mining Task Primitives – Integration of a Data Mining System with a Data Warehouse – Issues – Data Preprocessing.

9

### UNIT IV ASSOCIATION RULE MINING AND CLASSIFICATION

Mining Frequent Patterns, Associations and Correlations – Mining Methods – Mining various Kinds of Association Rules – Correlation Analysis – Constraint Based Association Mining – Classification and Prediction - Basic Concepts - Decision Tree Induction - Bayesian Classification – Rule Based Classification – Classification by Back propagation – Support Vector Machines – Associative Classification – Lazy Learners – Other Classification Methods – Prediction.

9

### UNIT V CLUSTERING AND TRENDS IN DATA MINING

Cluster Analysis - Types of Data – Categorization of Major Clustering Methods – K-means– Partitioning Methods – Hierarchical Methods - Density-Based Methods –Grid Based Methods – Model-Based Clustering Methods – Clustering High Dimensional Data - Constraint – Based Cluster Analysis – Outlier Analysis – Data Mining Applications.

9

TOTAL: 45 PERIODS

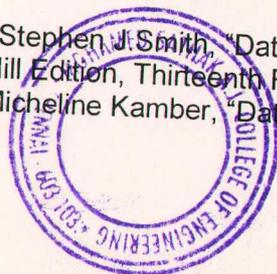
### OUTCOMES:

After completing this course, the student will be able to:

- Apply data mining techniques and methods to large data sets.
- Use data mining tools.
- Compare and contrast the various classifiers.

### TEXT BOOKS:

1. Alex Berson and Stephen J. Smith, "Data Warehousing, Data Mining and OLAP", Tata McGraw – Hill Edition, Thirteenth Reprint 2008.
2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Third



PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
SCOTTUR-603 103.  
KANCHIPURAM DT.

IT6503

## WEB PROGRAMMING

LTP C31

### 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.

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.

9

### UNIT II JAVA

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.

9

### UNIT III JDBC

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.

9

### UNIT IV APPLETS

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.

9

### UNIT V XML AND WEB SERVICES

Xml – Introduction-Form Navigation-XML Documents- XSL – XSLT- Web services- UDDI-WSDL-Java web services – Web resources.

9

### PERIODS

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

### 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.



  
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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR 603103.  
KANCHIPURAM DT.

IT6701

## INFORMATION MANAGEMENT

LT PC 3 (

### OBJECTIVES:

- To expose students with the basics of managing the information
- To explore the various aspects of database design and modelling,
- To examine the basic issues in information governance and information integration
- To understand the overview of information architecture.

### UNIT I DATABASE MODELLING, MANAGEMENT AND DEVELOPMENT

Database design and modelling - Business Rules and Relationship; Java database Connectivity (JDBC), Database connection Manager, Stored Procedures. Trends in Big Data systems including NoSQL - Hadoop HDFS, MapReduce, Hive, and enhancements.

9

### UNIT II DATA SECURITY AND PRIVACY

Program Security, Malicious code and controls against threats; OS level protection; Security – Firewalls, Network Security Intrusion detection systems. Data Privacy principles. Data Privacy Laws and compliance.

9

### UNIT III INFORMATION GOVERNANCE

Master Data Management (MDM) – Overview, Need for MDM, Privacy, regulatory requirements and compliance. Data Governance – Synchronization and data quality management.

9

### UNIT IV INFORMATION ARCHITECTURE

Principles of Information architecture and framework, Organizing information, Navigation systems and Labelling systems, Conceptual design, Granularity of Content.

9

### UNIT V INFORMATION LIFECYCLE MANAGEMENT

Data retention policies; Confidential and Sensitive data handling, lifecycle management costs. Archive data using Hadoop; Testing and delivering big data applications for performance and functionality; Challenges with data administration;

9

TOTAL: 45 PERIODS

### OUTCOMES:

At the end of the course the students will be able to:

- Cover core relational database topics including logical and physical design and modeling
- Design and implement a complex information system that meets regulatory requirements; define and manage an organization's key master data entities
- Design, Create and maintain data warehouses.
- Learn recent advances in NOSQL , Big Data and related tools.



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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR - 603 103.  
KANCHIPURAM DT.

**OBJECTIVES:**

The student should be made to:

- Expose the criteria for test cases.
- Learn the design of test cases.
- Be familiar with test management and test automation techniques.
- Be exposed to test metrics and measurements.

**UNIT I INTRODUCTION**

Testing as an Engineering Activity – Testing as a Process – Testing axioms – Basic definitions – Software Testing Principles – The Tester's Role in a Software Development Organization – Origins of Defects – Cost of defects – Defect Classes – The Defect Repository and Test Design – Defect Examples – Developer/Tester Support of Developing a Defect Repository – Defect Prevention strategies.

9

**UNIT II TEST CASE DESIGN**

Test case Design Strategies – Using Black Box Approach to Test Case Design – Random Testing – Requirements based testing – Boundary Value Analysis – Equivalence Class Partitioning – State-based testing – Cause-effect graphing – Compatibility testing – user documentation testing – domain testing – Using White Box Approach to Test design – Test Adequacy Criteria – static testing vs. structural testing – code functional testing – Coverage and Control Flow Graphs – Covering Code Logic – Paths – code complexity testing – Evaluating Test Adequacy Criteria.

9

**UNIT III LEVELS OF TESTING**

The need for Levers of Testing – Unit Test – Unit Test Planning – Designing the Unit Tests – The Test Harness – Running the Unit tests and Recording results – Integration tests – Designing Integration Tests – Integration Test Planning – Scenario testing – Defect bash elimination System Testing – Acceptance testing – Performance testing – Regression Testing – Internationalization testing – Ad-hoc testing – Alpha, Beta Tests – Testing OO systems – Usability and Accessibility testing – Configuration testing – Compatibility testing – Testing the documentation – Website testing.

9

**UNIT IV TEST AMANAGEMENT**

People and organizational issues in testing – Organization structures for testing teams – testing services – Test Planning – Test Plan Components – Test Plan Attachments – Locating Test Items – test management – test process – Reporting Test Results – The role of three groups in Test Planning and Policy Development – Introducing the test specialist – Skills needed by a test specialist – Building a Testing Group.

9

**UNIT V TEST AUTOMATION**

Software test automation – skill needed for automation – scope of automation – design and architecture for automation – requirements for a test tool – challenges in automation – Test metrics and measurements – project, progress and productivity metrics.

9

**TOTAL: 45 PERIODS**

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MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

**OBJECTIVES:**

The student should be made to:

- Learn XML fundamentals.
- Be exposed to build applications based on XML.
- Understand the key principles behind SOA.
- Be familiar with the web services technology elements for realizing SOA.
- Learn the various web service standards.

