Lokmanya Tilak Jankalyan Shikshan Sanstha's
PRIYADARSHINI COLLEGE OF ENGINEERING
(Recognised by A.I.C.T.E., New Delhi & Govt. of Maharashtra, Affiliated to R.T.M.Nagpur University)
Near CRPF Campus, Hingna Road, Nagpur-440 019, Maharashtra (India)
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1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years

2020-21

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Page 2 to 116
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1.3.2 Average percentage of courses that include experiential learning through project work/field work/internship during last five years

BE.:Computer Technology(2020-21)

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain	Page No
1	Program Logic Design in "C"	BECT202T/P	Programming and logic design	2-18
2	Data Structures & Program Design	BECT209T/P		
3	Introduction to Main-Frame Languages	BECT212T		
4	Object Oriented Modeling	BECT301T/P		
5	Design and Analysis of Algorithms	BECT304T/P		
6	Computer Graphics	BECT306T/P		
7	Software Engineering and Project Management	BECT308T/P		
8	Social and Ethical aspects of IT	BECT204T	Computer Network and Security	19-39
9	Data Communication	BECT305T		
10	Computer network	BECT307T/P		
11	Cyber & Information Security	BECT407T/P		
12	Elective IV: Cloud Computing	BECT409T		
13	Database Management System	BECT302T/P	Database Management System and Data Processing	40-51
14	ELECTIVE-I Advance Database Systems	BECT403T		
15	Data Warehousing and Mining	BECT406T/P		
16	Digital Circuits & Microprocessor	BECT203T/P	Computer Architecture	52-63
17	Computer Architecture & Organization	BECSE205T		
18	Advance Microprocessor and Interfacing	BECT210T/P		
19	Embedded System Design	BECT309T		
20	Theory of Computation	BECSE211T	System Software	64-73
21	COMPUTER WORKSHOP – 2 LAB	BECSE206P		
22	Operating Systems	BECT303T/P		
25	Compilers	BECT401T/P		
26	Elective II: Natural Language Processing	BECT404T		
27	COMPUTER WORKSHOP I LAB	BECSE206P	Web Technology	74-93
28	Elective II:Architecture of Web Application	BECT404T		
29	ELECTIVE-III :Web Data Management	BECT408T		
30	Artificial Intelligence	BECT402T/P	Artificial Intelligence	94-115
31	ELECTIVE-I Computational Intelligence	BECT403T		
32	ELECTIVE-III :Human Computer Interface	BECT408T		
33	Mini project	BECT311P	Others	
34	Project and Seminar	BECT405P		
35	Project	BECT410P		

Domain 1: Programming and Logic Design

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Program Logic Design in "C"	BECT202T/P	Programming and logic design
2	Data Structures & Program Design	BECT209T/P	
3	Introduction to Main-Frame Languages	BECT212T	
4	Object Oriented Modeling	BECT301T/P	
5	Design and Analysis of Algorithms	BECT304T/P	
6	Computer Graphics	BECT306T/P	
7	Software Engineering and Project Management	BECT308T/P	

BECT202T: Program Logic Design in "C"

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Practical) 1 hr (Tutorial)	5	100	20	80	100

Unit-I

Arrays: single dimensional arrays, two dimensional arrays, multidimensional arrays, variable length arrays. Array operations. Strings, single dimensional array of string, two dimensional array of string, operations in "string.h". Structures: array of structures, passing structure to function, structure within structures. Unions, bit-fields, enumerations, sizeof, typedef.

Unit II

Introduction File handling,:-File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer, Opening a file, Closing a file, Writing a character, Reading a character, Using fopen(), getc(), putc(), and fclose(), Using feof(). Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), getting file name as Command line arguments.

Unit III

Pointers: pointers operators, pointer arithmetic, Pointers and function, Array of pointers, Pointer and Strings, Pointer to structure, Pointers within structure, Introduction of Static and Dynamic memory allocation, The process of Dynamic memory allocation, DMA functions Malloc() function, Sizeof() operator, Function free(), Function realloc()

Unit IV

Graphics: Graphics and Text mode, Video Adapter, Initialize Graphics Mode and resolution, header file graphics.h. Functions used In Graphics – Drawing a Point on Screen, Drawing – lines, rectangle, circles, arcs, polygon. Functions to fill colors. Display Text in Graphics mode, outtext(), outtextxy(), justifying text.

Advanced Graphics: various functions used for moving of graphical objects vizmoverel(), moveto(), putimage(), putpixel().

Unit V

Introduction to problem solving and programming : Basic model of computation, Notion of Algorithms, Principle of Mathematical Induction, Basics of functional programming, notion of types, Iterative versus recursive style, Correctness and efficiency issues in programming, time and space measures

Unit VI

Introduction to problem solving and programming: Basics of imperative style programming, Assertions and loop invariants, Top down design and examples of step-wise refinement, Programming using structures, introduction to encapsulation and object oriented programming.

Text Books

1. The C Programming Language: Dennis Ritchie & Brain Kernighan [Pearson]
2. Practical "C" Programming: Steve Oualline, O'Reilly Publications
3. Programming with C :K.R.Venugopal&S.R.Prasad [TMH]
3. How to solve it by Computer by R. J. Dromey, Prentice-Hall India EEE Series.

Reference Books

1. The Complete Reference C (4th Edition) : Herbert Schildt [TMH]
2. Structure and Interpretation of Computer Programs by Harold Abelson and Gerald Sussman with Julie Sussman, MIT Press, 1985.

BECT202P: Program Logic Design in "C" lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT209T: Data Structures & Program Design

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Introduction to Data Structures: Basic Concepts of Data, How to Create programs.
Arrays: Ordered Lists, Sparse Matrices, Quick Sort, Merge Sort, Heap Sort, selection & Bubble Sort, Linear Search, Binary Search.

Unit II:

Stacks & Queues: Fundamentals, Evaluation of expressions, Polish expressions & their compilation, Application of stacks, Multiple stacks & Queues, priority queues.

Unit III:

Linked Lists: Singly Linked List, Linked Stacks & Queues, the polynomial addition, Examples on linked list, circular linked list, doubly linked list & dynamic Storage management, Generalized list.

Unit IV:

Trees: Basic Terminology, Basic trees, Binary tree representations, threaded storage representation, binary tree traversals, binary search trees, Application of trees. Preliminary treatment of AVL Trees, B-Trees.

Unit V:

Graphs: Definition & terminology, Graph representation: matrix representation of Graph, List of structure, other representation of graphs, Breadth First Search, Depth First Search, Spanning trees, Shortest path algorithm, topological sorting, Critical path.

Unit VI:

Files: Storage structures on tapes & disks, sorting with disks & Tapes, sequential flies, indexed sequential files, Direct Access files, and Hashing techniques.

Textbooks:

- Fundamentals of Data Structures: Horowitz and Sahani
- Algorithms in a Nutshell, George H & Garry, O'reilly Publication
- Data Structures using C by Tanenbaum, Pearson Education
- S. Sahani, Data Structures in C,
- Data structures -Robert Kruse

BECT209P: Data Structures & Program Design Lab: Practical will be based on above syllabus using "C" language and relevant tools of MATLAB.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT212T: Introduction to Main-Frame Languages

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I: Evolution of Mainframe hardware

- Overview of Computer Architecture -Classification of Computers - micro, mini, mainframes and super computer - Mainframe computer - key features - benefits - Evolution of Mainframes - Different hardware systems
- Operating systems on mainframes, Batch processing vs. online processing - mainframe operating system. - evolution - concepts of Address space, Buffer management - Virtual storage - paging - swapping - Dataset management in mainframes

Unit II: z/OS and its features

- Z-operating system (Z/OS) - Virtual storage - Paging process - storage Managers - Program execution modes - Address space - Multiple virtual system(MVS) , MVS address space, Z/OS address space - Dataset - sequential and partial dataset - Direct access storage device(DASD) -Access methods - Record formats - Introduction to virtual storage access methods(VSAM) - Catalog - VTOC

Unit III: Introduction to JCL

- Introduction to Job Control language - Job processing - structure of JCL statements - Various statements in JCL - JOB statement - EXEC statement - DD statement - JCL procedures and IBM utility programs.

Unit IV: COBOL Programming 1

- Introduction – History, evolution and Features, COBOL program Structure, steps in executing COBOL
- Language Fundamentals – Divisions, sections, paragraphs, sections, sentences and statements, character set, literals, words, figurative constants, rules for forming user defined words, COBOL coding sheet.
- Data division – Data names, level numbers, PIC and VALUE clause, REDEIFNES, RENAMES and USAGE clause
- Procedure Division – Input / Output verbs, INITIALIZE verb, data movement verbs, arithmetic verbs, sequence control verbs.

Unit V: COBOL Programming 2

- File processing – Field, physical / logical records, file, file organization (sequential, indexed and relative) and access mode, FILE-CONTROL paragraph, FILE SECTION, file operations.
- File handling verbs – OPEN, READ, WRITE, REWRITE, CLOSE.
- Table processing – Definition, declaration, accessing elements, subscript and index, SET statement, SEARCH verb, SEARCH ALL verb, comparison.
- Miscellaneous verbs – COPY, CALL, SORT, MERGE, STRING, UNSTRING verbs.

Unit VI: Mainframe Application Development guidelines

- COBOL coding standards, relation between a COBOL file handling program and JCL, Different types of ABEND codes, COBOL-DB2 program pre-compilation, DBRM (Database Request Module), Application plan/packages, program execution methods (EDIT JCL, foreground and background modes).

Books and Reference Text:

- 1. MVS JCL, Doug Lowe, Mike Murach and Associates
- 2. Gary DeWard Brown, JCL Programming Bible (with z/OS) fifth edition, Wiley India Dream Tech, 2002.
- 3. z/OS V1R4.0 MVS JCL Reference found online at http://www-1.ibm.com/support/docview.wss?uid=pub1sa22759706
- 4. COBOL - Language Reference, Ver 3, Release 2, IBM Redbook.
- 5. COBOL - Programming Guide, Ver 3, Release 2, IBM Redbook.
- 6. Nancy Stern & Robert A Stern, "Structured Cobol Programming", John Wiley & Sons, New York, 1973.
- 7. M.K. Roy and D. GhoshDastidar, "Cobol Programming", Tata McGraw Hill, New York, 1973.
- 8. Newcomer and Lawrence, Programming with Structured COBOL, McGraw Hill Books, New York, 1973.
- Study material from INFOSYS-PUNE

SYLLABUS: V SEMESTER (Computer Technology) (C.B.S.)

BECT301T: Object Oriented Modeling

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I: Introduction: The meaning of Object Orientation, object identity, Encapsulation, information hiding, polymorphism, importance of modeling, principles of modeling, object oriented modeling, ***Aggregation and association, Generalization***, Introduction to UML, conceptual model of the UML, Architecture.

Unit II: Basic Structural Modeling: Classes, Relationships, common Mechanisms, and diagrams. Class &Object Diagrams: Terms, concepts, modeling techniques for Class &Object Diagrams. Collaboration Diagrams: Terms, Concepts, depicting a message, polymorphism in collaboration Diagrams, iterated messages, use of self in messages.Terms, concepts, depicting asynchronous messages with/without priority, callback mechanism, broadcast messages.

Unit III: Basic Behavioral Modeling: Use cases, Use case Diagrams, Activity Diagrams, State Machine, Process and thread, Event and signals, Time diagram, interactiondiagram, ***Dataflow diagram,*** Package diagram, ***sequence diagram, E-R diagram***.

Unit IV: Architectural Modeling: Component, Deployment, Component diagrams and Deployment diagrams.

Unit V: The Unified process: use case driven, architecture centric, iterative, and incremental. Use case driven process: why use case, capturing use cases, analysis, design, and implementation to realize the use cases, testing the use cases.

Unit VI: Architecture-centric process: architecture in brief, why we need architecture, use cases and architecture, the steps to architecture, an architecture description.Case Study: The Unified Library application.

