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	CS6302- Database Management Systems
18	CS6304 – Analog and Digital Communication

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

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

SiruseriIT Park, Egattur, Chennai - 603 103

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
1	CS6202	PROGRAMMING AND DATA STRUCTURES I	• Function with Variable number of Arguments • Applications of queues • Open Addressing

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

CS6202   PROGRAMMING AND DATA STRUCTURES I

L T P C
3 0 0 3

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.

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

TEXT BOOKS:

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

28

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
2	CS6301	PROGRAMMING AND DATA STRUCTURES II	• Nested Classes • Inheritance • Disjoint Sets • Warshall Algorithms

CS6301   PROGRAMMING AND DATA STRUCTURES II   L T P C
                                                                 3 0 0 3
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.

                                                    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", 3rd Edition, Pearson Education, 2007.
2. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C++", 2nd Edition, Pearson Education, 2005

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

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++", 7th Edition, Wiley Publishers, 2004.

34

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
3	CS6001	C# and .NET PROGRAMMING	• SQL Server with ADO.NET • XML and .NET • Virtual Directory • Returning exceptions from SQL Server

PRINCIPAL
MOHAMED SATHAK A.J.COLLEGE OF ENGIN⋯
34, Rajiv Gandhi Road (OMR), Siruseri
Chennai-603 103.

CS6001   C# AND .NET PROGRAMMING   L T P C
                                                                 3 0 0 3

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, Versoning, 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 frame work
- 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.

PRINCIPAL
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.

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
4	CS6703	GRID AND CLOUD COMPUTING	• Open Grid Services Architecture(OGSA) • Virtual Clusters and Resource Management. • Cloud Infrastructure Security. • Network, Host and Application level.

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

GRID AND CLOUD COMPUTING L T P C
3 0 0 3

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.

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

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.

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
5	IT6601	MOBILE COMPUTING	• MANET VS VANET • Security • IOS, ANDROID, BLACKBERRY.

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

IT6601   MOBILE COMPUTING   L T P C 3 0 0 3
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.

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
6	CS6551	COMPUTER NETWORKS	• Bluetooth • Multicast Routing • Transport Layer – UDP • Web Services - DNS

CS6551   **COMPUTER NETWORKS**   L T P C
                                                                   3 0 0 3
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.

                                        PRINCIPAL
                        MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING
                                   EGATTUR-603 103.
                                 KANCHIPURAM DT.
                                          44

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

SiruseriIT Park, Egattur, Chennai - 603 103

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
7	CS6659	ARTIFICIAL INTELLIGENCE	• Bayesian Network • Adaptive Learning • Knowledge Acquisition

PRINCIPAL

MOHAMED SATHAK A.J.COLLEGE OF ENGINEERING

Js Rajiv Gandhi Road (OMR), Siruseri, IT Park

Chennai-603 103.

CS6659   ARTIFICIAL INTELLIGENCE   L T P C
                                                                     3 0 0 3
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 Breath 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, 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", 3rd Edition, Pearson Education, 2007.
2. Stuart Russel and Peter Norvig "AI - A Modern Approach", 2nd Edition, Pearson Education 2007.
3. Deepak Khemani "Artificial Intelligence", Tata Mc Graw Hill Education 2013.

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
8	CS6701	CRYPTOGRAPHY AND NETWORK SECURITY	• The RSA Algorithm • HASH Function • Virus and Related Threats • IP and IPV6 • Authentication Header • Encapsulation Security

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

CS6701   CRYPTOGRAPHY AND NETWORK SECURITY   L T P C
                                                               3 0 0 3

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

76

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
9	IT6702	DATAWAREHOUSING AND DATA MINING	• Online Analytical Processing • Bayesian Classification • Density • Based Methods

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

IT6702   DATA WAREHOUSING AND DATA MINING   L T P C 3 0

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   9
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.

UNIT II   BUSINESS ANALYSIS   9
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.

UNIT III   DATA MINING   9
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.

UNIT IV   ASSOCIATION RULE MINING AND CLASSIFICATION   9
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.

UNIT V   CLUSTERING AND TRENDS IN DATA MINING   9
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.

                                                                        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.

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

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

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
10	IT6503	WEB PROGRAMMING	• CSS3 • Multithreaded Programming • JDBC Implementation • The Servlet API • XML Documents

PRINCIPAL

MOHAMED SATHAK A.J.COLLEGE OF ENGINEERING

34, Rajiv Gandhi Road (OMR), Siruseri, IT Park

Chennai-603 103.

IT6503   WEB PROGRAMMING   L T P C 3 1 (

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.