**UNIT I INTRODUCTION TO XML**

XML document structure - Well formed and valid documents - Namespaces - DTD - XML Schema - X-Files. 9

**UNIT II BUILDING XML- BASED APPLICATIONS**

Parsing XML - using DOM, SAX - XML Transformation and XSL - XSL Formatting - Modeling Databases in XML. 9

**UNIT III SERVICE ORIENTED ARCHITECTURE**

Characteristics of SOA, Comparing SOA with Client-Server and Distributed architectures - Benefits of SOA -- Principles of Service orientation - Service layers. 9

**UNIT IV WEB SERVICES**

Service descriptions - WSDL - Messaging with SOAP - Service discovery - UDDI - Message Exchange Patterns - Orchestration - Choreography - WS Transactions. 9

**UNIT V BUILDING SOA-BASED APPLICATIONS**

Service Oriented Analysis and Design - Service Modeling - Design standards and guidelines -- Composition - WS-BPEL - WS-Coordination - WS-Policy - WS-Security - SOA support in J2EE 9

**TOTAL : 45 PERIODS**

**OUTCOMES:**

Upon successful completion of this course, students will be able to:

- Build applications based on XML.
- Develop web services using technology elements.
- Build SOA-based applications for intra-enterprise and inter-enterprise applications.

**TEXTBOOKS:**

1. Ron Schmelzer et al. "XML and Web Services", Pearson Education, 2002.
2. Thomas Erl, "Service Oriented Architecture: Concepts, Technology, and Design", Pearson Education, 2005.

**REFERENCES:**

1. Frank P.Coyle, "XML, Web Services and the Data Revolution", Pearson Education, 2002
2. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education, 2005
3. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004.
4. James McGovern, Sameer Tyagi, Michael E.Stevens, Sunil Mathew, "Java Web Services Architecture", Morgan Kaufmann Publishers, 2003.

PRINCIPAL  
MÖHAMED SATHAK A.J.  
34, Rajiv Gandhi Road (OMRI) Street  
Chennai-600 030

**OBJECTIVES:**

The student should be made to:

- Study the Architecture of 8086 microprocessor.
- Learn the design aspects of I/O and Memory Interfacing circuits.
- Study about communication and bus interfacing.
- Study the Architecture of 8051 microcontroller.

**UNIT I THE 8086 MICROPROCESSOR**

9

Introduction to 8086 - Microprocessor architecture - Addressing modes - Instruction set and assembler directives - Assembly language programming - Modular Programming - Linking and Relocation - Stacks - Procedures - Macros - Interrupts and interrupt service routines - Byte and String Manipulation.

**UNIT II 8086 SYSTEM BUS STRUCTURE**

9

8086 signals - Basic configurations - System bus timing - System design using 8086 - IO programming - Introduction to Multiprogramming - System Bus Structure - Multiprocessor configurations - Coprocessor, Closely coupled and loosely Coupled configurations - Introduction to advanced processors.

**UNIT III I/O INTERFACING**

9

Memory Interfacing and I/O interfacing - Parallel communication interface - Serial communication interface - D/A and A/D Interface - Timer - Keyboard /display controller - Interrupt controller - DMA controller - Programming and applications Case studies: Traffic Light control, LED display , LCD display, Keyboard display interface and Alarm Controller.

**UNIT IV MICROCONTROLLER**

9

Architecture of 8051 - Special Function Registers(SFRs) - I/O Pins Ports and Circuits - Instruction set - Addressing modes - Assembly language programming.

**UNIT V INTERFACING MICROCONTROLLER**

9

Programming 8051 Timers - Serial Port Programming - Interrupts Programming - LCD & Keyboard Interfacing - ADC, DAC & Sensor Interfacing - External Memory Interface- Stepper Motor and Waveform generation.

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

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

- Design and implement programs on 8086 microprocessor.
- Design I/O circuits.
- Design Memory Interfacing circuits.
- Design and implement 8051 microcontroller based systems.

**TEXT BOOKS:**

1. Yu-Cheng Liu, Glenn A.Gibson, "Microcomputer Systems: The 8086 / 8088 Family - Architecture, Programming and Design", Second Edition, Prentice Hall of India, 2007.
2. Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, "The 8051 Microcontroller and Embedded Systems: Using Assembly and C", Second Edition, Pearson Education, 2011

**REFERENCE:**

1. Doughlas V.Hall, "Microprocessors and Interfacing, Programming and Hardware:,TMH, 2012

**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.
- Compare and contrast various testing techniques.

**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.

**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.

**UNIT I INTRODUCTION**

9

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.

**UNIT II BRUTE FORCE AND DIVIDE-AND-CONQUER**

9

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.

**UNIT III DYNAMIC PROGRAMMING AND GREEDY TECHNIQUE**

9

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.

**UNIT IV ITERATIVE IMPROVEMENT**

9

The Simplex Method-The Maximum-Flow Problem - Maximum Matching in Bipartite Graphs- The Stable marriage Problem.

**UNIT V COPING WITH THE LIMITATIONS OF ALGORITHM POWER**

9

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.

# CRIME REDUCTION BY BIG DATA ANALYTICS

A PROJECT REPORT

*Submitted by*

**MAHALAKSHMI.N (311813205008)**

**SALMAA.A.G (311813205017)**

*In partial fulfillment for the award of the degree*

*Of*

**BACHELOR OF TECHNOLOGY**

**IN**

**INFORMATION TECHNOLOGY**

**MOHAMED SATHAK A.J COLLEGE OF ENGINEERING, EGATTUR**



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**ANNA UNIVERSITY: CHENNAI 600 025**



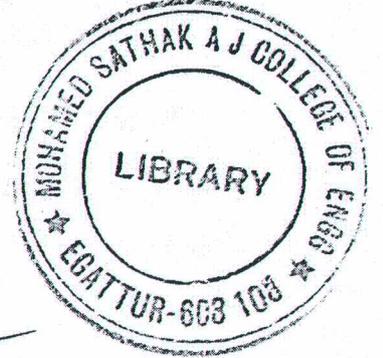
**APRIL-2017**

**PRINCIPAL**  
**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**  
**EGATTUR-603 103.**  
**KANCHIPURAM DT.**

**ANNA UNIVERSITY: CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "**CRIME REDUCTION BY BIG DATA ANALYSIS**" is the bonafide work of "**MAHALAKSHMI.N (311813205008), SALMAA.A.G (311813205017)**" who carried out the project work under my supervision.