Text Books:

1. The Unified Modeling Language User Guide by Grady Booch, James Rumbaugh, Ivar Jacobson 2nd Edition, Pearson Education.
2. UML 2 Toolkit by Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado WILEY-Dreamtech India Pvt. Ltd.
3. The Unified Software Development Process by Ivar Jacobson, Grady Booch, James Rumbaugh, Pearson Education

Reference Books:

1. Fundamentals of Object Oriented Design in UML by Meilir Page-Jones Pearson Education.
2. Modeling Software Systems Using UML2 by Pascal Roques WILEY-Dreamtech India Pvt. Ltd
3. Practical Object-Oriented Design with UML by Mark Priestley TATA McGrawHill

BECT301P: Object Oriented Modeling lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT304T: Design & Analysis of Algorithms

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT-I

Mathematical foundations, summation of arithmetic and geometric series, n, n^2 , bounding summations using integration, recurrence relations, solutions of recurrence relations using technique of characteristicequation, Complexity calculation of various standard functions, principles of designing algorithms

UNIT-II

*Asymptotic notations of analysis of algorithms, analyzing control structures, worst case and average case analysis, amortized analysis, application of amortized analysis, advanced data structures like Fibonacci heap, disjoint set representation,and their applications,**Divide and conquer basic strategy, binary search, quick sort, merge sort, matrix operations, Multiplication Algorithm***

UNIT-III

Greedy method – basic strategy, Knapsack Problem, application to job sequencing with deadlines problem, minimum cost spanning trees, single source shortest path, Optimal Search Patterns.

UNIT-IV

Dynamic Programming basic strategy, multistage graphs, all pairs shortest path, single source shortest paths, optimal binary search trees, traveling salesman problem, Longest Common Subsequence, ***0/1 Knapsack problem***.

UNIT-V

Connected components, Backtracking basic strategy, 8-Queen's problem, ***sum of subsets, Knight tour's problem***, graph coloring, Hamiltonian cycles etc, Introduction to Approximation algorithm.

UNIT-VI

NP-hard and NP-complete problems, basic concepts, non-deterministic algorithms, NP-hard and NP-complete, decision and optimization problems, graph based problems on NP Principle.

Text Books:

1. Introduction to Algorithms By Thomas H. Cormen et.al. Prentice Hall of India.
2. Design & Analysis of Algorithms By ParagHimanshu Dave, HimanshuBhalchandra Dave, second Edition, Pearson Publication.
3. Computer Algorithms- Inroduction to Design and Analysis By Sara Baase, Allen Van Gelder, Third Edition, Pearson Publication.
4. The Design and Analysis of Algorithms By Alfred V. Aho, John E. Hopcraft, Jeffrey D. Ullman, Pearson Publication.

Reference Books:

1. Computer AlgorithmsBy Horowitz, Sahani, Rajsekharam, Galgotia Publications Pvt.

BECT304P: Design & Analysis of Algorithms Lab: Practical will be based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

SEMESTER: SIXTH (C.B.S.)

BRANCH: COMPUTER TECHNOLOGY

BECT306T: Computer Graphics

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Computer Graphics

Overview of Computer Graphics, Computer Graphics Application and Software, Graphics Areas, Graphics Pipeline, Graphics API's, Hardcopy Technologies, Display Technologies – Raster scan Display System, Video Controller – Vector scan display system, Random Scan Display Processor, Input Devices for Operator Interaction,

UNIT II

Basic Raster Graphics Algorithms for Drawing 2D primitives, aliasing and antialiasing, Polygon filling methods: Scan Conversion Algorithms: Simple Ordered edge list, Edge Fill, Fence fill and Edge Flag Algorithm. ,Seed fill Algorithms: Simple and Scan Line Seed Fill Algorithm, Halftoning techniques

UNIT III

2D Clipping algorithms for regular and irregular windows: Sutherland Cohen Outcode, Sutherland Cohen Subdivision, Mid-Point subdivision, Cyrus Beck and Sutherland Hodgman, Cohen-Sutherland Polygon clipping Algorithm. Clipping about Concave regions.

Curves and Surfaces: Polygon Mesh, Parametric Cubic Curves, Parametric Bicubic Surfaces, Quadratic Surface, Bezier Curves and B-spline curves.

UNIT IV

2D Transformations, Translation, Rotation, Reflection, Scaling, Shearing Combined Transformation, Rotation and Reflection about an Arbitrary Line. Normalized Device Coordinates and Viewing Transformations. ***Homogeneous coordinate system.***

UNIT V

3D System Basics and 3D Transformations, 3D graphics projections, parallel, perspective, viewing transformations. 3D graphics hidden surfaces and line removal, painter's algorithm, Z - buffers, Warnock's algorithm.

UNIT VI

Graphics Programming using OPENGL: Why OpenGL, Features in OpenGL, OpenGL operations, Abstractions in OpenGL – GL, GLU & GLUT, 3D viewing pipeline, viewing matrix specifications, a few examples and demos of OpenGL programs.

Text Books:

1. Fundamentals of Computer Graphics, Peter Shirley and Steve Marschner, Third Edition.
2. Procedural Elements of Computer Graphics III Edition, Rogers, McGraw Hill.
3. Computer Graphics - Principles and Practice, J. D. Foley, A. Van Dam, S. K. Feiner and J. F. Hughes, Second Edition in C, Pearson Education.
4. Computer Graphics with OpenGL, Donald D. Hearn, M. Pauline Baker, Warren Carithers, Fourth Edition, Pearson Education.
5. Computer Graphics, Hearn and Baker, PHI, India

BECT306P: Computer GraphicsLab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs	1	50	25	25	50

BECT308T:Software Engineering & Project Management

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT - I

Introduction: Software Characteristics, Software Engineering- A Layered Technology, Software Process Framework, Software Process Models, Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process Model, Agile Process Models.

UNIT - II

Software Engineering Principles and Practice: Communication, planning and modeling practices, System engineering and modeling, Business process engineering, Requirements Engineering

UNIT - III

Software Analysis &Design : Modeling Approaches, Data Modeling, Object-Oriented Modelling, Scenario-Based Modeling, Flow-Oriented Modeling, Class-based Modeling, Behavioral Model. Design Engineering Concepts, Design Model, Pattern-Based Software design Design Concepts : Abstraction Architecture, pattern modularity, information hiding, design classes, refactoring.

UNIT - IV

Software Testing : Testing Fundamentals , Black-Box Testing, White-Box Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging.

UNIT - V

An overview, Software Quality, A Framework for Product Metrics, Metrics for Analysis & Design Models, Metrics for Source Code, Metrics for Testing & Maintenance. Project management – the management spectrum, Metrics for process & project – Software measurement, Metrics for software quality, Project scheduling.

UNIT - VI

Risk management – Risk strategies, Software risks, Risk identification, Risk refinement, RMMM Quality Management – Quality Concepts, Software Quality Assurance, Software Reviews, Formal Technical Review, Statistical Software Quality Assurance, Software Reliability, Change Management – Software Configuration Management, SCM Repository, SCM Process, Reengineering – Software reengineering, Reverse engineering, Restructuring, Forward Engineering

Text Books:

1. Software Engineering-A Practitioner's Approach (Sixth Edition)-Roger Pressman (TMH)
2. Software Engineering (Ninth Edition)-Ian Summerville (Pearson Education)
3. Software Engineering : Theory and Practice (Fourth Edition) – Pfleeger (Pearson Education)
4. Software Engineering- Mishra /Mohanty (Pearson Education)

Reference Books:

1. Software Engineering-Schaum's Series (TMH)
2. Software Project Management - Sanjay Mohapatra (Cengage Learning)
3. Software Engineering for Students –(Fourth Edition) – Bell (Pearson Education)

BECT308P: Software Engineering & Project Management Lab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

Projects

"IOT BASED SMART HOME SECURITY SYSTEM"

A Project Report Submitted in the partial fulfillment of
requirement of the Degree of
Bachelor of Engineering
in
Computer Technology
Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Mr. Mahesh Panjwani

Co- Guide

Mr. C. N. Bhoyar

Submitted by

SUNNY FOFSE
TITESH AGLAWE
SURAJ DESHKAR
SUDHANSHU RAUT
ATHARVA HAWALE

DEPARTMENT OF COMPUTER TECHNOLOGY
PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

2020-2021

PRIYADARSHINI COLLGE OF ENGINEERING

Department of Computer Technology

NAGPUR-440019

CERTIFICATE

This is to certify that project report entitled - **"IOT BASED SMART HOME SECURITY SYSTEM"** is a bonafide work done by the student **SUNNY FOFSE, SUDHANSHU RAUT, TITESH AGLAWE, ATHARVA HAWALE, and SURAJ DESHKAR.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2021-2022

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CHAPTER 1
INTRODUCTION

When security mode is turned on, any recognized harmful activities that occurred at intervals the house are going to be detected through put in sensors and mechanically forward the alert message to the home-owner through the net.The main aim of this project is to observe for liquid fossil oil gas (LPG) leakage to avoid hearth accidents, providing house/industrycharacteristic wherever the safety has been a very important issue. The system detects the LPG leakage using a gas detector and flames by a flame detector that alerts the buyer concerning the gas discharge by causing SMS with the assistance of GSM module that is connected preprogrammed microcontroller (Arduino Mega).

When the LPG concentration within the air exceeds the sure level, the Gas detector detects the discharge and so it like a shot alert the user by causing SMS to fixed itinerant and alert the individuals reception by activating the Buzzer alarm. Home security is thatthe most important one for each home-owner either in a personal house or Associate in Nursing flat. To induce absolutely the peaceof mind whether or not you're initially time home or out of home you want to make sure that your house is put in with the right home security observance system. This wireless home and industrial automation and security system can be used to provide to give securitysystem for residential, industrial, and for all domestic and commercial purpose using GSM technique. The essential parts of a home automation security system area unit motion detectors, LPG detectors and smoke detector.

During this paper we have a tendency to aim to beat the failings created by several alternative security device because it is only in security purpose. It's cheaper and may be maintained simply than the other security device. Security systems are around for a very long time, even before the introduction of microcontrollers. Over the course of all that point, they need return quite a great distance. They need gone from being easy analog circuits with key switches and mechanical bells to being refined digital systems which will mechanically report alarms and standing info to an observance center and even provide home automation to some extent.However, several fashionable security systems

ABSTRACT

IOT (Internet of Things) refers to the infrastructure of connected physical devices that is expanding at a fast rate as large range of devices and objects have gotten associated to the Internet. Home security may be a very helpful application of IOT (Internet of Things) and that we are mistreatment it to form a cheap security system for homes yet as industrial use. The protection system can utilize a microcontroller called Arduino MEGA 2560 to interface between the parts. A GSM module is employed to Convey Alert SMS for sensing Gas discharge, a water device is employed to sense the amount of water, a fireplace device is used to discover fireplace, and a buzzer for sounding the alarm, the main benefits of such a system includes the ease of setting up, affordable prices and low maintenance. After activation of sensors, The Message generated by GSM module will be automatically forward to fire station, Police station and the system user. These indications will help us to decrease the damage cause and danger rate.

CHAPTER 6

MODULES

6.1 Arduino Mega 2560:

Variety of microprocessors and controllers are used in the design of Arduino. Digital and analog input/output (I/O) pins are equipped in boards that may be interfaced to various expansion boards and other circuits. Serial communications interfaces is a feature in this board, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are programmed using features from the programming languages C and C++.

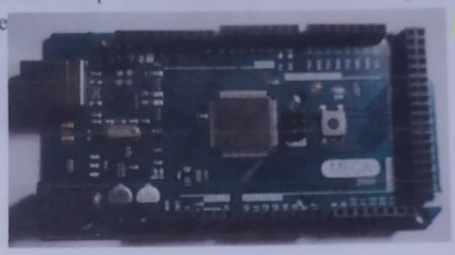

Figure 1: Arduino Mega 2560

Specification Arduino Mega 2560:

Parameter	Description
Microcontroller	ATmega2560
Operating Voltage	5v
Input Voltage(recommended)	7-12v
Digital I/O Pins	54(of which 15 provide PWM output)
Analog Input Pins	16
Flash Memory	256 kb of which 8kb is used by boot loader
SRAM	8kb
EEPROM	4kb

1.2 Project Description:

This report describes an approach of creating a system identifying fruit and vegetables in the retail market using images captured with a video camera attached to the system. The system helps the customers to label desired fruits and vegetables with a price according to its weight.

The purpose of the system is to minimize the number of human computer interactions, speed up the identification process and improve the usability of the graphical user interface compared to existing systems. To accomplish creating a system improving these properties, an idea of implementing machine learning to identify the products aroused.

Instead of assigning the responsibility to the user, who usually identify the products manually, the responsibility is given to a computer. To classify an object, different convolutional neural networks have been tested and retrained. The networks have been retrained on data sets collected from ImageNet. To improve the accuracy, the networks have also been retrained on images where the background environment is similar to the environment the networks are supposed to perform in. The networks tested in this report are MobileNet and Inception. The networks have different propagation time and varies in accuracy. MobileNet performs the classification about seven times faster than Inception, but Inception gives more accurate results. To improve the systems further, usability testing has been performed on the graphical user interface of existing system and resulted system. To test the usability, a heuristic evaluation has been performed in combination of a second test produced by the authors.