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:

Harvey Deitel, Abbey Deitel, Internet and World Wide Web: How To Program 5th Edition.

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)
SiruseriIT Park, Egattur, Chennai - 603 103

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
11	CS6008	HUMAN COMPUTER INTERACTION	• Software Lifecycle • Hypertext • Drag and Drop, Direct Selection

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

HUMAN COMPUTER INTERACTION   L T P C
                                                                      3 0 0 3

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", 3rd 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).

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

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
12	IT6701	INFORMATION MANAGEMENT	• Network Security Intrusion detection systems • Master Data Management • Synchronization • Confidential and Sensitive Data Handling

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

IT6701   INFORMATION MANAGEMENT   L T P C 3 0

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   9

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.

UNIT II   DATA SECURITY AND PRIVACY   9

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.

UNIT III   INFORMATION GOVERNANCE   9

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

UNIT IV   INFORMATION ARCHITECTURE   9

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

UNIT V   INFORMATION LIFECYCLE MANAGEMENT   9

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;

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.

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

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
13	IT6004	SOFTWARE TESTING	• Integration Test Planning • Usability and Accessibility Testing • Test Planning

IT6004   SOFTWARE TESTING   L T P C 3 0

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   9
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.

UNIT II   TEST CASE DESIGN   9
Test case Design Strategies – Using Black Bod 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.

UNIT III   LEVELS OF TESTING   9
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.

UNIT IV   TEST AMANAGEMENT   9
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.

UNIT V   TEST AUTOMATION   9
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.

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

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
14	IT6801	SERVICE ORIENTED ARCHITECTURE	• XML Schema • Service Layers • UDDI • Service Oriented Analysis • Service Modelling

IT6801   SERVICE ORIENTED ARCHITECTURE   L T P C
                                                                    3 0 0 3
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   9
XML document structure – Well formed and valid documents – Namespaces – DTD – XML Schema –
X-Files.

UNIT II   BUILDING XML- BASED APPLICATIONS   9
Parsing XML – using DOM, SAX – XML Transformation and XSL – XSL Formatting – Modeling
Databases in XML.

UNIT III   SERVICE ORIENTED ARCHITECTURE   9
Characteristics of SOA, Comparing SOA with Client-Server and Distributed architectures – Benefits of
SOA -- Principles of Service orientation – Service layers.

UNIT IV   WEB SERVICES   9
Service descriptions – WSDL – Messaging with SOAP – Service discovery – UDDI – Message
Exchange Patterns – Orchestration – Choreography –WS Transactions.

UNIT V   BUILDING SOA-BASED APPLICATIONS   9
Service Oriented Analysis and Design – Service Modeling – Design standards and guidelines --
Composition – WS-BPEL – WS-Coordination – WS-Policy – WS-Security – SOA support in J2EE.

                                            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, 20044.
4. James McGovern,Sameer Tyagi, Michael E.Stevens, Sunil Mathew, "Java Web.
   Services Architecture", Morgan Kaufmann Publishers, 2003.

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

(Approved by AICTE, New Delhi and affiliated to Anna University, Chennai)

Siruseri IT Park, Egattur, Chennai - 603 103

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
15	EC6504	MICRO PROCESSOR AND MICRO CONTROLLER	• Modular Programming • Multi-processor Configurations • LED Display, LCD Display • I/O Pins Ports and Circuits • ADC, DAC and Sensor Interfacing.

EC6504   MICROPROCESSOR AND MICROCONTROLLER   L T P C
                                                            3 0 0 3

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

MOHAMEDSATHAKAJCOLLEGEOFENGINEERING

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
16	CS6502	OBJECT ORIENTED ANALYSIS AND DESIGN	• UML Diagrams • Associations • Attributes • GUI Testing • OO System Testing

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

CS6502   OBJECT ORIENTED ANALYSIS AND DESIGN   L T P C
                                                             3 0 0 3

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.

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
17	CS6302	DATABASE MANAGEMENT SYSTEMS	• Relational DBMS • Entity Relationship Models • Dynamic SQL • Concurrency Control • RAID • Tertiary Storage • Distributed Databases • Database Access Control • Classification-Association • Relevance Ranking • Crawling

CS6302   DATABASE MANAGEMENT SYSTEMS   L T P C
                                                                 3 0 0 3

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.

UNIT I   INTRODUCTION TO DBMS   10

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

UNIT II   SQL & QUERY OPTIMIZATION   8

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.