  
SIGNATURE

Ms.SANTHI NISHA, M.E,  
SUPERVISOR

Information Technology  
Mohamed Sathak AJ College of Engineering  
Egattur, Chennai-603103

  
SIGNATURE

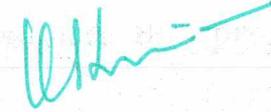
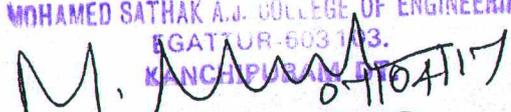
Mr.A.NARESH KUMAR, M.E, (Ph.D),  
HEAD OF THE DEPARTMENT

Information Technology  
**HEAD OF THE DEPARTMENT**  
Department of Information Technology  
Mohammed Sathak A.J. College of Engineering  
Mohamed Sathak A.J. College of Engineering  
64 Road, Egattur Road, IT Village, Egattur-603103  
Egattur, Chennai-603103

Submission for the University exam held on..... 7/4/2017 .....

  
INTERNAL EXAMINER



  
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DISTRICT  
  
EXTERNAL EXAMINER

## ABSTRACT

Big data is the collection of large amount of data which is generated from various application such as social mediate-commerce etc. In traditional way, this large amount of data cannot be processed and stored so it is found to be tedious for storage and analysis. Now a days various tools and techniques were came to an existence to solve this problem. One of the application where huge amount of data are massively increasing is Crime which makes a huge issue for government to provide deliberate decision by following the law and order. These large data were kept with the solution called Big Data Analytics. The processing of this huge data generation can be analyzed with high performance when compared to traditional way of processing. By performing this analytics helps the government and the people to be provided with security and healthy nation.



  
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

## APPENDIX C

### CONCLUSION AND FUTURE ENHANCEMENT

Big Data Analytics refers to the process that can be used for transforming raw data into meaningful information. This also helps in forming a decision support system for the legislature towards crime detection. Since the population and the crime rates are increasing drastically, certain steps should be taken in order to maintain law and order. If the number of crimes are found to be increasing in a particular area extra security should be provided. These measures should be carried out so that a sense of safety and awareness can be maintained among the citizens of the country.

#### Future Work

This analysis can be further carried out by using Apache spark which provides support for structured and semi-structured data. Its processing engine's in-memory computing layer is supposed to run batch-processing programs 100 times faster than MapReduce.



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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR - 603 103.  
KANCHIPURAM DT.

# NEW EVENT DETECTION FOR WEB PAGE RECOMMENDATION USING WEB MINING

Submitted by

**DHASLIMA NASRIN.S (311813205004)**

**MUBINA.A (311813205012)**

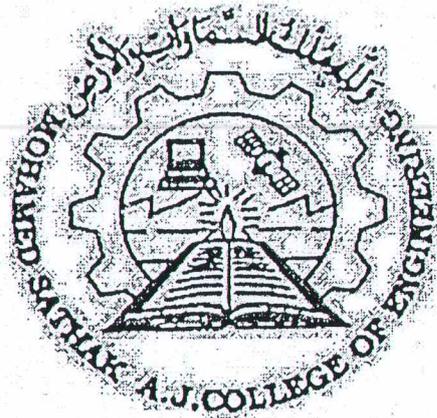
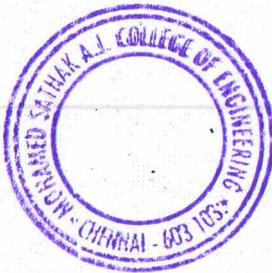
In partial fulfilment for the award of the degree

of

**BACHELOR OF TECHNOLOGY**

IN

**INFORMATION TECHNOLOGY**



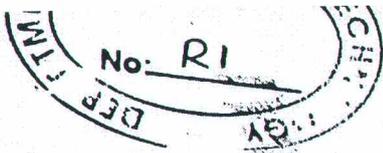
PRINCIPAL

MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR - 603 103.

**MOHAMED SATHAK A.J COLLEGE OF ENGINEERING**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2017**



ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "NEW EVENT DETECTION FOR WEB PAGE RECOMMENDATION USING WEB MINING" is the bonafide work of "DHASLIMANASRIN.S (311813205004), MUBINA.A (311813205012)" who carried out the project work under my supervision.

*[Handwritten Signature]*  
SIGNATURE

*[Handwritten Signature]*  
SIGNATURE 6/2/17

Mrs.K.SHANMUGAPRIYA, M.Tech,  
SUPERVISOR

Mr.A.NARESH KUMAR, M.E, (Ph.D),  
HEAD OF THE DEPARTMENT

Information Technology  
Mohamed Sathak AJ College of Engineering  
Egattur, Chennai-603103

Information Technology  
**HEAD OF THE DEPARTMENT**  
Department of Information Technology  
Mohammed Sathak A.J. College of Engineering  
34 Rajiv Gandhi Road, IT Highway, Egattur-603103  
Egattur, Chennai-603103



*[Handwritten Signature]*  
INTERNAL EXAMINER

Submission for the University exam held on.....07.10.2017.....

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103,  
KANCHIPURAM DT.

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EXTERNAL EXAMINER

## ABSTRACT

In this paper, we propose an uncertainty analysis of the online events and its application to Webpage recommendations by a new approach to observe, summarize and track events from a collection of new Web pages. Given a set of web services, we calculate response-time for the web services and also obtain feedback to improve the web service by the means of HMM model. We examine some experimental results and show the usefulness of our approach. The literature of Webpage recommendations will be roughly classified into two categories: 1) non content based methods and 2) content-based strategies. We tend to propose a framework to identify the various underlying levels of linguistics uncertainty in terms of internet events, and then utilize these for Webpage recommendations. Our plan is to contemplate an internet event as a system composed of various keywords, and therefore the uncertainty of this keyword system is expounded to the uncertainty of the actual Web event, we tend to establish the different levels of linguistics uncertainty, and construct a linguistics pyramid to precise the uncertainty hierarchy of an internet event.



*Mohamed Sathak A.J.*

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

## APPENDIX C CONCLUSION AND FUTURE WORK

### CONCLUSION & FUTURE WORK

We propose a probabilistic model for predicting response time of web service and then selected an optimal web service at runtime from the list of functionally equivalent web services. To know the probabilistic insight of Web services we have used HMM. In our model we have assumed that WS is deployed on a cluster of web servers and sometime the delay or crash during WS invocation is because the bad node in sever clustering responds to users' requests. With the help of HMM we have predicted the probabilistic behavior of these web servers and then selected the WS based on their probabilistic value. We have calculated the response time for the web services and also collected the feedback for the web services. For future work, testing web services at the client side can be implemented as it is not as straightforward as testing traditional software due to the complex nature of web services and the absence of source code. The literature Survey reveals the previous work undertaken on web service testing, showing the strengths and weaknesses of current web service testing strategies and identifying issues for future work.



PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPURAM DT.

# TO OVERCOME THE REDUNDANCY IN PRIVATE CLOUD USING DEDUPLICATION ALGORITHM

PROJECT REPORT

*Submitted by*

**M.RUKNUDEEN(311813205016)**

**S.SHARATH(311813205020)**

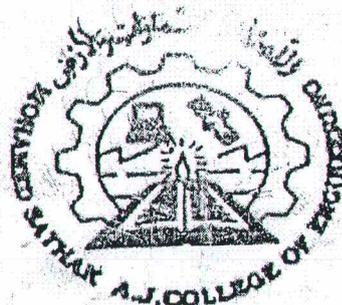
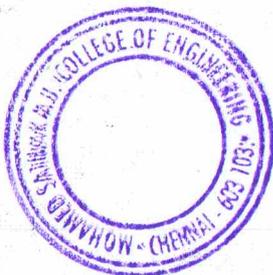
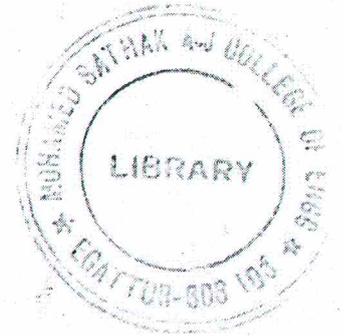
**M.NAGOOR IMRAN (311813205013)**

*In partial fulfillment for the award of the degree  
Of*

**BACHELOR OF TECHNOLOGY**

**IN**

**INFORMATION TECHNOLOGY**



PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

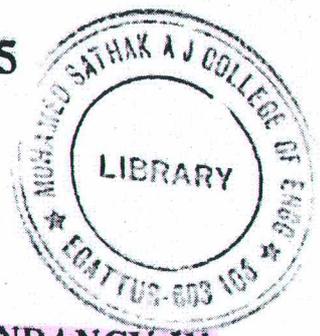
**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2017**

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE



Certified that this project report "TO OVERCOME THE REDUNDANCY IN PRIVATE CLOUD USING DEDUPLICATION ALGORITHM" is the bonafide work of "M.RUKNUDEEN (311813205016), S.SHARATH (31181320502) and A.NAGOOR IMRAN (311813205013)" who carried out the project work under my supervision.

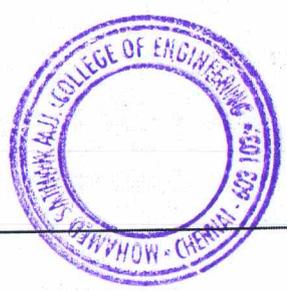
*V. Ramachandran*

SIGNATURE

Mr.V.RAMACHANDRAN, M.Tech.,

SUPERVISOR

Department of Information Technology  
Mohamed Sathak A.J. College of Engineering  
34, OMR Road, IT Highway,  
Egattur, Chennai-603103



*A. Naresh Kumar*

SIGNATURE

Mr.A.NARESH KUMAR, M.E., (Ph.D.)

HEAD OF THE DEPARTMENT

Department of Information Technology  
Mohamed Sathak A.J. College of Engineering  
Department of Information Technology  
34, OMR Road, IT Highway,  
34-Rajiv Gandhi Road, IT Highway, Egattur-603103  
Egattur, Chennai-603103

*[Signature]*

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103  
KANCHIPURAM DIST.

Submitted for Anna University Project Viva Voce held on July 13, 2017.....

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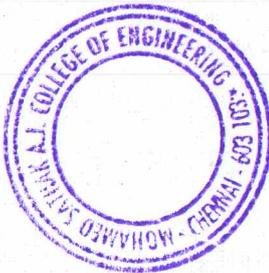
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EXTERNAL EXAMINER

## ABSTRACT

Storage outsourcing is becoming more and more attractive to both industry and academics due to the advantages of low cost, high accessibility, and easy sharing. As one of the storage outsourcing forms, cloud storage gains wide attention in recent years [1] [2]. Many companies, such as Amazon, Google, and Microsoft, provide their own cloud storage services, where users can upload their files to the servers, access them from various devices, and share them with the others. Although cloud storage services are widely adopted in current days, there still remain many security issues and potential threats [3] [4]. Data integrity is one of the most important properties when a user outsources its files to cloud storage. Users should be convinced that the files stored in the server are not tampered. Traditional techniques for protecting data integrity, such as message authentication codes (MACs) and digital signature, require users to download all of the files from the cloud server for verification, which incurs a heavy communication cost.



PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGA-11UR-603 103.  
KANCHIPURAM DT.

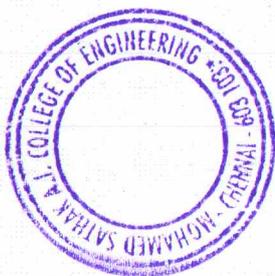
## APPENDIX C CONCLUSION

We proposed the comprehensive requirements in multi-user cloud storage systems and introduced the model of de duplicable dynamic PoS. We designed a novel tool called HAT which is an efficient authenticated structure. Based on HAT, we proposed the first practical de duplicable dynamic PoS scheme called DeyPoS and proved its security in the random oracle model. The theoretical and experimental results show that our DeyPoS implementation is efficient, especially when the file size and the number of the challenged blocks are large.

## FUTURE ENHANCEMENT

### ADMIN MONITORING THE NETWORKS

Another natural direction is to consider secure network coding in a framework where only statistical security or security against computationally bounded adversaries is required. So, Admin monitor the Network. So, it is possible avoid the Unauthorized User in same network entering.



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EGATTUR 603 103,  
KANCHIPURAM DT.