The tests concluded that the resulted system was more user friendly compared to existing systems. The hardware of the system constitutes of a Raspberry Pi, camera, load cell and a case. The software includes Python-code to label an image, a graphical user interface to interact with the user

and a server created with Machine Learning. The graphical user interface has been programmed with JavaScript supplemented with the React library. To conclude, implementing convolutional neural networks to classify images and developing a new user interface resulted in a faster identification process together with fewer usabilityflaws.

CHAPTER 2: LITERATURE REVIEW

CHAPTER 7:

MODULES

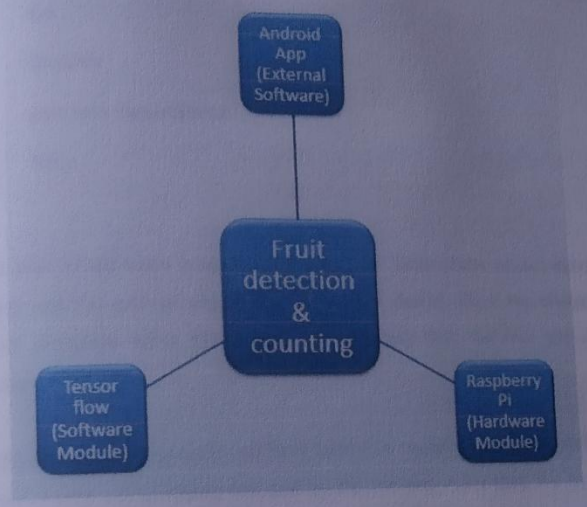

Fig. 12 System Modules Classification

7.1 Raspberry Pi (Hardware Module)

The Raspberry Pi is a tiny and affordable computer that you can use to learn programming through fun, practical projects. The Raspberry Pi is a very cheap computer that runs Linux, but it also provides a set of GPIO (general purpose input/output) pins, allowing you to control electronic components for physical computing and explore the Internet of Things (IoT).

First of all, we will import the required libraries in the code. Here we are using the following set of libraries and Tensor modules:

- os
- cv2
- Numpy

conveyor belt. When a fruit named orange is detected, then the servo will move to drop it in a basket and keep it separated from other fruits. You can see the total number of fruits detected as they are counted in the Python terminal. It will also save the total number of fruits detected in the text file with a timestamp in the database.

7.2 Android Application (External Software)

Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. This tutorial will teach you basic Android programming and will also take you through some advance concepts related to Android application development.

The official language for Android development is Java. Large parts of Android are written in Java and its APIs are designed to be called primarily from Java. It is possible to develop C and C++ app using the Android Native Development Kit (NDK), however it isn't something that Google promotes. According to Google, "the NDK will not benefit most apps. As a developer, you need to balance its benefits against its drawbacks. Notably, using native code on Android generally does not result in a noticeable performance improvement, but it always increases your app complexity."

Android Application is implemented to show the fruit detection result on a GUI to look amazing. It is working real-time, as the fruit is placed in front of raspberry pi camera module the app will show the detected fruit and the accuracy with freshness percentage on the screen.

7.3 Tensor Flow (Internal Software)

Tensor Flow Object Detection API. The Tensor Flow object detection API is the framework for creating a deep learning network that solves object detection problem. There are already pretrained models in their framework.

Domain 2: Computer Network and Security

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Social and Ethical aspects of IT	BECT204T	**Computer Network and Security**
2	Data Communication	BECT305T	
3	Computer network	BECT307T/P	
4	Cyber & Information Security	BECT407T/P	
5	Elective IV: Cloud Computing	BECT409T	

BECT204T: Social and Ethical aspects of IT

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	4	100	20	80	100

1. An Overview of Ethics.
2. Ethics for IT Professionals and IT Users.
3. Computer and Internet Crime.
4. Privacy.
5. Freedom of Expression.
6. Intellectual Property.
7. Software Development.
8. The Impact of Information Technology on Productivity and Quality of Life.
9. Social Networking.
10. Ethics of IT Organizations.

BOOKS:

Ethics in Information Technology, 4/e by Reynolds George, Cengage Publisher

BECT305T: Data Communication

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	4	100	20	80	100

UNIT - 1

Analog and digital signals; periodic and non periodic signals analog signals time and frequency domains; COMPOSITE SIGNALS: Frequency spectrum and Bandwidth; TRANSMISSION MODES: Serial and Parallel transmission, Asynchronous and Synchronous Transmission, Simplex, Half-Duplex and Full-Duplex communication.

UNIT - 2

Signal conversions: digital-to-digital conversion, digital-to-analog conversion, analog to digital conversion ,analog-to-analog conversion in detail.

UNIT - 3

COMMUNICATION MEDIA: guided media and unguided media, Radio frequency allocation, Propagation of Radio waves, Terrestrial microwave, Satellite communication, Cellular Telephony

UNIT - 4

Multiplexing and Spread Spectrum, frequency division multiplexing (FDM). Time division multiplexing (TDM): inverse multiplexing, wave-division multiplexing, FHSS AND DSSS multiplexing applications: the telephone system: Common carrier services and hierarchies, Analog services, Digital Services; DIGTAL SUBCRIBER LINE (DSL): ADSL, RADSL, HSDL, SDSL, VDSL

UNIT - 5

Multimedia: Digitizing Audio and Video, Compression of Audio and Video, Real Time Interactive Audio/Video, RTP, HTTP and WWW.

UNIT - 6

DATA COMPRESSION: Huffman code, Run-Length Encoding, Relative Encoding, Lempel-Ziv Encoding, Image Compression, JPEG, MPEG

Text / Reference Books:

1. Data Communications and Networking by Behrouz A. Forouzan, 4thEdition, Tata McGraw Hill
2. Understanding Data Communications and Networks by William A. Shay, 2nd Edition, Vikas Publishing House.
3. Electronic communication Systems by Kennedy.

BECT307T Computer Networks

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Networks –,Components and categories ,Types of connections ,Topologies – ,Protocols and standards ,ISO / OSI model ***and TCP/IP model***,Transmission media ,Coaxial cable , Fiber optics , Line coding ,Modems . RS232interfacing sequences.

UNIT II

DATA LINK LAYER

Error – Detection and correction, Parity, LRC, CRC, Hamming code, Flow Control and error control , Stop and wait , Go back-N ,ARQ – Selective repeat ARQ –Sliding window , HDLC –,LAN – Ethernet IEEE 802.3 , IEEE 802.4 , IEEE 802.5.

MEDIUM ACCESS SUBLAYER

Channel allocation in LAN's and MAN's Network: Protocols-persistent and Non Persistent CSMA, CSMA with collision detection, binary countdown, Limited Contention protocol.

UNIT III

NETWORK LAYER

Internetworks – Packet switching and datagram approach ,IP addressing methods ,Subnetting , Routing ,Distance vector routing , Link state routing , Routers, ***Congestion control***.

UNIT IV

TRANSPORT LAYER

Duties of transport layer, Multiplexing – Demultiplexing, Sockets, User Datagram Protocol (UDP), Transmission Control Protocol (TCP), Quality of Services (QOS) – Integrated services.

UNIT V

APPLICATION LAYER

DNS; SMTP, SNMP, FTP, HTTP & WWW; Security: Cryptography, user authentication, security protocols in internet, Firewalls.

UNIT VI

ISDN services &ATM ; DSL technology, Sonet.Wireless LAN: IEEE 802.11; Introduction to blue-tooth, VLAN's, Cellular telephony & Satellite network.

Text Books:

1. B. A. Forouzan – "Data Communications and Networking (3rd Ed.) " – TMH
2. A. S. Tanenbaum – "Computer Networks (4th Ed.)" – Pearson Education/PHI
3. W. Stallings – "Data and Computer Communications (5th Ed.)" – PHI/ Pearson Education

Reference Books:

1. Kurose and Rose – "Computer networking -A top down approach featuring the internet" – Pearson Education
2. Leon, Garica, Widjaja – "Communication Networks" – TMH

BECT307P: Computer NetworksLab: Practical will be based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT406P: Data Warehousing & Mining: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT407T: Cyber and Information Security

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Need of Information Security: Legal, Ethical and Professional Issues Attributes of security- authentication, access control, confidentiality, authorization, integrity, non-reproduction.
OSI Security Architecture: attacks, services and mechanisms. Security Attacks, Security services, A model of Internetwork Security.
Conventional Encryption: Classical Encryption Techniques and Problems on classical ciphers, Security architecture.

UNIT II

Introduction to Secret key and Cryptography: Block Cipher Principle: Stream ciphers and block cipher, Block cipher design principles, modes of operation, Encrypt given messages using DES, Triple DES, IDEA, AES Problems on cryptography algorithms.
Confidentiality Using Conventional Encryption: Key Distribution.

UNIT III

Introduction to Public key and Cryptography: Principles of Public-Key Cryptosystem, RSA algorithm, Ket Management, Diffie Hellman Key Exchange, Encrypt given messages using ECC.
Introduction to Number Theory: Prime and Relative Prime numbers, Modular Arithmetic, Fermat's and Euler's Theoram, Euclids Algorithm, the Chinese Remainder Theorem.

UNIT IV

Message Authentication and Hash Functions: Authentication Requirements and Functions, Hash Functions and their Security, MD5 Message Digest Algorithm, Kerberos.
Key Management: Digital Certificates-Certificate types, X.509 Digital Certificate format, Digital Certificate in action, Public Key Infrastructure-Functions, PKI Architecture, Certificate Authentication.

UNIT V

Firewall: Firewall Functionality, Policies and Access Control Policies, Firewall Types.
Intrusion Prevention and Detection: Prevention vs Detection, Types of Intrusion Detection System- Anomaly versus Signature based IDS, Host-based versus Network-based IDS, DDoS Attack Prevention/ Detection, Malware Detection-Worm Detection, Worm Signature Extraction, Virus Detection.

UNIT VI

Software Vulnerability: Phishing, Buffer Overflow, Cross-site Scripting (XSS), SQL Injection.
Electronic Payment: Payment Types, Enabling Technologies-Smart Cards and Smart Phones, Cardholder Present E-Transaction-Attacks, Chip Card Transactions, Payment over Internet-Issues and Concerns, Secure Electronic Transaction, Online Rail Ticket Booking.
Electronic Mail Security: Pretty Good Privacy, S/MIME

Text Book:

1. William Stallings, "Cryptography and network security, principles and practices", Pearson Education, 2013.
2. Bernard Menezes, "Network Security and Cryptography", Cengage Learning, 2010.

Reference Books:

1. Nina Godbole, "Information System Security", Wiley India Publication, 2008.
2. Charlie Kaufman, Radia Perlman and Mike Speciner, "Network security, private communication in a public world", Second Edition, Prentice Hall, 2002.
3. Christopher M. King, Curtis Patton and RSA press, "Security architecture, Design Deployment and Operations", McGraw Hill Publication, 2001.
4. Robert Bragge, Mark Rhodes, Heithstraggberg "Network Security, The Complete Reference", Tata McGraw Hill Publication, 2004.

BECT407P: Cyber and Information Security: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT409T: Elective IV: Cloud Computing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I

Introduction to Cloud Computing: Introduction to Cloud Computing, History of Cloud Computing, Cloud service providers, Properties, Characteristics & Disadvantages of Cloud Computing, Pros and Cons of Cloud Computing, Benefits of Cloud Computing, Cloud computing vs. Cluster computing vs. Grid computing. Legal issues when using cloud models, challenges in cloud computing.

Unit II

Cloud Computing Architecture: Cloud computing stack, Comparison with traditional computing architecture (client/server), Services provided at various levels, How Cloud Computing Works, Role of Networks in Cloud computing, protocols used, Role of Web services, Service Models (XaaS), Infrastructure as a Service (IaaS), Platform as a Service(PaaS), Software as a Service(SaaS), Deployment Models: Public cloud, Private cloud, Hybrid cloud, Community cloud.

Unit III

Big Data Analysis, Hadoop and Map Reduce: Introduction, Clustering Big Data, Classification of Big Data, Hadoop MapReduce Job Execution, Hadoop scheduling, Hadoop cluster setup, configuration of Hadoop, starting and stopping Hadoop cluster.

Unit IV

Security in Cloud: Cloud Security Challenges, Infrastructure Security, Network level security, Host level security, Application level security, data privacy, data security, application security, virtual machine security, Identity Access Management, Authentication in cloud computing, Client access in cloud, Cloud contracting Model, Commercial and business considerations.