UNIT III   TRANSACTION PROCESSING AND CONCURRENCY CONTROL   8

Introduction-Properties of Transaction- Serializability- Concurrency Control – Locking Mechanisms-Two Phase Commit Protocol-Dead lock.

UNIT IV   TRENDS IN DATABASE TECHNOLOGY   10

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.

UNIT V   ADVANCED TOPICS   9

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.

S.No.	Subject Code	Subject Name	Name of the Content that include experiential learning through project work
18	CS6304	ANALOG AND DIGITAL COMMUNICATION	• Theory of Amplitude Modulation • SSB Techniques • Frequency Shift Keying (FSK) • Minimum Shift Keying (MSK) • Pulse Code Modulation(PCM) • Global system for Mobile Communication (GSM) • Code Division Multiple Access(CDMA)

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

CS6304   ANALOG AND DIGITAL COMMUNICATION   L T P C
                                                                                  3 0 0 3

OBJECTIVES:

The student should be made to:

- Understand analog and digital communication techniques.
- Learn data and pulse communication techniques.
- Be familiarized with source and Error control coding.
- Gain knowledge on multi-user radio communication.

UNIT I   ANALOG COMMUNICATION   9

Noise: Source of Noise - External Noise- Internal Noise- Noise Calculation. Introduction to Communication Systems: Modulation - Types - Need for Modulation. Theory of Amplitude Modulation - Evolution and Description of SSB Techniques - Theory of Frequency and Phase Modulation - Comparison of various Analog Communication System (AM – FM – PM).

UNIT II   DIGITAL COMMUNICATION   9

Amplitude Shift Keying (ASK) – Frequency Shift Keying (FSK) Minimum Shift Keying (MSK) -Phase Shift Keying (PSK) - BPSK - QPSK - 8 PSK - 16 PSK - Quadrature Amplitude Modulation (QAM) - 8 QAM - 16 QAM – Bandwidth Efficiency- Comparison of various Digital Communication System (ASK – FSK – PSK – QAM).

UNIT III   DATA AND PULSE COMMUNICATION   9

Data Communication: History of Data Communication - Standards Organizations for Data Communication- Data Communication Circuits - Data Communication Codes - Error Detection and Correction Techniques - Data communication Hardware - serial and parallel interfaces. Pulse Communication: Pulse Amplitude Modulation (PAM) – Pulse Time Modulation (PTM) - Pulse code Modulation (PCM) - Comparison of various Pulse Communication System (PAM - PTM - PCM).

UNIT IV   SOURCE AND ERROR CONTROL CODING   9

Entropy, Source encoding theorem, Shannon fano coding, Huffman coding, mutual information, channel capacity, channel coding theorem, Error Control Coding, linear block codes, cyclic codes, convolution codes, viterbi decoding algorithm.

UNIT V   MULTI-USER RADIO COMMUNICATION   9

Advanced Mobile Phone System (AMPS) - Global System for Mobile Communications (GSM) - Code division multiple access (CDMA) – Cellular Concept and Frequency Reuse - Channel Assignment and Hand off - Overview of Multiple Access Schemes - Satellite Communication - Bluetooth.

                                                      TOTAL: 45 PERIODS

OUTCOMES:

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

- Apply analog and digital communication techniques.
- Use data and pulse communication techniques.
- Analyze Source and Error control coding.
- Utilize multi-user radio communication.

TEXT BOOK:

1. Wayne Tomasi, "Advanced Electronic Communication Systems", 6th Edition, Pearson Education, 2009.

REFERENCES:

1. Simon Haykin, "Communication Systems", 4th Edition, John Wiley & Sons, 2004

EFFECTIVE AND ENHANCED DATA SECURITY USING MHT AND DATA RETRIEVAL SYSTEM IN CLOUD

A PROJECT REPORT

Submitted by

TAMILSELVI A   311816205704

JAYASRI V   311816205703

In partial fulfillment for the requirement award of the degree

Of

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY
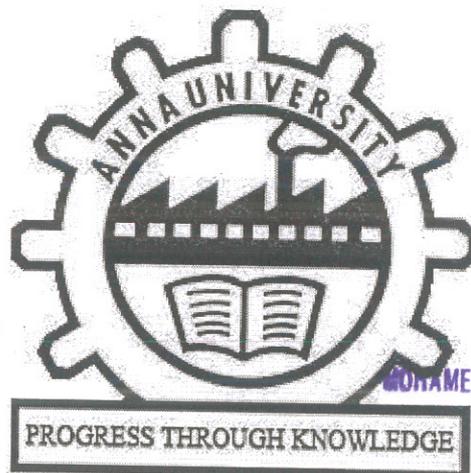
MOHAMED SATHAK A.J COLLEGE OF ENGINEERING

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

ANNA UNIVERSITY : CHENNAI-600 025

MAY 2020

BONAFIDE CERTIFICATE

Certified that this project report **"EFFECTIVE AND ENHANCED DATA SECURITY USING MHT AND DATA RETRIEVAL SYSTEM IN CLOUD"** is the bonafide work of **"TAMILSELVI A (311816205704), JAYASRI V (311816205703)"** Who carried out the project work under my supervision.