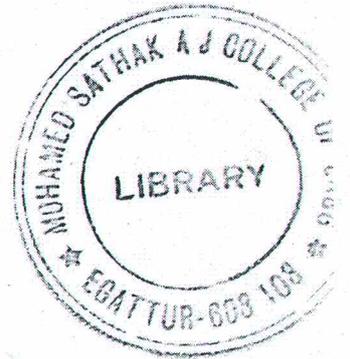
# ELASTIC PROVISIONING OF RESOURCES IN CLOUD ENVIRONMENT

A PROJECT REPORT

*Submitted by*

**ABDUL BARI.T(311813205002)**

**SRINIVASAN.O.G(311813205021)**



*for the fulfillment of the award of the degree*

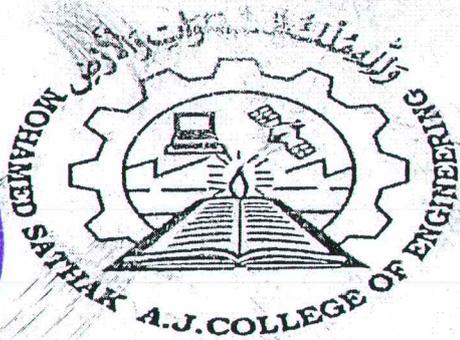
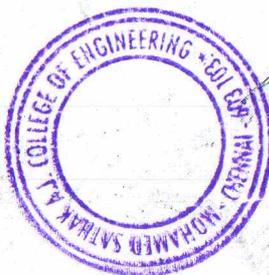
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**IN**

**INFORMATION TECHNOLOGY**

**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**



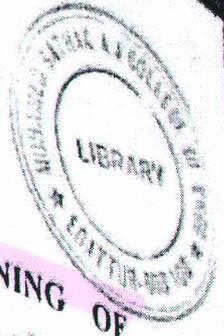
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
MADURAI DIST.

**ANNA UNIVERSITY : CHENNAI 600 025**

APRIL 2017

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE



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SIGNATURE

*S. Sivapriya*  
6.4.17

Mrs.S.Sivapriya.,M.E.,

SUPERVISOR

Information Technology

Mohamed Sathak A.J College Of Engineering

Egattur, Chennai-603103

SIGNATURE

*A. Naresh Kumar*

Mr.A.NareshKumar,M.E.,(Ph.D)

HEAD OF THE DEPARTMENT

Information Technology

HEAD OF THE DEPARTMENT  
Mohamed Sathak A.J College Of Engineering  
Department of Information Technology  
Mohamed Sathak A.J College of Engineering  
34-Railv Camp Road Egattur-603103

Submitted for the Project viva held on.....7.4.17.....



*A. Naresh Kumar*  
INTERNAL EXAMINER

*W. Sathak*  
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR 603103  
MANCHIPURAM DT  
EXTERNAL EXAMINER

# ABSTRACT

In this project we implemented cloud computing with the blasting distributed computing industry, computational assets to be promptly and flexibly accessible to the clients. In order to draw in clients with different requests, most **Infrastructure-as-an administration (IaaS) cloud administration** suppliers offer a few estimating systems. The various estimating plans among various IaaS administration suppliers or even in the same supplier shape a complex financial scene that supports the business sector of cloud representatives. We exhibit a randomized online stack-driven planning calculation (ROSA) and hypothetically demonstrate the lower bound of its aggressive proportion. In this project, we concentrate on how a specialist can push a gathering of clients to fully utilize the volume rebate estimating methodology offered by cloud administration suppliers through cost-productive online asset booking. Three special cases of the logged off curved cost planning issue and the relating ideal calculations are presented. Trace-driven re-enactment utilizing Google group information exhibits that ROSA is better than the ordinary web booking calculations regarding cost sparing. Our re-enactment demonstrates that ROSA accomplishes an aggressive proportion near the hypothetical lower bound under the uncommon cases.



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PRINCIPAL  
MOHAMED SATHIAN A.J. COLLEGE OF ENGINEERING  
EG. NO. 603 103.  
KANCHIPURAM DT.

## APPENDIX 3

### CONCLUSION

Cloud is an emerging computing market where cloud providers, brokers, and users share, edit, and consume computing resource. With the evolution of cloud computing, Pay-as-you-go pricing model has been diversified with volume discounts to stimulate the users' adoption of cloud computing. This paper studies how a broker can schedule the jobs of users to leverage the pricing model with volume discounts so that the maximum cost saving can be achieved for its customers. We have analyzed the properties that an optimal solution should have and studied three special cases of the concave cost scheduling problem. We developed an online scheduling algorithm and derived its competitive ratio. Simulation results on a Google data trace have shown that the proposed online scheduling algorithm outperforms other conventional scheduling algorithms. Although continuous concave cost functions and piece-wise linear cost functions are used to conduct the evaluation, the properties proved and the online algorithm proposed apply to all piecewise concave cost functions.

### FUTURE ENHANCEMENT

Future system in broker can schedule the jobs of users to leverage the pricing model with volume discounts so that the maximum cost saving can be achieved for its customers behaviours and strategies of cloud service providers, brokers, and end users when offering or facing a pricing model with volume discounts. It opens a door for many interesting problems along the line. Although continuous concave cost functions and piece-wise linear cost functions are used to conduct the evaluation, the properties proved and the online algorithm proposed apply to all piecewise concave cost functions.



PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EG-1118-603-103  
KANCHIPURAM DT.

# HUMAN FALL DETECTION SYSTEM IN ANDROID

Submitted by

**AAMEERAA BEGUM.N (311813205001)**

**KALPANA.D (311813205007)**

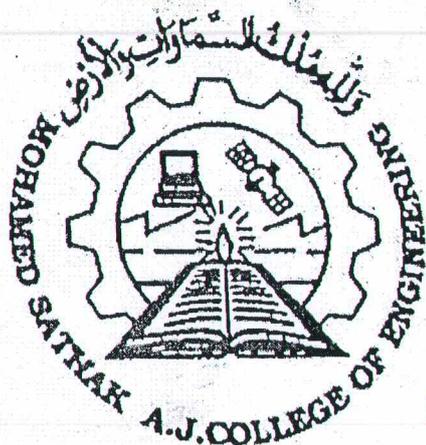
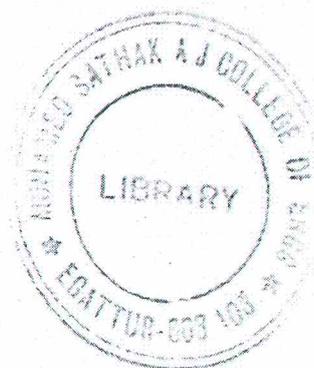
In partial fulfillment for the award of the degree

Of

**BACHELOR OF TECHNOLOGY**

IN

**INFORMATION TECHNOLOGY**



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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

**MOHAMED SATHAK A.J COLLEGE OF ENGINEERING**

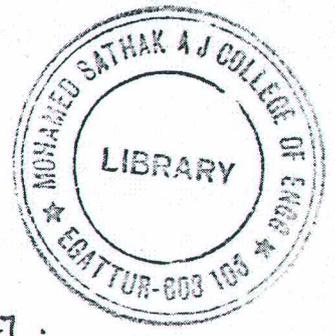
**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2017**

**ANNA UNIVERSITY: CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

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*V. Suba*  
6/4/17  
SIGNATURE

Mrs.V.SUBAPRIYA, M.E.,  
SUPERVISOR

Information Technology  
Mohamed Sathak AJ College of Engineering  
Egattur, Chennai-603103

*A.N. Naresh Kumar*  
SIGNATURE

Mr.A.NARESH KUMAR, M.E, (Ph.D),  
HEAD OF THE DEPARTMENT

Information Technology  
**HEAD OF THE DEPARTMENT**  
Department of Information Technology  
Mohammed Sathak A J College of Engineering  
Egattur, Chennai-603103  
Egattur, Chennai-603103

Submission for the University exam held on... **7/4/17** .....