Unit V

Application Development using C#: Understand object oriented concepts in C#.NET, Creation of UI and event handling, web page creation using ASP.NET, ADO.NET architecture, implementation of data seta, using ADO.NET in console application, using ADO.NET in web application.

Unit VI

Creating Cloud Application using Azure: Creating simple cloud application, configuring an application, creating virtual machine, deployment of application to Windows Azure Cloud, using Azure Storage Services, using Azure Table Service, deployment of application to the production environment.

Text Books:

1. Mcohen K. Hurley, "Google Compute Engine", O'Reilly Edition, 2014 .
2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, "Cloud Computing: Principles and Paradigms", Wile, 2011.
3. Arshdeep Bahga, Vijay Madisetti, "Cloud Computing, A Hands-on Approach", Universities Press, 2013.
4. R. J. Dudley, N. A. Duchene, "Microsoft Azure: Enterprise Application Development", Packt Publication, 2010.

Reference Books:

1. B. M. Harwani, "Cloud Computing using Windows Azure ", Arizona Business Alliance Publication, 2014.
2. J. W. Rittinghouse, J. F. Ransome, "Cloud Computing, Implementation, Management and Security", CRC Press, 2009.

"RIDE SHARE"

A Project Report Submitted in the partial fulfilment of the requirement of the degree of

Bachelor of Engineering

In

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University,Nagpur

Under the guidance of

Prof. Pradnya Suryawanshi

Submitted by:

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Mr. Manthan Khobragade (260)
Mr. Vivek Shinde (255)
Mr. Navjit Singh Thakur (249)
Mr. Mayuresh Parkhi (268)

DEPARTMENT OF COMPUTER TECHNOLOGY

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

PRIYADARSHINI COLLEGE OF ENGINEERING

NAGPUR-440019 **Department of Computer Technology**

CERTIFICATE

This is to certify that project report entitled - **"RIDE SHARE"** is a Bonafide work done by the students **Vipin Mangrulkar, Navjit Singh Thakur, Manthan Khobragade, Mayuresh Parkhi** and **Vivek Shinde.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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3

1. ABSTRACT

Ride-sharing and lift sharing, is the sharing of vehicle journeys so that more than one person can travel in a vehicle. With the enormous increase in number of private vehicles on road, people around the country especially in metro cities have started facing problem now due to increase in traffic which added an hour or so to their daily travelling time. Ridesharing is seen as a more environmentally friendly and sustainable way to travel as sharing journeys reduces carbon emissions, traffic congestion on the roads, and the need for parking spaces.

This paper gives a survey of different techniques used by the researchers for ridesharing. An abstract view of the proposed system that we are going to implement helps to enable its user a **Keywords:** Ridesharing, Mobile communication systems, Android, Ride-Sharing, GPS Navigation, Ride-Seeker

"OPTIMIZATION OF ROUTING PROTOCOL FOR MANET USING BAT OPTIMIZATION ALGORITHM"

A Project Report Submitted in the partial fulfillment of requirement of the Degree

of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Under the guidance of

Prof. Charan Pote

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Shraddha Vaidya

Suhani Asati

Poorva Rahangdale

Nikita Asati

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PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

2020-2021

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CERTIFICATE

This is to certify that project report entitled - **"Optimization of Routing Protocol for MANET using BAT Optimization Algorithm"** is a bonafide work done by the students **Srushti Gulhane, Poorva Rahangdale, Shraddha Vaidya, Nikita Asati and Suhani Asati.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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CHAPTER 1: INTRODUCTION

Mobile ad hoc network (MANET) can be described as a group of wireless mobile nodes that form a temporary dynamic and independent infrastructure network or a central administration facility. High energy consumption is one of the main problems associated with the MANET technology. The wireless mobile nodes used in this process rely on batteries because the network does not have a steady power supply. Thus, the rapid battery drain reduces the lifespan of the network. In this paper, a new Bat Optimized Link State Routing (BOLSR) protocol is proposed to improve the energy usage of the Optimized Link State Routing (OLSR) protocol in the MANET. The BOLSR protocol is implemented in a MANET simulation by using NS2 toolbox. Mobile ad hoc networks (MANETs) are wireless networks that are subject to severe attacks, such as the black hole attack. One of the goals in the research is to find a method to prevent black hole attacks without decreasing network throughput or increasing routing overhead. The routing mechanism in define uses route requests (RREQs; for discovering routes) and route replies (RREPs; for receiving paths). The NS2 simulator is used for simulation and the results are compared with existing Ad Hoc on Demand Distance vector (AODV) protocol. In this paper, a new Bat Optimized Link State Routing (BOLSR) protocol is proposed to improve the energy usage of the Optimized Link State Routing (OLSR) protocol in the MANET. This BOLSR protocol that determines the optimized path from a source node to a destination node according to the energy dynamics of the nodes. The results of the tests reveal that the BOLSR protocol reduces the energy consumption and increases the lifespan of the network, compared with the AODV routing protocol.

1.1. Mobile Ad hoc Network (MANET)

A MANET is a modern, dynamic network that has a dynamic condition for auto configuration and maintenance. A MANET has flexibilities that make it a suitable type of network for many applications. Many existing routing protocols in MANETs, such as AODV, are excellent in terms of performance and efficiency but lack security protection and can therefore suffer from several types of attacks. AODV creates routes on an on-demand basis and expands the Distance Vector (DV) to eliminate loops in the routing table. AODV is very simple routing configuration in which it is easier for every node to maintain the distance to each

DECENTRALIZED STORAGE AND SHARING SYSTEM USING BLOCKCHAIN

Submitted in the partial fulfillment of the requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Prof. Mrs. Rubana Khan

Submitted by

Yashwant Sharma

Manali Rahangdale

Shivang Verma

Hardik Kajne

Avnish Karwa

DEPARTMENT OF COMPUTER TECHNOLOGY

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

2020-2021

PRIYADARSHINI COLLEGE OF ENGINEERING

Department of Computer Technology

NAGPUR-440019

CERTIFICATE

This is to certify that the project report entitled - " DECENTRALIZED STORAGE AND SHARING SYSTEM USING BLOCKCHAIN " is a bonafide work done by the students Yashwant Sharma, Shivang Verma, Hardik Kajne, Manali Rahangdale, **and** Avnish Kurwa. The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2020-2021

GUIDED BY- Mrs. Rubana Khan

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- Equifax (Data costs of up to $400M)
- Facebook Cambridge Analytica (Up to 87M user data leaked)

There were of course several factors that contributed to the data breach regarding the security measures, however, one major factor revolves around the central server storage of such information. Data breaches have been happening since the Internet started and companies have learned to deal with them but it also comes to attention that new infrastructures might help fix parts of the solution (i.e. decentralized storage).

Decentralized storage is a potential solution that Blockchain companies are researching and implementing. It is a system of being able to store your files without having to rely on large, centralized silos of data that don't undermine important values such as privacy and freedom of your information.

Back in the day of P2P file sharing, torrenting and services such as Limewire were popular in downloading music and video files. It worked as a system where many users maintain copies of the file and *seed* (send fragments of the file) to participants on the network. However there were no mass-scale consumer [1] incentive mechanisms for the network participants to stay online. Decentralized storage networks operate in a similar manner with further advanced cryptography and encryption as well as the added incentive mechanism.

Currently most of the data is stored in cloud based decentralized storage systems. As the amount of data is increasing every day the cloud providers are also charging fees for storing the data. The exponential increase in the amount of data has led to the growth of many digital cloud based storage systems. These storage systems have also turned out to be the most reliable and convenient systems for storing data. A major advantage of a centralized cloud based storage system is that it

CHAPTER-1: INTRODUCTION

Decentralized storage has fascinated the world for a while after coming across the Filecoin ICO which raised over $250M dollars with leading investors such as Y Combinator, Naval Ravikant, Andreessen Horowitz, Union Square Ventures Sequoia and Winklevoss Capital. Considering how much they raised, there must have been a reason as to why industry leaders are betting on its success.

What is Decentralization + Storage?

Decentralization is understood as the transfer of authority from a central entity to a more localised and 'liberal' system. The concept itself has been around for a while and an earlier concept could be paralleled to the introduction of the Internet where the spread of information was democratised. The term is now being coined against Blockchain technologies and applications such as Bitcoin and Ethereum which decentralise financial transactions and computing power.

Storage is defined as the retention of retrievable data on a computer or other electronic system. We use storage on a daily basis from the mobile phone and computers we use and it is easily understood from the files we put onto a USB stick. From the days of having to put files on a floppy disk to being able to place files in the 'cloud', storage has come a long way.

So why Decentralized Storage?

The current solutions of Google Drive and Dropbox still work great there is no reason to change something if it works just fine. However there have been growing concerns as to why users want to switch from these systems due to the restrictive nature of some services as well as the more commonly understood reports of recent company data leaks. Examples include:

ABSTRACT

Nowadays data is one of the most important parts of our lives. We generate data every time we use our phones or use the internet. All that data is needed to be stored somewhere to be accessed. For most of the storage we use cloud based centralized storage. We trust the cloud storage providers with our data. As if data is not handled in a secured way it can lead to disastrous results. But the cloud based centralised storage has also its drawbacks. As all the data is stored at one place if the server gets hacked or a DOS attack happens. It can lead to all our valuable data getting lost. If the server goes down then we won't be able to access our data. As we are trusting the cloud storage providers with our data it can be viewed by them. So we are proposing a decentralized storage and sharing system that can be built using Blockchain and IPFS technologies. We are using various new and old technologies which can be used to develop a more secure, privacy, and integrity-oriented system. Principles like decentralized storage, cryptography, hashing algorithms like SHA-256, and peer-to-peer networking. These things are taken into consideration in developing this system using blockchain and IPFS.

"VIDEO STREAMING THROUGH PEER-TO- PEER CONNECTION OVER THE CLOUD NETWORK. (BEST ENTERTAINMENT)"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of Bachelor of Engineering

In

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

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Assistant Professor, Computer Technology

Submitted by

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2020-2021

PRIYADARSHINI COLLGE OF ENGINEERING, NAGPUR

Department of Computer Technology

CERTIFICATE

This is to certify that project report entitled - **"Web Application (streaming Platform) that streams on Peer-to-peer server as a single host (RTMP), using JavaScript, Json and AWS cloud network (Best Entertainment)."** is a bonafide work done by the student **Raghav Agasti, Deepali Mahajan, Mustafa Yusuf Karanjawala, Deepali Bhoyar and Mohammed Zafir.** Theproject report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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CHAPTER: 1 – INTRODUCTION

Best Entertainment as "Web Application (streaming Platform) that streams on Peer-to- peerserver as a single host (RTMP), using JavaScript, Json and AWS cloud network."

Best Entertainment is a collaborative, cloud-based videoconferencing service offering feature of Peer to Peer over the cloud Network as a single host that including online meetings, group messaging services, and secure recording of sessions as with comparable platforms like Skype. It offers the ability to communicate in real time with geographically dispersed individuals via computer, tablet, or mobile device. However, unlike many other VoIP technologies, It possesses a number of additional advantages that enhance its potential research utility. A key advantage is its ability to securely record and store sessions without recourse to third-party software. This feature is particularly important in research where the protection of highly sensitive data is required. Other important security features include user-specific authentication, real-time encryption of meetings, and the ability to backup recordings to online remote server networks ("the cloud") or local drives,which can then be shared securely for the purpose of collaboration. The possibility that VoIP technologies like can improve researchers' and participants' experiences of qualitative data collection is yet to be validated. The merits and shortcomings of VoIP technologies, as well as comparisons with in-person data collection, are typically based onresearchers' subjective assessments of the quality of interview data. However, as Weller (2015) argues, "participants' experiences and assessments of the process have received farless attention" thus hindering efforts to improve interview quality and explore novel research applications. Further, most of the literature has concentrated on asynchronous online discussion forums rather than synchronous interaction.

Social networking websites (SNWs) have grown in popularity among all segments of society, but particularly among younger groups such as university students. Facebook is an example of the enormous amount of social interaction that occurs on these websites. Approximately 85% of all American university students at 4-year institutions use Facebook. There are 67 million active users worldwide, half of whom log in at least once each day for an average of twenty minutes.

Abstract

Advances in communication technologies offer new opportunities for the conduct of qualitative research. Among these, Best Entertainment —an innovative videoconferencing platform—for legion gatherings by peer-to-peer Streaming Over Cloud Network server asa single host has a number of unique features that enhance its potential appeal to qualitative and mixed-methods researchers.