SIGNATURE OF HOD

Mr .S. SENDHIL PANDI M.TECH (PH.D)

HEAD OF THE DEPARTMENT,

Dept. of Information Technology
 Mohamed Sathak A.J
College of Engineering,
Chennai-603103.
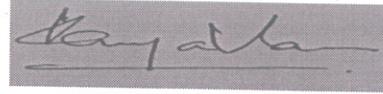
SIGNATURE OF GUIDE

Mrs. S. KAYALVIZHI M.E (PH.D)

Assistant Professor,

Dept. of Information Technology

MohamedSathak A.J College of Engineering,

Chennai-603103.

Submitted for viva – voice Examination held ___22.09.2020___

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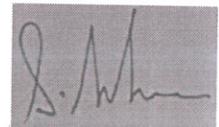
Internal Examiner

External Examiner

Abstract

Generally, to create data for the Intrusion Detection System (IDS), it is necessary to set the real working environment to explore all the possibilities of attacks, which is expensive. Software to detect network intrusions protects a computer network from un603103authorized users, including perhaps insiders. The intrusion detector learning task is to build a predictive model (i.e. a classifier) capable of distinguishing between "bad" connections, called intrusions or attacks, and "good" normal connections. To prevent this problem in network sectors have to predict whether the connection is attacked or not from KDDCup99 dataset using machine learning techniques. The aim is to investigate machine learning based techniques for better packet connection transfers forecasting by prediction results in best accuracy. To propose a machine learning-based method to accurately predict the DOS, R2L, U2R, Probe and overall attacks by prediction results in the form of best accuracy from comparing supervise classification machine learning algorithms. Additionally, to compare and discuss the performance of various machine learning algorithms from the given dataset with evaluation classification report, identify the confusion matrix and to categorizing data from priority and the result shows that the effectiveness of the proposed machine learning algorithm technique can be compared with best accuracy with precision, Recall and F1 Score.

Conclusion

The analytical process started from data cleaning and processing, missing value, exploratory analysis and finally model building and evaluation. The best accuracy on public test set is higher accuracy score will be find out by comparing each algorithm with type of all network attacks for future prediction results by finding best connections. This brings some of the following insights about diagnose the network attack of each new connection. To presented a prediction model with the aid of artificial intelligence to improve over human accuracy and provide with the scope of early detection. It can be inferred from this model that, area analysis and use of machine learning technique is useful in developing prediction models that can helps to network sectors reduce the long process of diagnosis and eradicate any human error.
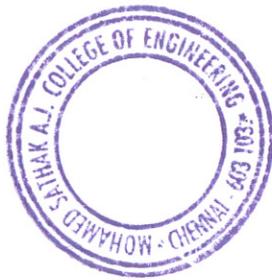
PREDICTION OF THE NETWORK ATTACKS USING SUPERVISED MACHINE LEARNING ALGORITHM

A PROJECT REPORT

Submitted by

AFRIN FATHIMA M.	(311816205001)
FARHEEN BEGUM J.	(311816205003)

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
SIRUSERI, OMR, CHENNAI - 603103

APRIL 2020

i
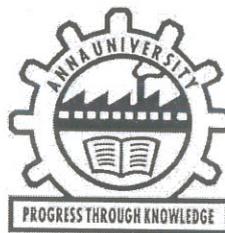
BONAFIDE CERTIFICATE

Certified that this project report "PREDICTION OF THE NETWORK ATTACKS USING SUPERVISED MACHINE LEARNING ALGORITHIM" is the bonafide work of **AFRIN FATHIMA M.(311816205001)** and **FARHEEN BEGUM J. (311816205003)** who carried out the project work under my supervision.