*A.N. Naresh Kumar*  
INTERNAL EXAMINER

*[Signature]*  
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR 603 103.  
KANCHIPURAM DT.  
*[Signature]*  
EXTERNAL EXAMINER

## ABSTRACT

The usage of technology has ended up being a value asset in the prosperity office. Nowadays, from PCs to mobile phones, advancement society in their activities, being these eventually or cooperatively. Because of these ideal circumstances, new research has make to make structures and applications to help with people's prosperity, for our circumstance recognizing fall incidents with the usage of mobile phones. This project acquaints a route with manage recognize falls using unmistakable proposed computations with the target of peopling with their prosperity and security. The system is made out of three one of kind fragments: data gathering, range decision, and fall ID. It utilizes the wireless' intrinsic sensors (accelerometer, whirligig) to recognize the region of the mobile phone in the customer's body (mid-segment, pocket, holster, et cetera.) and once a zone is perceived, the fall distinguishing proof portion happens. A general depiction on fall area systems is given, including the differing sorts of sensors used nowadays. The proposed course of action is presented and depicted in wonderful unobtrusive component. A total accuracy of 81.3% was found out from the fall distinguishing proof proposed computation. The primary three regions to recognize a fall were: Informing with 95.8% fall area accuracy, pants' side pocket with an 87.5% precision, and shirt mid-segment pocket with a 83.3% precision. In like manner an extra study was done using only the holster territory making an awesome 100% region decision accuracy.



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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103.  
KANCHIPURAM DT.

## APPENDIX C

### APPLICATION

#### CONCLUSION

The proposed algorithm is derived in such a way that it examines features in an orderly fashion in the form of states where the initial state has to be verified to move towards the next state. Hence fall detection can be further improved in terms of accuracy and efficiency which provides precise indication about the location of the fall people as well the fall accident.

#### FUTURE WORK

As a part of futuristic development, well designed smart sensor system to detect falls can be both medically and economically helpful. This research may introduce a portable terrain adaptable fall detection system, by placing accelerometers and gyroscopes in parts of the body and transmit data through wireless transmitter modules to mobile devices to get the related information.



A handwritten signature in blue ink, appearing to be "M. Sathak".

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR 603 103.  
KANCHIPURAM DT.

# SMARTMAP WITH PRIVACY PROTECTION

A PROJECT REPORT

*Submitted by*

**A.AZARUDEEN(311813205003)**

**V.MANIKANDAN(311813205009)**

**H.MOHAMED FAISAL(311813205010)**

*In partial fulfillment for the award of the degree*

*Of*

**BACHELOR OF TECHNOLOGY**

*In*

**INFORMATION TECHNOLOGY**



*Handwritten signature in blue ink.*

**PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPUBAM DT.**

**MOHAMED SATHAK A.J COLLEGE OF ENGINEERING**

**ANNA UNIVERSITY : CHENNAI 600 025**

**APRIL 2017**

**ANNA UNIVERSITY : CHENNAI 600 025**

**BONAFIDE CERTIFICATE**

Certified that this project report "**SMARTMAP WITH PRIVACY PROTECTION**" is the bonafide work of "A.AZARUDEEN(311813205003), V.MANIKANDAN(311813205009),H.MOHAMEDFAISAL(311813205010)" who carried out the project work under my supervision.

  
SIGNATURE

Mr.M.AHSAN SHARIFF, M.Tech,

**SUPERVISOR**

Information Technology

Mohamed Sathak A.J College of Engineering

Egattur, Chennai-603103

  
SIGNATURE

Mr.A.NARESH KUMAR,M.E, (Ph.D),

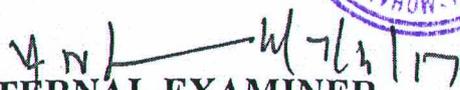
**HEAD OF THE DEPARTMENT**

Information Technology  
**HEAD OF THE DEPARTMENT**  
Department of Information Technology Engineering  
Mohamed Sathak A.J. College of Engineering  
Egattur, Chennai-603103

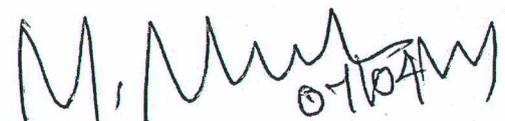


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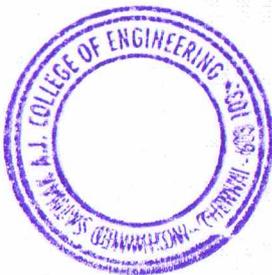
  
INTERNAL EXAMINER

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPURAM DT.

  
EXTERNAL EXAMINER

## ABSTRACT

In smart city, all kinds of users' data are stored in electronic devices to make everything intelligent. A **smartphone** is the most widely used electronic device and it is the pivot of all smart systems. However, current smartphones are not competent to manage users' sensitive data, and they are facing the privacy leakage caused by data over-collection. Data over-collection, which means smartphones apps collect users' data more than its original function while within the permission scope, is rapidly becoming one of the most serious potential security hazards in smart city. In this paper, we study the current state of data over-collection and study some most frequent data over-collected cases. We present a **mobile-cloud framework**, which is an active approach to eradicate the data overcollection. By putting all users' data into a cloud, the security of users' data can be greatly improved. We have done extensive experiments and the experimental results have demonstrated the effectiveness of our approach.



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**MOHAMED SA. HAN. A.J. COLLEGE OF ENGINEERING**  
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## APPENDIX C

### CONCLUSION

Data over-collection in smartphone becomes the most severe potential privacy hazard in smart city. Unlike malwares, data over-collection is difficult to be solved, because this kind of behaviors are within permissions authorized by users. To maximize releasing users' operation pressure and eradicating the data over-collection problem, we presented an active approach. Every app that wanted to use users' data sent its request for accessing to the cloud, and the cloud access control service could provide detailed permissions for every app to every block of users' data. Meanwhile the operations of encryption and decryption were achieved by cloud encryption/decryption service that saves computation resource of smartphone for dealing with these complex calculations. Finally, experimental result verifies the feasibility and advantages of our framework.