Best Entertainment is a collaborative, cloud-based videoconferencing service offering features including online meetings, group messaging services, and secure recording of sessions as with comparable platforms like Skype. It offers the ability to communicate in real time with geographically dispersed individuals via computer, tablet, or mobile device. However, unlike many other VoIP technologies, it possesses a number of additional advantages that enhance its potential research utility. A key advantage is its ability to securely record and store sessions without recourse to third-party software. This feature is particularly important in research where the protection of highly sensitive data is required. Other important security features include user-specific authentication, real-time encryption of meetings, and the ability to backup recordings to online remote server networks ("the cloud") or local drives, which can then be shared securely for the purpose of collaboration.

This Dynamic website provides a way for Companies and individuals who are facing problems, especially in these times of increased work pressure from home.

The application enables a medium of Online gathering for Entertainment, Games, Meetings, group information, platform for speakers, shows, webinars, religious summit, video chats etc.

Domain3: Database Management System and Data Processing

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Database Management System	BECT302T/P	Database Management System and Data Processing
2	ELECTIVE-I Advance Database Systems	BECT403T	
3	Data Warehousing and Mining	BECT406T/P	

BECT302T: Database Management System

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Syllabus

UNIT-I

Introduction to IMs, Introduction to DBMS, architecture, role of database administrator, data dictionary, TraditionalModels, three-level architecture, hierarchical model, network model and relational model.

UNIT-II

Relational Database design,***ER modeling,*** relational algebra,Tuple relation calculus, Domain relational calculus. Functional Dependencies, Normalization

UNIT-III

PL/SQL Concept. Physical and logical hierarchy. Concept of index, B-trees, hash index, function index, bitmap index, ***trigger and assertions***.

UNIT-IV

Overview, measures of query cost, ***query optimization,*** selection operation, sorting, join, evaluation of expressions, transformation of relational expressions, estimating statistics of expression results, evaluation plans, materialized views.

UNIT-V

Transaction concepts, properties of transactions, serializability of transactions, testing for serializability, System recovery, Two-Phase Commit protocol, concurrent executions of transactions and related problems, Locking mechanism, solution to concurrency related problems, deadlock, , two-phase locking protocol, Isolation, Intent locking.

UNIT-VI

Recovery System: failure classification, recovery and atomicity, log based recovery, checkpoints, buffer management, advanced recovery techniques. Introduction to ***various***Sql databases.

TextBooks:

1. Database System Concepts by Silberschatz , Henry F. Korth , S. Sudarshan, Tata McGraw Hill, Fifth Edition
2. Fundamentals of Database Systems – Elmasiri and Navathe, Addisson Wesley, 2000.
3. An introduction to Database Systems,C J Date - Wesley

Reference Books:

1. Database Management Systems - by Raghu Ramakrishnan and Johannes Gehrke, Tata McGraw Hill Publication, Third Edition

BECT302P: Database Management System lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT403T: Elective-I Advanced Database Management Systems

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Distributed Databases, DDBMS architectures, Comparison of Homogeneous and Heterogeneous Databases, Concurrency control in distributed databases, Distributed query processing, Distributed data storage, Distributed transactions, Commit protocols, and Directory systems-LDAP.

UNIT II

Introduction to Parallel databases, Parallel database architecture, speedup, scale-up I/O parallelism, Comparison of Inter-query and Intra-query parallelism, parallel query evaluation, implementation issues of Parallel query evaluation.

UNIT III

Object-based databases: Complex data types, structured types and inheritance in SQL, table inheritance, array and multi-set types in SQL, object identity and reference types in SQL, Persistent programming languages, Object-oriented vs. Object-Relational.

UNIT IV

Introduction to XML, Structure of XML data, Document type definition, XML Document Schema, Querying and Transformation, XPATH, XSLT, XQUERY, API in XML, XML data storage, XML applications.

UNIT V

Introduction to Data warehouse, Data warehouse architecture, Creating and maintaining a warehouse, Multidimensional data model, OLAP and data cubes, Operations on cubes, pre-processing, Analysis of Data pre-processing.

UNIT VI

Security and integrity threats, Defence mechanisms, Statistical database auditing & control, Security issue based on granting/revoking of privileges, introduction to statistical database security. PL/SQL Security - Locks - types and levels of locks, Implicit locking, explicit locking.

BECT406T: Data Warehousing & Mining

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction: Evolution of data warehousing, Characteristics, Operational database systems and data warehouse (OLTP & OLAP), Multidimensional data models, Data warehouse architecture, OLAP Operations., Design and construction of data warehouses.

UNIT II

Fundamentals of data mining, Data mining functionalities, Classification of data mining systems, Data mining task primitives, Integration of data mining systems with data warehouse, Major issues and challenges in data mining, Data preprocessing- need for processing, data cleaning, integration, transformation, data reduction. Discretisation and concept hierarchy generation, data mining application areas.

UNIT III

Classification: Introduction, Decision tree, Building decision tree- tree induction algorithm, Split algorithm based on information theory, Split algorithm based on gini index, Decision tree rules, naive based methods.

Clustering: Cluster analysis, Desired features, Types of data in cluster analysis, Computing distance. Categorizations of major clustering methods – Partitioning methods (K-means, EM), Hierarchical methods (agglomerative, divisive).

UNIT IV

Mining frequent patterns and Association Rules: Market basket analysis, Frequent item sets and association rules, Apriori algorithm, FP growth algorithm, Improving efficiency of Apriori and FP growth algorithms.

UNIT V

Web Data Mining: Introduction, Graph properties of web, Web content mining, Web structure mining, Web usage mining, Text mining, Visual web data mining, Temporal and Spatial data mining.

UNIT VI

Big data Analytics: Introduction to the Big Data problem. Current challenges, Trends, and applications, Technologies for big data management. Big data technology and tools, Map-Reduce paradigm and the Hadoop.

TEXT BOOK:

1. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Second Edition, Elsevier, Reprinted 2008.
2. A. K. Pujari, "Data Mining Techniques", Second Edition, University press, 2013.
3. Jason Bell, "Machine Learning for Big Data: Hands-on for Developers and Technical Professionals, Wiley India Publications, 2013.

BECT406P: Data Warehousing & Mining: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

Projects

"MartShop – An Ecommerce App"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

Bachelor of Engineering

In

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Dr. (Mrs.) Snehal S. Golait

Submitted by

Charul Mehta

Dipti Deoke

Aditi Pidurkar

Anisha Ninawe

Janvi Ghate

DEPARTMENT OF COMPUTER TECHNOLOGY

PRIYADARSHINI COLLEGE OF ENGINEERING,

NAGPUR-440019

PRIYADARSHINI COLLGE OF ENGINEERING,

NAGPUR-440019

Department of Computer Technology

CERTIFICATE

This is to certify that project report entitled - **"MartShop-An E-commerce Application"** is a bonafide work done by the student **Aditi Pidurkar, Anisha Ninawe, Charul Mehta, Dipti Deoke and Janvi Ghate.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2020-2021

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CHAPTER – 1

INTRODUCTION

1.1 Introduction

With the increasing popularity of e-commerce, it is very essential to involve every minuscule vendor who is innovating sundry products and selling them at a plausible price. The proposed project is implemented utilizing the latest technology flutter and with the firebase, which makes this app platform amicable and independent. The app is for all the minute vendors who are selling and earning through their hard work. Here the utilizer has to register first without any registration fees and can integrate their store with rudimentary info needed for establishing the online store. After the successful registration the utilizer can upload a number of products with description and pricing additionally.

Features like managing order history, contacting customers, sharing product images, sharing shop details, receiving payment, and updating shop details is given to vendors. For users features like view products, integrate products to wish list or cart, contact sellers directly, share products, and make payment is available. Utilizing the latest technology makes this shopping app more flexible and utilizer amicable.

The cyber world has transmuted many aspects of society, from business to recreation, from culture to communication and technology, as well as shopping and travelling. This incipient form of communication has provided incipient ways of doing business with the avail of technological development. E-commerce is the incipient way of shopping and doing business. Technology has sanctioned vendors to promote and sell their products on incipient markets, surmounting geographical borders as never before. Consumers have access to a wider market of products when they utilize wireless and internet technologies. Mobile contrivances with wide access to the Internet have sanctioned companies to reach consumers in more diverse ways, thus ascertaining deep market perforation.

ABSTRACT

With the increasing popularity of e-commerce, it is very essential to involve every minuscule vendor who is innovating sundry products and selling them at a plausible price. The proposed project is implemented utilizing the latest technology flutter and with the firebase, which makes this app platform amicable and independent. The app is for all the minute vendors who are selling and earning through their hard work. Here the utilizer has to register first without any registration fees and can integrate their store with rudimentary info needed for establishing the online store. After the successful registration the utilizer can upload a number of products with description and pricing additionally. Features like managing order history, contacting customers, sharing product images, sharing shop details, receiving payment, and updating shop details is given to vendors. For users features like view products, integrate products to wish list or cart, contact sellers directly, share products, and make payment is available. Utilizing the latest technology makes this shopping app more flexible and utilizer amicable. All these processes are done through data mining and using a data warehouse to collect multiple data for processing. Analysis of the data is done by K-Means algorithm and unsupervised ML.

"SENTIMENT ANALYSIS BASED PRODUCT RECOMMENDATION SYSTEM"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Prof. Charan Pote

Submitted by

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Amarjeet Rajesh Yadav

Kalyani Vasant Wadhai

Abhishek Ganeshrao Pethe

Divya Prakash Wanjari

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2020-2021

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This is to certify that project report entitled - **"Sentiment Analysis Based Product Recommendation System"** is a bonafide work done by the students **Pranay Ulhas Makode, Amarjeet Rajesh Yadav,Kalyani Vasant Wadhai,Abhishek Ganeshrao Pethe andDivya Prakash Wanjari.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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ABSTRACT

E-commerce sites are now a day having boom in selling and purchasing products, some of the most popular e-commerce sites are Amazon, flipkart etc where most of the customers visit to purchase products. Product reviews (genuine comments from the customers) is very important for customers, seller, businesses and manufacturers. Seller often want to know in time what consumers and the public think of their products and services. However, it is not really very feasible to manually read every post on the website and extract useful viewpoint information from it because there are so many comments about a single product on any e-commerce site. If you do it manually, there is too much data and it consumes your huge time. Sentiment analysis allows large-scale processing of data in an efficient and cost-effective manner to analyze the sentiments and conclude the result. In order to explore more about sentiment analysis, this paper tries to use the power of sentiment analysis to help the buyer and seller both. It helps buyers to see the honest reviews of the customers which already had purchased some product in the past and also to the seller to analyse the bunch of reviews which is being posted by the customers who purchased the product and based on this analysis they can improve their product for better selling.

Keywords- Sentiment analysis, Amazon customer reviews, classification.

CHAPTER 1: INTRODUCTION

With the rapid development and popularization of e-commerce technology, more and more users like to shop on various e-commerce platforms. Compared with the way of off-line shopping in physical stores, users can shop at anytimeand anywhere, and do not have to wait for the weekend to go shopping, which saves time and effort. Moreover, the products on e-commerce platforms are full of varieties and styles, and consumers can buy the desired products without leaving home.

However, while online shopping brings convenience to consumers, due to the virtuality of the e-commerce platforms, there are many problems in the products sold on the platforms, such as inconsistency between descriptive information and real goods, poor quality of goods, imperfect after-sales of goods and so on. Therefore, it is of great significance to conduct sentiment analysis on the commodity evaluation of the purchased products on electronic commerce platforms.

Amazon is one of the biggest online shopping sites in the world. People often trust over the products and reviews of the product before buying the product on amazon itself. Also, for seller it a beneficial site as a large number of peoples visit this site for shopping so seller is also getting a huge number of customers there, but the seller also has to improv its product quality as the customers wants, to satisfy the customers.

The proposed model helps the buyers to get the analysis of the reviews of the past customer of that product so that he/she can quickly take the decision whether the product is worth to buy or not instead of wasting time in scrolling all the comments and reading it, it consumes time. Review's sentiment analysis is the process of determining whether a piece of writing is positive, negative or neutral. Sentiment analysis helps data analysts within large enterprises to monitor brand and product reputation, and understand customer experiences.

1. "I really like the new design of your website!" → Positive.
2. "I'm not sure if I like the new design" → Neutral.
3. "The new design is awful!" → Negative.

A product review is nothing but the honest comments of the person who already used that product, our model is trying to collect all this review and trying to analyze it to help the buyer to take decision about buying the product.