SIGNATURE
Mr. SENTHIL PANDI S, ME.,
HEAD OF THE DEPARTMENT
Information Technology
Mohamed Sathak A J College of Engineering
Siruseri, OMR
Chennai – 603103

SIGNATURE
Mr. SYED ISMAIL A, ME.,
SUPERVISOR
Information Technology
Mohamed Sathak A J College of Engineering
Siruseri, OMR
Chennai – 603103

Project Viva-Voce held on   22.9.2020

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

INTERNAL EXAMINER   EXTERNAL EXAMINER

ABSTRACT

We are deploying this Application in Cloud. Data is made & Encrypted, Split and stored in Cloud. Replica is created for data backup. Top Hash Key is stored in Separate Cloud as well in the Local Backup. We apply MHT algorithm for data splitting. In our implementation we are using cloud for data storage . Because in existing system automatic data recover is drawback. If user loss any file in their cloud storage user have to give recover option and cloud service provider will recover the file and provide that to the user. But in this paper we are implementing an system that will recover the crashed files automatically. For that we are having TPA Third Party Auditing to monitor the file crashes TPA will intimate the user that filer crashed . After that we are using the concept Erasure code , it will recover the file from replica server. So through this e are providing security to the user and his data.

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

CONCLUSION

Thus the paper infer that now a days people were using cloud in huge number of ways, but the question is proper security is there or not? We can't able to provide security to the entire cloud server but we can able to secure our data. Here, we provide the security system using MHT by splitting the data on cloud server and if it any case our data was crashed on cloud TPA will send notificationto the user through Mail and also crashed file will automatically recovered using Replica server.

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

PROJECT REPORT
ON

"Attendance For IT Company Using Optical Scanning System"

Submitted By:

DEEWAN FEROZKHAN A   **(311816205002)**

SUHAIL RASHEED .S   **(311816205011)**

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY
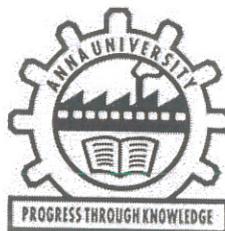
PRINCIPAL
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING
EGATTUR 603 .03
KANCHIPURAM DT.

MOHAMED SATHAK A J COLLEGE OF ENGINEERING
SIRUSERI, OMR, CHENNAI - 603103

APRIL 2020

BONAFIDE CERTIFICATE

Certified that this project report "Attendance For IT Company Using Optical Scanning System" is the bonafide work of " DEEWAN FEROZH KHAN .A (311816205009) , SUHAIL RASHEED .S (311816205011)" who carried out the project work under my supervision.

SIGNATURE

Mr.Senthil Pandi. S
HEAD OF THE DEPARTMENT

Information Technology

**MOHAMED SATHAK A J
COLLEGE OF ENGINEERING
SIRUSERI, OMR,**

CHENNAI - 603103

SIGNATURE

Mr.Syed Ismail. A
SUPERVISOR
Asst Professor
Information Technology

**MOHAMED SATHAK A J
COLLEGE OF ENGINEERING
SIRUSERI, OMR,**

CHENNAI - 603103

PRINCIPAL
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING
EGATTUR 603 103.
KANCHIPURAM DT.
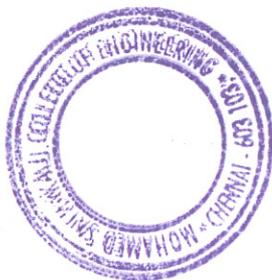
Project Viva-Voce held on   22/ 9 /2020
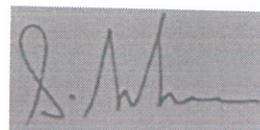
INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

Today there is a need for automation systems and for this we can automate on how the attendance is done. The face detection system has also delivered a security enhancement, where this can be used in the system to provide greater security. There is no need of manual interventions and the attendance is taken automatically and is stored in the database.

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

CONCLUSION

The attendance of the employees will be maintained and be recorded on a daily basis. The computer vision based attendance monitoring system will bring a great benefit to many organization and institutions by saving more time.

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

DETECTION OF MISBEHAVIORAL ACTIVITY AS COPY CAT NODES IN WIRELESS SENSOR NETWORKS TO ENHANCE THE NETWORK SECURITY

A PROJECT REPORT

Submitted by

P.MAHALAKSHMI   (311816205005)
V.VINDHIYA   (311816205705)

In partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY
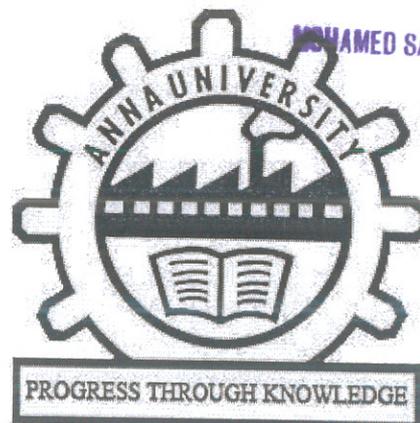
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

SEPTEMBER 2020

BONAFIDE CERTIFICATE

Certified that this project report" **DETECTION OF MISBEHAVIORAL ACTIVITY AS COPY CAT NODES IN WIRELESS SENSOR NETWORKS TO ENHANCE THE NETWORK SECURITY**" is the bonafide work of **"P.MAHALAKSHMI (311816205005), V.VINDHIYA (311816205705)"** who carried out the project work undermy supervision.