### FUTURE WORK

Allow to search malls near to you and shop list Shop details within those malls. Calculates distance & give you direction guide to the mall from your current location and also include online buying.



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MOHAMED SATHAR A.C. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPURAM DT.

PR-852

AN AUTOMATED APPROACH FOR  
IMPROVING MPTCP USING FEEDBACK  
PATH FAILURE  
IN NETWORK SECURITY

Submitted by

TULASSIDEVI.M (311813205022)

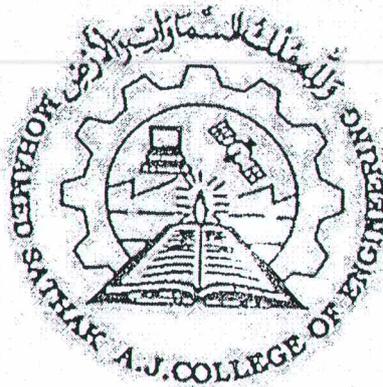
In partial fulfillment for the award of the degree

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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
CHENNAI - 603 103.  
LANCHIPUBAM DT.

MOHAMED SATHAK A.J COLLEGE OF ENGINEERING

ANNA UNIVERSITY: CHENNAI 600 025

APRIL 2017

ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

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*Jessima*  
06/04/17

SIGNATURE

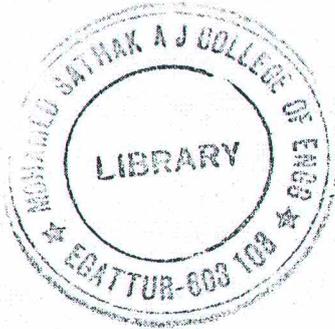
Ms.J.JESSIMA, M.E.,

SUPERVISOR

Information Technology

Mohamed Sathak AJ College of Engineering

Egattur, Chennai-603103



*A.N.K.*  
7/4/17

SIGNATURE

Mr.A.NARESH KUMAR, M.E,

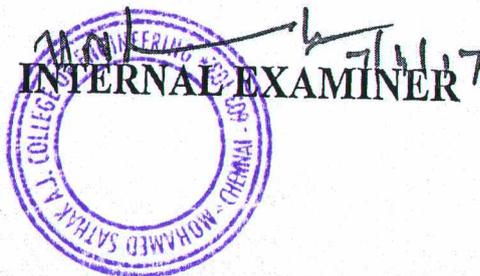
HEAD OF THE DEPARTMENT

Information Technology

Department of Information Technology  
Mohamed Sathak A.J. College of Engineering  
Mohammed Sathak A.J. College of Engineering

Egattur, Chennai-603103

Submission for the University exam held on.....7/04/17.....



*Alshani*

*A.N.K.*  
07/04/17

EXTERNAL EXAMINER

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPURAM DT.

## ABSTRACT

A multipath TCP (MPTCP) is a promising protocol that has been standardized by the Internet Engineering Task Force to support multipath operations in the transport layer. However, although the MPTCP can provide multiple transmission paths and aggregate the bandwidth of multiple paths, it does not consistently achieve more throughput (goodput) nor a greater connection resilience. Unfortunately, there is no exact rule for declaring a path failure or preventing the usage of underperforming subflows in the MPTCP. In this paper, we propose a novel path failure detection method referred to as feedback-based path failure (FPF) detection. In addition, we propose a new decision method called buffer blocking protection (BBP) to address the underperforming subflows for the MPTCP. Measurement results indicate that the FPF detection reduces transmission interruption time by the fast path failure decision, which can prevent duplicate transmission interruption events and unnecessary retransmissions. Furthermore, the FPF detection is sufficiently robust in terms of packet loss and the delay difference between paths. The results additionally show that the BBP method prevents goodput degradation due to underperforming subflows. Consequently, the MPTCP with the BBP method can at least achieve the throughput performance of a single Transmission Control Protocol (TCP), which uses the best path regardless of the delay difference between paths.



  
PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGAT TCR 603 102  
KANCHIPURAM DT.

## APPENDIX C

### CONCLUSIONS

The enforcement of access policies and the support of policy updates are important challenging issues in the data sharing systems. In this paper, we presented a novel path failure detection method and a novel subflow closing method for underperforming subflows in MPTCP. FPF detection performed path failure detection with feedback from the receiver. Through measurement, we determined that FPF detection reduces transmission interruption time compared to original MPTCP, although MPTCP performed a radical path failure detection in the current methodology. Moreover, FPF detection is sufficiently robust for packet loss and delay differences between paths. The BBP method can prevent goodput degradation due to delay differences between paths by detecting buffer blocking and closing underperforming subflows. Measurement results showed that MPTCP with the BBP method can at least achieve the throughput performance of single TCP that uses the best path regardless of the delay difference between paths.

### Future Enhancements

The future plans have Consistency check procedure enable the server to possess an estimate of the number of clients under its coverage. This is made possible by broadcasting a control packet that forces every client in the cell to respond with a feedback. The broadcast server will use the total received feedback to estimate the number of clients under its coverage.



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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
REG. NO. 603 103.  
KANCHIPURAM DT.

# ENSURING SECURITY USING EMF TECHNIQUE IN CLOUD COMPUTING

PROJECT REPORT

*Submitted by*

**PRASANTH.D (311813205015)**

**IRFAN AHAMED.K.S (311813205006)**

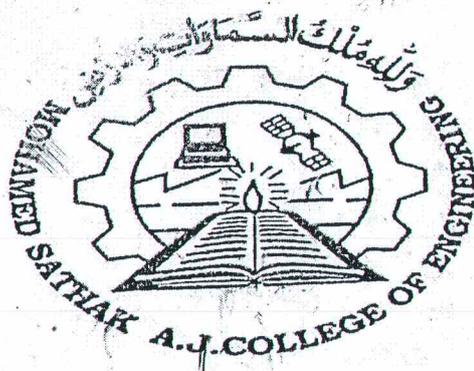
*In partial fulfillment for the award of the degree*

*Of*

**BACHELOR OF TECHNOLOGY**

**IN**

**INFORMATION TECHNOLOGY**



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**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**

**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**

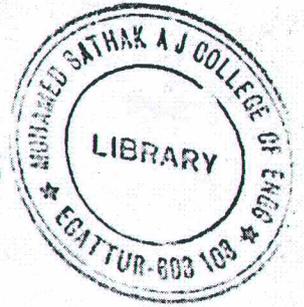
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**KODIPIPURAM DT**

**ANNA UNIVERSITY: CHENNAI 600 025**

**APRIL 2017**

ANNA UNIVERSITY : CHENNAI 600 025



BONAFIDE CERTIFICATE

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SIGNATURE

Mr.M.AHSAN SHARIFF, M.Tech,  
SUPERVISOR

Information Technology  
Mohamed Sathak A.J College of Engineering  
Egattur, Chennai-603103

SIGNATURE

Mr.A.NARESH KUMAR,M.E, (Ph.D),  
HEAD OF THE DEPARTMENT

Information Technology  
Mohamed Sathak A.J College of Engineering  
Egattur, Chennai-603103  
**HEAD OF THE DEPARTMENT**  
Department of Information Technology  
Mohamed Sathak A.J College of Engineering  
84-Bajaj Gandhi Road, IT Highway, Egattur-603103

Submission for the University exam held on.....7.4.2017.....