For example, if the user writes in his review, "the laptop is giving very high performance and I am satisfied with the product.", then we can classify this comment as positive because customer is happy with the product. We aim to build a system that analyze the review's

Domain4: Computer Architecture

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Digital Circuits & Microprocessor	BECT203T/P	Computer Architecture
2	Computer Architecture & Organization	BECSE205T	
3	Advance Microprocessor and Interfacing	BECT210T/P	
4	Embedded System Design	BECT309T	

BECT203T: Digital Circuits & Microprocessor

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Boolean Algebra, Boolean identities, , Binary, Gray, Octal, Hex and ASCII Codes, Logic Gates & truth Tables, De-Morgan's Law, Sum of Product & Product of Sum, K-Maps, Solution of problems using K-Maps

Unit II:

Combinational Circuits: Decoders, Encoders, Multiplexers, De-multiplexers, Code Converters. Introduction to Flip-flops, Latches, Memory organizationwith Flip Flop as a basic cell, Master Slave Combination & conversion of one type to another type flip flop.

Unit III:

Sequential Circuits: Excitation tables, Counters- Synchronous/asynchronous, different modulo counters with reset/clear facility, design of counters of arbitrary modulo with K-maps, Lock FreeCounters. Arithmetic Circuits: Adders, Subtractors, BCD adders/Subtractor, Carry Look Ahead Adders

Unit IV:

Introduction to Intel's 8085A, Architecture Description, memory and Input/Output, Instruction set.

Unit V:

Addressing Modes, Timing Diagrams, Assemblers & Dissemblers (by Hand coding), Flag structure, concept of PSW, Stacks, Subroutines, PUSH &POP instructions & CALL/RETURN instructions, Stack Manipulations.Simple Programs.

Unit VI:

Programming Techniques, Looping, Counting, Indexing, Counters & timing delays, interrupt concept & structure in 8085.Interrupt Service routines. Advanced Instructions of 8085.

TEXT BOOKS:

1. Digital Circuits & Microprocessors by Herbert Taub
2. Digital circuits by M. Mano
3. Digital Electronics Principles by Malvino.
4. Microprocessors Architecture Programming & Application with 8085 By R. S. Gaonkar Microprocessor & Interfacing: D. V. Hall

BECT203P: Digital Circuits &Microprocessor lab: Practical based on above syllabus.

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	25

BECSE205T: Computer Architecture & Organization

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I:

Basic Structure of Computer Hardware and Software: Functional Units, Basic Operational concepts, Bus Structures, Software, Distributed computing, Addressing Methods and Machine Program Sequencing: Memory Locations, Addresses and Encoding of Information, Main Memory Operations, Instructions and Instruction Sequencing, Addressing Modes, Assembly Language, Stacks. Subroutines.

Unit II:

Instruction Sets: Instruction Formats, Limitations of Shortword- length machines, High Level Language considerations, The IBM -370.

The Processing Unit: Some Fundamental Concepts, Execution of a complete Instruction, Sequencing of Control Signals, Concluding Remarks.

Unit III:

Microprogrammed Control: Microinstructions, Grouping of control signals, Micro program Sequencing, Micro instructions with next address field, Perfecting Microinstructions, Emulation, Bit Slices, Introduction to Microprogramming.

Unit IV:

Arithmetic: Number Representation, Addition of Positive Numbers, Logic Design for Fast Adders, Addition and Subtraction, Arithmetic and Branching Conditions, Multiplications of positive numbers, Signed -Operand Multiplication, Fast Multiplication, Integer Division, Floating Point Numbers and Operations.

Unit V:

The Main Memory: Some Basic Concepts, Semiconductor RAM Memories, Memory System Considerations, Semiconductor ROM Memories, Multiple module Memories and Interleaving, Cache Memories, Virtual Memories, Memory Management requirements.

Unit VI:

Computer peripherals: I/O Devices, Online Storage, File Services. Processors: Families of Microprocessor chips, Introduction to RISC Processors, Array Processors, Loosely coupled, Tightly coupled Systems. Vector Processing, Array Processor, Literature review of multi-core architecture

BOOKS:

- V.C.Hamacher,Z.G.Vranesic and S.G.Zaky, Computer Organisation, McGraw Hill,5th ed,2002.
- Computer Organization, Design and Architecture (IV Ed), Sajjan G. Shiva, CRC Press
- Computer Architecture & Organization III Ed- J.P.Hayes.

REFERENCES BOOKS:

- M Mano,"Computer System and Architecture", PHI, 1993.
- W. Stallings, "Computer Organization & Architecture", PHI, 2001.

BECT210T: Advance Microprocessor and Interfacing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Architecture of 8086, Pin configuration of 8086, Physical address formation, addressing modes, Segmentation of memory, Instruction set & programming, 8086 minimum mode and maximum mode, Memory interfacing, static RAM interfacing, dynamic RAM interfacing.

UNIT II

Different input/output techniques, interfacing with latches, buffers, interfacing of keyboard matrix, Seven-segment display, DAC, ADC 0809 pin diagram, interfacing ADC with 8086, interfacing of 8253.

UNIT III

Interrupts of 8086, CRT controller 6845and Hard disk controller. 8255 PPI, pin diagram, modes of operation, strobe modes, interrupt driven mode, BSR mode, Programmable Interrupt Controller 8259, pin diagram, ICWs, OCWs, modes of operation and interfacing details, cascaded mode, SFNM, polled mode, SMM, USART 8251, pin diagram, internal architecture, modes of operation synchronous and asynchronous modes and interfacing details, DMA controller 8237, pin diagram, transfer modes and interfacing details.

UNIT IV

Maximum mode of 8086, PDMAC 8237, Interfacing with 8086, 8279A, interfacing with 8086, bus controller 8288, bus arbiter 8289, IOB mode, resident bus mode, co-processor configuration, ESC prefix, system bus mode, semaphores and LOCK prefix, loosely coupled and closely coupled configuration, priority resolution, NDP architecture.

UNIT V

Introduction to 8 bit microcontroller 8051, architecture, instruction set and programming, using 32 bit addressing in real mode, introduction to protected mode operation, segmentation, segment descriptors, selectors, privilege levels, paging.

UNIT VI

Pentium super scalar architecture, CPU pin description, bus operation, RISC concepts, pipe lining, branch prediction, instruction and data cache, floating point unit, software programming model, registers, data organization, protection, protecting segmented access, page level protection, multitasking, TSS descriptors, task switching, exceptions and interrupts, IDT descriptors , input/output, IOPL, ALP implementation of data structures : linked list, Queue, stacks.

Reference

1. Microprocessor and interfacing : Douglas Hall
2. Advanced Microprocessors And Peripherals A.K.Ray ,K.M.Bhuchandi
3. John P Uffenbeck, 8086/8088 Families: Designing, Programming and interfacing Prentice Hall
4. James Antonokos, The Pentium Processor, Pearson Education

BECT210P:Advance Microprocessor and Interfacing

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT309T: Embedded System Design

Load	Credit	Total marks	Sessional marks	University marks	Total
3 hrs (Theory) 1 hr (Tutorial)	4	100	20	80	100

UNIT - 1

Introduction to an embedded systems design: Microcontroller, Memory Devices, Embedded System Project Management, ESD and Co-design issues in System development Process, Design cycle in the development phase for an embedded system, Use of target system or its emulator and In-circuit emulator, Use of software tools for development of an ES,***embedding software on target machine.***

UNIT - 2

Inter Process Communication And Synchronization*: Tasks and Threads, SharedData problem, Use of semaphore(s), Priority inversion problem and deadlocksituations, Inter process communications using signals, Semaphore flag or mutex asresource key, Message queues, Mailboxes, Pipes,Virtual (Logical) sockets,Remote Procedure Calls (RPCs).*

UNIT – 3

Introduction to real time operating systems: Real Time Operating Systems: OS Services, I/O Subsystems, Interrupt Routines in RTOS Environment, RTOS Task Scheduling model, Interrupt Latency and Response times of the tasks. Case study of embedded systems

UNIT - 4

Overview of Microcontroller: Microcontroller and Embedded Processors, Overview of 8051 Microcontroller family: Architecture, basic assembly language programming concepts, The program Counter and ROM Spaces in the 8051, Data types, 8051 Flag Bits ad PSW Register, 8051 Register Banks and Stack Instruction set, Loop and Jump Instructions, Call Instructions, Time delay generations and calculations, I/O port programming Addressing Modes, accessing memory using various addressing modes, Arithmetic instructions and programs, Logical instructions, Single-bit instruction programming, Programming of 8051 Timers, Counter Programming

UNIT - 5

Communication with 8051: Basics of Communication, Overview of RS-232, I^2C Bus, UART, USB, 8051 connections to RS-232, 8051 serial communication programming, 8051 interrupts, Programming of timer interrupts, Programming of External hardware interrupts, Programming of the serial communication interrupts, Interrupt priority in the 8051

UNIT - 6

Interfacing with 8051: Interfacing an LCD to the 8051, 8051 interfacing to ADC, Sensors, Interfacing a Stepper Motor, 8051 interfacing to the keyboard, Interfacing a DAC to the 8051, 8255 Interfacing with 8031/51, 8051/31 interfacing to external memory

Text / Reference Books:

1. Raj Kamal, "Embedded Systems", TMH, 2004.
2. M.A. Mazidi and J. G. Mazidi, "The 8051 Microcontroller and Embedded Systems", PHI, 2004.
3. David E. Simon, "An Embedded Software Primer", Pearson Education, 1999.
4. K.J. Ayala, "The 8051 Microcontroller", Penram International, 1991.
5. Dr. Rajiv Kapadia, "8051 Microcontroller & Embedded Systems", Jaico Press
6. Dr. Prasad, "Embedded Real Time System", Wiley Dreamtech, 2004.

"IOT BASED SMART HOME SECURITY SYSTEM"

A Project Report Submitted in the partial fulfillment of
requirement of the Degree of
Bachelor of Engineering
in
Computer Technology
Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

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Co- Guide

Mr. C. N. Bhoyar

Submitted by

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PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

2020-2021

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CERTIFICATE

This is to certify that project report entitled - **"IOT BASED SMART HOME SECURITY SYSTEM"** is a bonafide work done by the student **SUNNY FOFSE, SUDHANSHU RAUT, TITESH AGLAWE, ATHARVA HAWALE, and SURAJ DESHKAR.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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CHAPTER 1
INTRODUCTION

When security mode is turned on, any recognized harmful activities that occurred at intervals the house are going to be detected through put in sensors and mechanically forward the alert message to the home-owner through the net.The main aim of this project is to observe for liquid fossil oil gas (LPG) leakage to avoid hearth accidents, providing house/industrycharacteristic wherever the safety has been a very important issue. The system detects the LPG leakage using a gas detector and flames by a flame detector that alerts the buyer concerning the gas discharge by causing SMS with the assistance of GSM module that is connected preprogrammed microcontroller (Arduino Mega).

When the LPG concentration within the air exceeds the sure level, the Gas detector detects the discharge and so it like a shot alert the user by causing SMS to fixed itinerant and alert the individuals reception by activating the Buzzer alarm. Home security is thatthe most important one for each home-owner either in a personal house or Associate in Nursing flat. To induce absolutely the peaceof mind whether or not you're initially time home or out of home you want to make sure that your house is put in with the right home security observance system. This wireless home and industrial automation and security system can be used to provide to give security system for residential, industrial, and for all domestic and commercial purpose using GSM technique. The essential parts of a home automation security system area unit motion detectors, LPG detectors and smoke detector.

During this paper we have a tendency to aim to beat the failings created by several alternative security device because it is only in security purpose. It's cheaper and may be maintained simply than the other security device. Security systems are around for a very long time, even before the introduction of microcontrollers. Over the course of all that point, they need return quite a great distance. They need gone from being easy analog circuits with key switches and mechanical bells to being refined digital systems which will mechanically report alarms and standing info to an observance center and even provide home automation to some extent.However, several fashionable security systems

ABSTRACT

IOT (Internet of Things) refers to the infrastructure of connected physical devices that is expanding at a fast rate as large range of devices and objects have gotten associated to the Internet. Home security may be a very helpful application of IOT (Internet of Things) and that we are mistreatment it to form a cheap security system for homes yet as industrial use. The protection system can utilize a microcontroller called Arduino MEGA 2560 to interface between the parts. A GSM module is employed to Convey Alert SMS for sensing Gas discharge, a water device is employed to sense the amount of water, a fireplace device is used to discover fireplace, and a buzzer for sounding the alarm, the main benefits of such a system includes the ease of setting up, affordable prices and low maintenance. After activation of sensors, The Message generated by GSM module will be automatically forward to fire station, Police station and the system user. These indications will help us to decrease the damage cause and danger rate.