SIGNATURE OF HOD

Mr. SENDHIL PANDI., M.Tech (Ph.d)

HEAD OF THE DEPARTMENT,

Dept. of Information Technology
Mohamed Sathak A.J College of
Engineering, Chennai-603103.
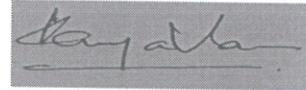
SIGNATURE OF GUIDE

Mrs. S. KAYALVIZHI M.E (Ph.d)

Assistant Professor,

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

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

Submitted for viva – voice Examination held on 22.09.2020 .

INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

The first one is based on a distributed hash table (DHT) in which Chord algorithm is used to detect the cloned node, every node is assigned with the random key, before it transmits the data it has to give its key which would be verified by the witness node. If same key is given by another Node then the witness node identifies the cloned Node. Here every node only needs to know the neighbor-list containing all neighbor IDs and its locations. We are implementing Chord Algorithm, by location based nodes identification, where every region/location will have a group leader. The Group leader will generate a random number with time stamp to the available nodes in that location. Witness nodes verify the random number and time stamp to detect the cloned node. The message is also encrypted for security purpose.

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

CONCLUSION

In this paper, we have proposed distributed energy-efficient clone detection protocol with random witness selection. Specifically, we have proposed ERCD protocol, which includes the witness selection and legitimacy verification stages. Both of our theoretical analysis and simulation results have demonstrated that our protocol can detect the clone attack with almost probability 1, since the witnesses of each sensor node is distributed in a ring structure which makes it easy be achieved by verification message. In addition, our protocol can achieve better network lifetime and total energy consumption with reasonable storage capacity of data buffer. This is because we take advantage of the location information by distributing the traffic load all over WSNs, such that the energy consumption and memory storage of the sensor nodes around the sink node can be relieved and the network lifetime can be extended.

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

A SECURE DATA IN CLOUD COMPUTING BY KEY POLICY ATTRIBUTE BASED ENCRYPTION

A PROJECT REPORT

Submitted by

HARIKRISHNAN.P.C   (311816205004)

MOHAMED FAIZAL.A   (311816205007)

Partial fulfillment for the award of the degree

Of

BACHELOR OF TECHNOLOGY

IN

INFORMATION TECHNOLOGY

MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING

PROGRESS THROUGH KNOWLEDGE
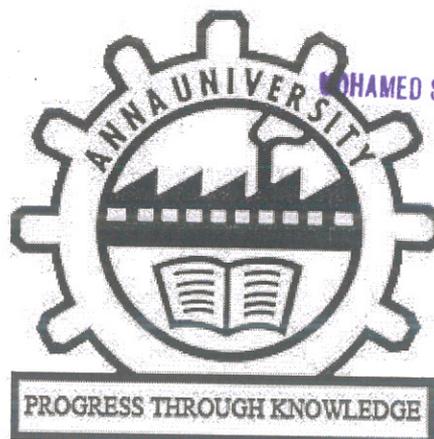
MAY 2020

BONAFIDE CERTIFICATE

Certified that this project report **"A SECURE DATA IN CLOUD COMPUTING BY KEY POLICY ATTRIBUTE BASED ENCRYPTION"** is the bonafide work of "HARIKRISHNAN.P.C (311816205004), MOHAMED FAIZAL.A (311816205007)"

Who carried out the project work under my supervision .

SIGNATURE OF HOD

Mr.SENDHIL PANDI M.TECH(PH.D)

HEAD OF THE DEPARTMENT,

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

SIGNATURE OF GUIDE

Mr.R.B.SAROORAJ M.TECH

(PH.D)ASSISTANT PROFESSOR,

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

Submitted for viva – voice Examination held on 22/09/2020

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

INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

The cloud computing is a rapid development of versatile cloud services; it becomes increasingly susceptible to use cloud services. We can share data in friend circle. Since it is not feasible to implement full lifecycle privacy security. The privacy security of access control becomes a challenging task, especially when we share sensitive data on cloud servers. In order to tackle this problem, we propose a key policy attribute based encryption with time-specified attributes (KP-ABE). In the KP-ABE scheme, every cipher text is labeled with a time interval while private key is associated with a time instant. The KP-ABE is able to solve some important security problems by supporting user defined authorization n period and by providing fine grained access control during the period.