7/4/17  
INTERNAL EXAMINER

07/04/17  
EXTERNAL EXAMINER

PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603103.  
KANCHIPURAM DT

## ABSTRACT

In the cloud, for achieving access control and keeping data confidential, the data owners could adopt attribute-based encryption to encrypt the stored data. Users with limited computing power are however more likely to delegate the task of the decryption to the **cloud servers** to reduce the computing cost. In existing method is Circuit Cipher text-Policy Attribute-Based Hybrid Encryption. Here We propose a new method called steganography. This method is very secure than a **Cryptography** because in cryptography the system is broken when the attacker can read the secret messages but in **steganography**, breaking a steganography system needs a attacker to detect steganography has been used. Before the steganography we encrypt the plaintext to symbols that symbols are hidden in a images. So this method is very secure to share the messages, files.

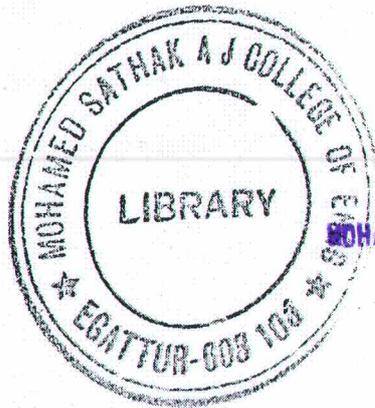


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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
KANCHIPURAM - 603 103.  
KANCHIPURAM DT.

### 7.5 Conclusion

JSP and Servlets are gaining rapid acceptance as means to provide dynamic content on the Internet. With full access to the Java platform, running from the server in a secure manner, the application possibilities are almost limitless. When JSPs are used with Enterprise JavaBeans technology, e-commerce and database resources can be further enhanced to meet an enterprise's needs for web applications providing secure transactions in an open platform. J2EE technology as a whole makes it easy to develop, deploy and use web server applications instead of mingling with other technologies such as CGI and ASP. There are many tools for facilitating quick web software development and to easily convert existing server-side technologies to JSP and Servlets.



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PRINCIPAL  
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103,  
KANCHIPURAM DT.

PR-858

# SECURITY AND PRIVACY IN MOBILR SOCIAL NETWORK

## A PROJECT REPORT

*Submitted by*

SARANYA .K

(311813205018)

SHAHINA.J

(311813205019)

*Partial fulfillment for the award of the degree*

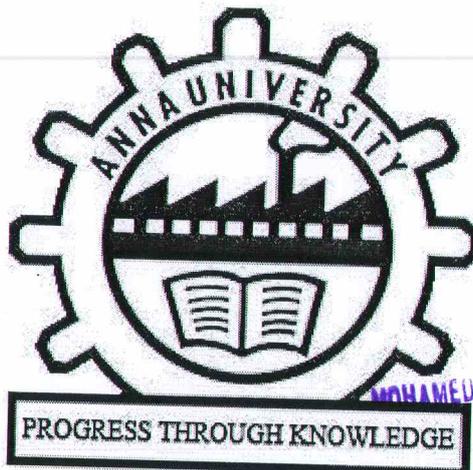
*Of*

**BACHELOR OF TECHNOLOGY**

**IN**

**INFORMATION TECHNOLOGY**

**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**



*[Handwritten Signature]*  
PRINCIPAL  
MOHAMED SA HAN A.J. COLLEGE OF ENGINEERING  
EC R-603103.  
KANCHIPURAM DT.



ANNA UNIVERSITY: CHENNAI-600 025

MAY 2017

## BONAFIDE CERTIFICATE

Certified that this project report “**SECURITY AND PRIVACY IN MOBILR SOCIAL NETWORK**” is the bonafide work of “**SARANYA .K (311813205018) , SHAHINA.J (311813205019)**“ Who carried out the project work under my supervision.

*V. Suba*  
6/4/17

**SIGNATURE**

**Mrs. V.SUBAPRIYA, M.E**

**SUPERVISOR,**

Information Technology  
Mohamed Sathak A.J College of  
Engineering, Chennai-603103.

*A. N. N. Kumar*

**SIGNATURE**

**Mr.A.NARESH KUMAR, M.E (Ph.D)**

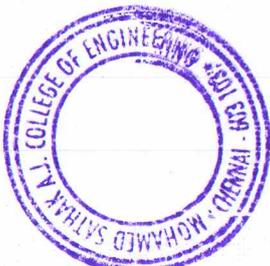
**HEAD OF THE DEPARTMENT**

Information Technology  
Mohamed Sathak A.J College of  
Engineering, Chennai-603103.

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*Principal*

**PRINCIPAL**  
**MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING**  
**EGATTUR-603103.**  
**KANCHIPURAM DT**



*A. N. N. Kumar*  
**INTERNAL EXAMINER**

*External Examiner*  
**EXTERNAL EXAMINER**

## ABSTRACT

Mobile social networking is a pervasive communication platform where users with smart phones can search over the Internet and query neighboring peers to obtain the desired information. We examine the architecture, communication patterns, and especially the security and privacy of MSN. We first study three categories of mobile applications with a focus on two autonomous mobile applications, business card and service review. We then explore the possible methods to deal with the associated security and privacy challenges. By discussing the shortages of the methods, we finally provide several promising research directions.



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PRINCIPAL  
MOHAMED SATHAR A.J. COLLEGE OF ENGINEERING  
EGATTUR-603 103,  
KANCHIPURAM DT.

## CONCLUSION

In this article, we have studied the security and privacy issues in mobile social networking and applications. We have defined MSN communication patterns, and introduced the security and privacy challenges. We have also offered several promising approaches to deal with the security and privacy challenges in various mobile applications, especially for the business card and service review applications. Lastly, we have presented three promising research directions: gesture assisted secure information sharing, social-context-based private information management, and effective resistance to mobile Sybil attacks



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PRINCIPAL  
MOHAMED SATHAK A.G. COLLEGE OF ENGINEERING  
EG-1103 603103.  
KANCHIPURAM DT.