"AVA ARTIFICIAL VIRTUAL ASSISTANT"

A Project Report Submitted in the partial fulfillment of requirement of the Degree

of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

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Submitted by

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This is to certify that project report entitled - **"AVA Artificial Virtual Assistant"** is a bonafide work done by the student **Ankur Mishra, Harshada Khadse, Simran Shahare, Mansi Tambe and Aparna Waghade.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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PRIYADARSHINI COLLEGE OF ENGINEERING PCE NAGPUR

INTRODUCTION

In this modern era, Technology will always require upgrades according to time the desire to run faster is just the reason why assistant and home automation will always need new features according to the situation. AVA Artificial Virtual Assistant is going to serve with or without the internet. The Project presents the design of home automation and security system using ESP8266 and Raspberry pie credit-sized computer. Raspberry pi provides the features of a mini-computer, additional with its GPIO pins where other components and devices can be connected. GPIO registers of raspberry pi are used for output purposes. We have designed a power strip that can be easily connected to GPIO Pins of the Raspberry pi. The home appliances are connected to the input/output ports of Raspberry pi along with the power strip and their status is passed to the raspberry pi. The Android running OS in any phone connected to a network can access the status of the home appliances via an application. It presents the design and implementation of an automation system that can monitor and control home appliances via an android phone or tablet. In this modern world, the computer is used widely in education, entertainment, offices, hospitals, private firms, NGOs, Government Sector very vast field sector. Artificial bits of Intelligence are using in every dedicated platform AI is in software and app it is very useful and easy to handle and problem-solving. Artificial Intelligence is the science of making an intelligent machine or software intelligently, in a similar manner the intelligent human thinks. People are using more virtual tools to make their life easy in this busy world. AI-powered digital assistants are software programs. They might use specific hardware like a smart speaker, microphone, camera, relay switch, sensors alternatively. Assistants come in somewhat small packages and can perform a variety of actions after hearing your command. They can turn on lights, answer questions, play music, place online orders, and do all kinds of AI-based who work remotely handle all kinds of tasks using the mobile. AVA is the name of our Artificial virtual personal assistance. It is the assistant that can do whatever the user wants AVA can communicate through text and voice in both online and

Domain 5: System Software

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Theory of Computation	BECSE211T	System Software
2	COMPUTER WORKSHOP – 2 LAB	BECSE206P	
3	Operating Systems	BECT303T/P	
4	Compilers	BECT401T/P	
5	Elective II: Natural Language Processing	BECT404T	

BECSE211T: Theory of Computation

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT 1

Mathematical preliminaries – Sets, operations, relations, strings, closure of relation, countabilityanddiagonalization, induction and proof methods- pigeon-hole principle ,concept of language, formal grammars, Chomsky hierarchy.

UNIT 2

Finite Automaton, regular languages, deterministic & non deterministic finite automata, E-closures, minimization of automata, equivalence, Moore and Mealy machine.

UNIT 3

Regular expression, identities, Regular grammar, right linear, left linear, Arden theorem, Pumping lemma for regular sets, closure & decision properties for regular sets, Context free languages, parse trees and ambiguity, reduction of CFGS, Normal forms for CFG .

UNIT 4

Push down Automata (PDA), non-determinism, acceptance by two methods and their equivalence, conversion of PDA to CFG, CFG to PDAs, closure and decision properties of CFLs, pumping lemma for CFL

UNIT 5

Turing machines, TM as acceptor, TM as transducers, Variations of TM, linear bounded automata, TM as computer of function.

UNIT 6

Recursively enumerable (r.e.) set, recursive sets, Decidability and solvability, Post correspondence Problem (PCP), Introduction to recursive function theory, primitive recursive functions, Ackerman function

Text Books:

- Introduction Of Automata Theory, Languages and computation- Hopcroft, Motwani&Ulman
- Introduction to formal languages and automata – Peter Linz.
- Introduction to Theory of Computation –Michael Sipser.

Reference Books:

- Theory Of Computer Science –Mishra and Chandrashekharan,
- Theory Of Computation –John C. Martin

BECT213P: COMPUTER WORKSHOP – 2 LAB

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

The contents may be based on LINUX and LINUX Administration. The contents can be revised as per the current trends in Software Industry.

BECT303T: Operating system

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I: Introduction: Definition, Functions of Operating Systems, Evolution of Operating Systems, Types of OS, Structural overview, System calls, Process Concept,Process States, Process Scheduling, Operations on Processes, Types of scheduler, Context switch, Threads Overview, Multithreading Models, Threading issues. Examples of WINDOWS Server & LINUX.

Unit II:CPU Scheduling Concepts, Scheduling Criteria and Algorithms. Process Synchronization: The Critical-Section Problem, software and hardware solution, Semaphores, Monitors, Classical inter process communication problems.

Unit III: Deadlocks: Definition & Characterization, Deadlocks Prevention, Avoidance, Detection and Recovery from Deadlock, Goals of Protection.

Unit IV: Memory Management: Background, Swapping, Contiguous Memory Allocation Schemes, Paging, Segmentation, Segmentation with paging, demand paging, page Faults and instruction restart, page replacement algorithms, working sets, Locality. Virtual Memory Management: Background, Demand Paging scheme, Process Creation, Page Replacement Policies, Allocation of Frames, Thrashing.

Unit V: File System: Directory Structure, File-System Mounting, File Sharing & Protection. File-System Structure, File-System Implementation. Directory Implementation, Disk space management and space allocation strategies File Recovery, disk arm scheduling strategies.

Unit VI:I/O Systems :Overview, I/O Hardware, Application I/O Interface, and Kernel I/O Subsystem. Transforming I/O to Hardware Operations. Disk Scheduling, Disk Management, Swap-Space Management, RAID Structure.

Text Books:

1. Operating System concepts by Silberchatz& Galvin, Addison Wesley, 6th edition.
2. Modern Operating Systems by Tanenbaum, 2nd edition Pearson Education.

Reference Books:

1. Operating System concepts and design by Milan MilenkovikMcGraw-Hill
2. Operating Systems by William Stallings
3. Operating Systems by D M Dhamdhere

BECT303P: Operating system lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT401T: Compilers

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Compilers: Compilers and translators, Phases of compiler design, cross compiler, Bootstrapping, Design of Lexical analyzer, LEX. Top down Parsing; LL(1) Parser, recursive descent parser.

UNIT II

Syntax Analysis: Specification of syntax of programming languages using CFG, Top-down parser, design of LL (1) parser, bottom up parsing technique, LR parsing, Design of SLR, CLR, LALR parsers, YACC.

UNIT III

Syntax directed translation: Study of syntax directed definitions & syntax directed translation schemes, implementation of SDTS, intermediate notations- postfix, syntax tree, TAC, translation of expressions, controls structures, declarations, procedure calls, Array reference.

UNIT IV

Code optimization: Important code optimization techniques, loop optimization, control flow analysis, data flow analysis, Loop invariant computation, induction variable removal, Elimination of Common sub expression.

UNIT V

Code generation: Problems in code generation, Simple code generator, Register allocation and assignment, Code generation from DAG, peephole optimization.

UNIT VI

Storage allocation & Error Handling: Run time storage administration stack allocation, symbol table management, Error detection and recovery-lexical, syntactic and semantic.

TEXTBOOKS

1. Alfred V. Aho and Jeffery D. Ullman, "Principles of Compiler Design", Narosa Pub. House, 1977.
2. Aho, Sethi, and Ullman, "Compilers Principles Techniques and Tools", Second Edition, Pearson education, 2008.
3. Vinu V. Das, "Compiler Design using Flex and Yacc" PHI Publication, 2008.

BECT401P: Compilers lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

Projects

BECT404T: Elective II Natural Language Processing

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I

Introduction: NLP tasks in syntax, semantics, and pragmatics, Key issues &Applications such as information extraction, question answering, and machine translation, the problem of ambiguity, the role of machine learning, brief history of the field.

Unit II

N-gram Language Models : Role of language models, Simple N-gram models, Estimating parameters and smoothing, Evaluating language models, Part Of Speech Tagging and Sequence Labeling Lexical syntax, Hidden Markov Models, Maximum Entropy models.

Unit III

Syntactic parsing: Grammar formalisms and tree banks, Efficient parsing for context-free grammars (CFGs), Statistical parsing and probabilistic CFGs (PCFGs), Lexicalized PCFGs.

Unit IV

Semantic Analysis: Lexical semantics and word-sense disambiguation, Compositional semantics, Semantic Role labeling and Semantic Parsing.

Unit V

Information Extraction (IE): Named entity recognition and relation extraction, IE using sequence labeling, automatic summarization Subjectivity and sentiment analysis.

Unit VI

Machine Translation (MT): Basic issues in MT, Statistical translation, word alignment, phrase-based translation, and synchronous grammars.

Text Books:

1. D. Jurafsky and R. Martin, "Speech and Language Processing", Second Edition, Pearson Publication, 2014.
2. Terence Parr, "Language Implementation Patterns", Pragmatic Bookshelf, 2011.

Reference Books:

1. James Allen, "Natural Language Understanding", Second Edition, Addison Wesley, 2007.
2. Akshar Bharati, Vineet Chaitanya, and Rajeev Sangal, "NLP: A Paninian Perspective", Prentice Hall, 1994.

"Impact of Enterprise Resource Management System on Industrial Revolution 4.0"

A Project Report Submitted in the partial fulfilment of the requirement of the degree of

Bachelor of Engineering

In

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Prof. JOGI JOHN

Submitted by:

Miss. Flowary Moon (114)

Miss. Prachi Khokle (124)

Master. Nikhil Aparajit (171)

Master. Utkarsh Priyadarshi (237)

Master. Aman Nashine (135)

DEPARTMENT OF COMPUTER TECHNOLOGY

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

PRIYADARSHINI COLLEGE OF ENGINEERING

NAGPUR-440019 **Department of Computer Technology**

CERTIFICATE

This is to certify that project report entitled - **"Impact of Enterprise Resource Management System on Industrial Revolution 4.0"** is a bonafide work done by the students **Flowary Moon, Prachi Khokle, Nikhil Aparajit, Utkarsh Priyadarshi and Aman Nashine.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2020-2021

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sentiment in and come to the final result whether to buy the product or not.

Analyzing the sentiment tendency of consumer evaluation can not only provide a reference for other consumers but also help businesses on e-commerce platforms to improve service quality and consumer satisfaction. Sentiment analysis for product reviews, also known as text orientation analysis or opinion mining, refers to the process of automatically analyzing the subjective commentary text with the customer's emotional color and deriving the customer's emotional tendency

Sentiment Analysis is a form of Natural Language Processing (NLP) which tracks the mood and attitude of the public regarding any item or topic. Sentiment Analysis or Opinion Mining, which includes the construction of a scheme or model for identifying and studying data aimed at obtaining and examining people's feelings expressed positively or negatively through the analysis of a big quantity of data from surveys, reactions and reviews. It is a field of study that could be useful in many ways. For example, in marketing, it helps to provide better product analytics or even monitor market research that can determine which version of a product or service are problematic or popular.

At present, the main methods of text mining are rule based method, machine learning method and combined method. Among them, the rule-based method also includes the lexicon-based method. Machine learning methods include traditional machine learning methods such as conditional random fields and deep learning methods. this all refer to traditional machine learning techniques.

sentiment analysis by constructing the sentiment lexicon, andachieved good results.The core of the sentiment lexicon-based approach is toconstruct a sentiment lexicon. The corresponding sentimentlexicon is constructed by selecting appropriate sentimentalwords, degree adverbs, and negative words, and the sentimental intensity and sentimental polarity are marked forthe constructed sentiment lexicon. After the text is input,the words in the input text are matched with the sentiment words in the sentiment lexicon, and the matched sentimentwords are weighted and summed to obtain the sentiment valueof the input text, thereby determining the sentimental polarityof the input text according to the sentiment value.

For instance, in an e-commerce website, people purchase product and give their reviews with or without using the product.These reviews must help the customers who desire to purchase the product or item. But the issue is, as the number of reviews is more the customers may find it difficult to read all reviews. So, there is a need of automated process to give an appropriate conclusion for particular product or topic and this task is known as Sentiment Analysis. we automate this process by creating an recommendation system for e-commerce web.