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

CONCLUSION

With the rapid development of versatile cloud services, a lot of new challenges have emerged. One of the most important problems is how to securely delete the outsourced data stored in the cloud severs. In this project, we proposed a novel KP-ABE scheme which is able to achieve the time-specified cipher text in order to solve these problems by implementing flexible fine- grained access control during the authorization period and time- controllable self-destruction after expiration to the shared and outsourced data in cloud computing. We also gave a systemmodel and a security model for the KP-ABE scheme. The comprehensive analysis indicates that the proposed KP-ABE scheme is superior to other existing schemes.

ONLINE STREAMING PARSING OF LARGE UNSTRUCTURED SYSTEM LOGS

A PROJECT REPORT

Submitted by

SUVIYA S   **311816205701**
**ASHWINI A**   **311816205702**

in partial fulfillment for the award of the

degree

of

BACHELOR OF TECHNOLOGY

in

INFORMATION   TECHNOLOGY
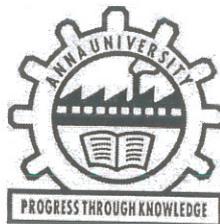
MOHAMED SATHAK A J COLLEGE OF ENGINEERING
SIRUSERI, OMR, CHENNAI - 603103

APRIL 2020

BONAFIDE CERTIFICATE

Certified that this project report **"ONLINE STREAMING PARSING OF LARGE UNSTRUCTURE SYSTEM LOGS"** is the bonafide work of **SUVIYA S (311816205701) and ASHWINI A(311816205702)"** who carried out the project work under my supervision.

HEAD OF THE DEPARTMENT

Mr. SENTHIL PANDI

Assistant Professor,

Department of Information technology,

Mohammed Sathak AJ College of,

Engineering

Chennai-603 103.

SUPERVISOR,

Mr. A. SYED ISMAIL

Assistant Professor,

Department of Information technology,

Mohammed Sathak AJ College of,

Engineering

Chennai-603 103.

Project Viva-Voce held on 22.09.2020

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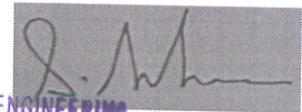
INTERNAL EXAMINER

EXTERNAL EXAMINER

ABSTRACT

This has made virtualized infrastructures become an attractive target for cyber attackers to launch attacks for illegal access. Exploiting the software vulnerabilities within the hypervisor source code, sophisticated attacks such as Virtualized Environment Neglected Operations Manipulation (VENOM) have been performedwhich allow an attacker to break out of a guest VM and access the underlying hypervisor. In addition, attacks such as Heart bleed and Shellshock which exploit the vulnerabilities within the operating system can also be used against the virtualized infrastructure to obtain login details of the guest VMs and perform attacks ranging from privilege escalation to Distributed Denial of Service (DDoS).

Conclusion

In this paper, we have put forward a novel big data based security analytics approach to protecting virtualized infrastructures in cloud computing against advanced attacks. Our BDSA approach constitutes a three phase framework for detecting advanced attacks in real-time. First, the guest VMs's network logs as well as user application logs are periodically collected from the guest VMs and stored in the HDFS. Then, attack features are extracted through correlation graph and Map Reduce parser. Finally, two-step machine learning is utilized to ascertain attack presence.

OXUINO

DETECTION OF DOPING IN SPORTS

A PROJECT REPORT

Submitted by

RAKESH C [311816205010]

NOUFAL AHMED N [311816205008]

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

IN
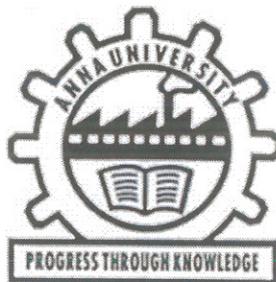
INFORMATION TECHNOLOGY

MOHAMED SATHAK A J COLLEGE OF ENGINEERING

SIRUSERI, OMR, CHENNAI – 603103.

SEPTEMBER 2020

1

BONAFIDE CERTIFICATE

Certified that this project report "**OXUINO - DOPE DETECTION IN SPORTS**" is the Bonafide work of **RAKESH [311816205010] and NOUFAL AHMED N [311816205008]** who carried out the project work under my supervision

.

S. SENTHIL PANDI M.Tech.(Ph.D.)

SUPERVISOR & HEAD OF THE DEPARTMENT

INFORMATION TECHNOLOGY

MOHAMED SATHAK A J COLLEGE OF ENGINEERING

SIRUSERI, OMR

CHENNAI, 603103.

Project Viva-Voce held on 22/09/2020

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

INTERNAL EXAMINER

EXTERNAL EXAMINER

2
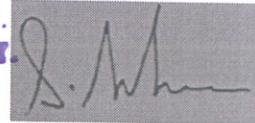
ABSTRACT

Oxuino – This project is to improve the effectiveness of drug test in sports by sensing the oxygen level of the sport person. The Sport Associations are till now using the traditional methods that is collection of blood and urine samples for the testing process. According to WADA, it's challenging to store the samples and performing test at certain period of times. To improve the Dope detection accuracy and make the efficiency, a new approach based on the interfacing of Arduino and oxygen sensor is proposed and it sense the oxygen level of athletes and achieves the testing with 99.04% detecting rate, this innovative and effective technique obviously outperforms the traditional testing methods.

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

CONCLUSION

This research makes a number of significant and valuable contributions to the
WADA and sports associations. Unlike the traditional method, which takes time
and storage space for the testing, this Oxuino Dope Detecting kit is user-friendly
and gives accurate results. The drugged athlete can be easily judged by sensing
their Oxygen level and result is provided instantly which will be useful for
deserving athlete and also for association to detect the undeserving candidate and
fraudulent in sports.

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

PROJECT REPORT ON

"AUTOMATED SPEAKER EMOTION DETECTION"

Submitted By:

RAJA SURYA. A
(311816205009)

THIYAGARAJAN.R
(311816205012)

in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

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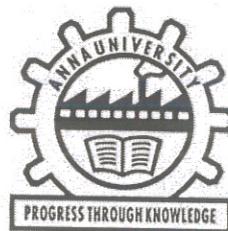
PRINCIPAL
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING
EGATTUR 603103.
KANCHIPURAM DT

MOHAMED SATHAK A J COLLEGE OF ENGINEERING
SIRUSERI, OMR, CHENNAI – 603103

ANNA UNIVERSITY: CHENNAI 600 025

APRIL 2020

BONAFIDE CERTIFICATE

Certified that this project report" AUTOMATED SPEAKER EMOTION DETECTION"
is the bonafide work of ""RAJA SURYA A(311816205009) THIYAGARAJAN (311816205012)""" who
carried out the project work undermy supervision.

SIGNATURE OF HOD

Mr. SENDHIL PANDI, M.Tech (Ph.d)

HEAD OF THE DEPARTMENT,

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

SIGNATURE OF GUIDE

Mr. SENDHIL PANDI,M.TECH (Ph.d)

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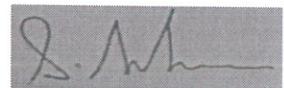Mohamed Sathak A.J College of
Engineering, Chennai-603103.

Submitted for viva – voice Examination held on 22.09.2020 .

INTERNAL EXAMINER

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

EXTERNAL EXAMINER

Abstract

An emotion recognition system for assessing human emotional behavior from communication by a speaker includes a processing system configured to receive signals representative of the verbal and/or non-verbal communication. The processing system derives signal features from the received signals. The processing system is further configured to implement at least one intermediate mapping between the signal features and one or more elements of an emotional ontology in order to perform an emotion recognition decision. The emotional ontology provides a gradient representation of the human emotional behavior.
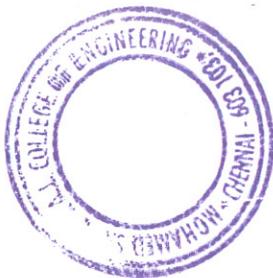
PRINCIPAL
MOHAMED SATHAK A.J. COLLEGE OF ENGINEERING
EGATTUR-603103.
KANCHIPURAM DT

Conclusion

The work of emotion detection is a research based project work which keeps on taking its own course along the whole timeline of work. We are having fixed in our minds certain targets which we have enumerated before in this report. So, we find it important to take stock of the whole work that we have done till now. The understanding of the proper functioning of the MFCC is totally based upon thorough theoretical study. The simulations and the practical implementation of the new ideas have been successfully developed by means of the system architecture and coding of the various modules of the working model. We also have made a considerable progress regarding the forecasting capability of the algorithm.

The detailed study of the program codes reveal that the entire model is devoid of any complicated nested loops and is based on simple code fragments, leading to its average complexity being O(n). Implementation of the prediction algorithm will make the model much more effective with respect to time, cost and space