1. ABSTRACT

The world is going through its fourth industrial revolution right now. The first industrial revolution started with the invention of steam power in the mid-1700s, while the second one commenced with the arrival of electricity in the middle of the 19th century. The third industrial revolution happened with the invention of the internet by the end of the 20th century.

Now, as the world shifts, its gears are moving into the fourth industrial revolution i.e the world of automation. Gone are the days where simple computing tasks would take large computers big enough to fill an entire chamber, whose place has been taken by devices smaller than our palms.

One area of technology that has also significantly changed is how we manage our offices and our industries. With data being termed as the digital gold, it is crucial in this day and age that corporations keep up with the rapidly changing and constantly innovating the field of technology. Managing large workspaces in big Enterprises has been made easy with the advent of particular software categories popularly known as ERP short for Enterprise Resource Planner.

With ERPs, Large corporations can manage their Multiple enormous amounts of data from all kinds of fields of work like finance, operations, sales, manufacturing, marketing, sales, pre-sales/post-sales, HR, etc.

Managing Enterprises has never been simpler as most of these organizations now have comprehensive ERP systems in place for monitoring all the aforementioned fields of work. What's even more enticing about it all is that all of this can now be stored on Cloud storage and can be accessed from pretty much any device. This makes it incredibly easy for business owners to manage their enterprise from anywhere in the world, anytime.

Domain 6: Web Technology

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	COMPUTER WORKSHOP I LAB	BECSE206P	Web Technology
2	Elective II:Architecture of Web Application	BECT404T	
3	ELECTIVE-III :Web Data Management	BECT408T	

BECSE206P: COMPUTER WORKSHOP LAB

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

Unit I:

Basic concepts of HTML: HTML, Web Pages, World Wide Web, Tags in HTML, HTML As a Markup Language, HTML as a Page Formatting Tool, Structure of an HTML Page, Commands Written In Notepad, the <H> TAG, the basic tags, the <P> TAG, The <PRE>Tag**The text attributes**: The <marquee> tag, Example of Text Styles, the images, the list tag: Ordered List, Unordered List, Nested List **The links**: Links between Two Pages, Links in the Same Page, Images as Links, Attributes of Links, the basic web page, **other formatting tags**: sounds and videos, comments, the <XMP> tag, special characters

Unit II:

The tables: The Table, The Rows, The Columns, Cellspacing, Cellpadding, Alignment of the Text Present inside the Cells, Alignment of Table, Border Attributes in the Table, Merging Of Rows and Columns, Colspan, Rowspan, Table within a Table, Empty Cells inside the Table, Links in the Table, **the frames**: Frames with Column Arrangement, Column Size for Frames, Row Size for Frames, Frame Spacing, Margin Width and Height in Frames,

Unit I:

The forms: The<input> Tag, The <textarea></textarea> Tag, The Dropdown List, The Normal List, HTML 5: New Markup Elements of HTML5, Basic Tags, Images, List and Links, Tables and Forms, Audio and Video, Canvas, XHTML, and CSS, design and deploy a web site

Unit IV:

VB script: Introduction to vbscript, Printing Text Using vbscript, Alert / msgbox in vbscript, Variables in vbscript, Arrays in vbscript, Conditional Statements, Looping Statements, Procedures , Events

Unit V:

Java script: Variables , Array, Comments, Operators, Conditional Statements, Looping Statements,

Unit VI:

Working under UNIX /LINUX Operating Systems:

a) Structure: Unix Architecture
b) Features of UNIX operating system
c) Layered model of UNIX operating system (study of kernel and Shell)
d) General file commands and Directory commands
e) File structure and Directory structure

Text Book:

1. **HTML Programming, Freeman and Robson, Oreilly publications**

BECT404T: Elective-II Architecture of Web Application

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Web Architecture and Framework: Basic Web Architecture, Web Server, Application Server, Web development framework, TCP/IP Architecture, TCP/IP Application Services.

UNIT II

HTTP, HTML & its roots: Uniform Resource Locator, fundamentals of http, information through header, evolution of http protocol, standard generalized markup language, html rendering.

UNIT III

XML & Introduction to Web server: Core XML, XHTML, XSL, Basic operation of web servers, mechanism for dynamic content recovery, Server configuration, Server security

UNIT IV

Overview of browser functionality: Architecture Considerations, Processing flow in Browser, Processing HTTP Request, Processing HTTP Responses, Cookie coordination, Privacy & P3P.

UNIT V

Active Browser Pages: Java Script, Cascading Style Sheets, DHTML, AJAX, CGI scripts and clickable maps

UNIT VI

Internet Telephoning, Virtual reality over the web, Intranet and Extranet, Firewall Design Issues.

Text Books:

1. Leon Shklar & Rich Rosen, "Web Application Architecture Principles, Protocols & Practices", 2nd Edition, John Wiely & Sons, 2009.

Reference book

1. Alex X. Liu, "Firewall Design and Analysis", World Scientific Publishing, Vol. 4., 2010.
2. Nancy J. Yeager, Rebert E.McGrath, "Web Server Technology", Morgan Koufmann Publication, 1996.
3. Peter Morville and Louis Rosenfeld, "Information Architecture for the World Wide Web", 3rd Edition, O'Reilly Publication, 1998.

BECT408T: Elective-III Web Data Management

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction: Modeling Web Data, Database Technology and Web Applications, Semistructured data, Web Data Management with XML, XML and syntax, XML Data Model, XLink, and XPointer.

UNIT II

XPath and XQuery:- Regular Path Expressions, XPath Basics, XPath steps and expressions, Path evaluations, axes, node tests, predicates, XQuery Syntax , FLWOR expression, advanced features, XUpdate.

UNIT III

Automata on ranked trees, unranked trees, XML Schema, other schema languages, Graph semistructured data, graph bisimulation, data guides, XML query evaluation, XML identifiers, XML evaluation techniques

UNIT IV

Ontologies, Querying and Data Integration: RDF, RDF Schema, OWL, Description Logic, Querying data through ontologies, Querying RDF data, querying through RDFS

UNIT V

Building Web scale applications: Web search, web crawlers, web information retrieval, Web graph mining and hot topics in web search, Distributed systems, failure management, Required properties of a distributed system, P2P networks,

UNIT VI

Dstributed Access Structure: Hash-based structures, distributed indexing, Distributed computing with MapReduce & PIG, Large Scale Data Management with HADOOP: Installing and Running HADOOP, Running MAPREDUCE Jobs, PIG LATIN, Scripts Running in Cluster Mode.

Text Book:

1. S. Abiteboul, I. Manolescu, P. Rigaux, M. Rousset and P. Senellart, Web Data Management, Cambridge University Press, 2012.

Reference Books :

1. S. Abiteboul, P. Buneman and D. Suciu, "Data on the Web: From Relational to Semistructured Data to XML", Morgan Kaufman Publisher, 1999.
2. Athena Vakali, George Pallis, "Web Data Management Practices: Emerging Techniques and Technologies", IGI Publication 2006.
3. W3C web site.

"WEB PORTAL FOR THE STUDENT ORGANIZATION"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Under the guidance of

Prof. Jogi John

Submitted by

SHUBHAM BAND

SWAPNIL MESHRAM

PIYUSH KANHERKAR

STAINLY SHENDRE

VAIBHAV GUPTA

DEPARTMENT OF COMPUTER TECHNOLOGY

PRIYADARSHINI COLLEGE OF ENGINEERING, NAGPUR-440019

2020-2021

PRIYADARSHINI COLLEGE OF ENGINEERING

Department of Computer Technology

NAGPUR-440019

CERTIFICATE

This is to certify that project report entitled - **"Web portal for the student organization"** is a bonafide work done by the student **SHUBHAM BAND, SWAPNIL MESHRAM, PIYUSH KANHERKAR, STAINLY SHENDRE, VAIBHAV GUPTA.** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2020-2021

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1.1 Web Portal

A web portal is a specially designed website that brings information from diverse sources, like emails, online forums, and search engines, together in a uniform way. Usually, each information source gets its dedicated area on the page for displaying information often, the user can configure which ones to display. Variants of portals include mashups and intranet "dashboards" for executives and managers. The extent to which content is displayed in a "uniform way" may depend on the intended user and the intended purpose, as well as the diversity of the content. Very often design emphasis is on a certain "metaphor" for configuring and customizing the presentation of the content (e.g., a dashboard or map) and the chosen implementation framework or code libraries. In addition, the role of the user in an organization may determine which content can be added to the portal or deleted from the portal configuration.

A portal may use a search engine's application programming interface (API) to permit users to search intranet content as opposed to extranet content by restricting which domains may be searched. Apart from this common search engine feature, web portals may offer other services such as e-mail, news, stock quotes, information from databases, and even entertainment content. Portals provide a way for enterprises and organizations to provide a consistent "look and feel" with access control and procedures for multiple applications and databases, which otherwise would have been different web entities at various URLs. The features available may be restricted by whether access is by an authorized and authenticated user (employee, member) or an anonymous website visitor.

Web portals often provide a particular look and feel for organizations and enterprises, and also provide access control and procedures. They are accessible from multiple platforms like personal computers, smartphones, and other electronic devices. Prominent features of a web portal are data access, personal content, transactions, security, published content, and search. It is capable of presenting information based on the user. It can also allow users to voluntarily personalize the information presented in the portal. There are two types of web portals, namely, horizontal web portals and vertical web portals. The former target large communities of users, whereas the latter is more specific to the contents and objects. Web portals are also classified based on their types, such as market space portals, public web portals, enterprise web portals, knowledge portals, etc.

A web portal is capable of handling both structured and unstructured information. For users, it provides ease of navigation, and for enterprises, it provides significant cost

Abstract

The world is facing the corona pandemic situation. This situation has affected many small and medium organizations. According to the guidelines, we can reduce the impact by just maintaining social distancing. So to overcome the problem, we have come up with the solution of the web portal for the student organization. The web portal will act as a medium between the committee members and the students from different levels. These will give all the necessary information in one place. In these pandemic situations, these could be a great way to maintain an organization. A web portal is a web-based solution that provides a single point of interaction to the various people involved in the organization. The portal can allow us to share the relevant with the relevant people only. The portal will improve the collaboration and the communication between the members.

"DOCTOR-PATIENT PORTAL FOR CONSULTATION AND MANAGEMENT"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

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Submitted by

Chaitanya Chinchamalatpure

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Ayushi Rahangdale

Prajwal Larokar

Richa Sen

DEPARTMENT OF COMPUTER TECHNOLOGY

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2020-2021

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Department of Computer Technology

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This is to certify that project report entitled - **"Doctor Patient Portal For Healthcare"** is a bonafide work done by the

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such situations, visiting hospitals for basic illness can actually give invitation to a bigger problem. So, the main goal of this tool is to provide individuals a platform where they could seek medical help for non-critical problems without necessarily visiting hospitals in person resulting into decreasing the burden on healthcare systems and to increase healthcare capacity where it is *most limited.* It provides health advice by experts just by sitting at home and helps to avoid actual visits for normal illness. Our proposed system aims to build an environment where various patients needing doctor can get help at their home i.e. consult doctors, send their images and reports, chat with doctors, tell them their issues and discuss remedies. It also consists of doctors and patient login panel where both will login to the system and see patient requests for consultations. The system then schedules those requests and serves them to doctor one after another. This allows doctors to chat with patients and discuss their problems.

In addition to this, the web application it will be consisting of all the necessary information regarding the hospitals. Such as specialist doctors, timing for the visits, availability of resources and critical equipment's (such as beds, ventilators, ICU, Ambulances etc.) and provides a means for online appointment booking.

The system will prove helpful to urgent cases that do not reach hospital, for emergency cases that do not have doctors in area, during late night emergencies and also for preliminary examination of patients. It will also be helpful for those who need regular check-ups. It enables patient to have a second opinion.

INTRODUCTION

Corona virus pandemic hit the whole world catastrophically. We are in need of "doctors & hospitals "more than ever. But while the Covid – 1 9 virus is spreading drastically, we can't gather around or make any place crowded, especially hospitals which will spread the virus more and more. As many people are getting infected our health care system is experiencing a burden than never before. People are facing problems like unavailability of authentic information of medical resources and time to time treatment. According to reports, many people are scared to visit hospitals amidst increase in corona virus. Thus, in this crucial time when everything is turning out to be online from Big Multinational Companies to small super market amidst COVID-19, so in this project we have tried to solve these problems by creating a website where user can see hospitals information like Number of beds availability, Number of operation theaters, Number of doctors and specialist doctors available in any hospital and many more. This website will also help to avoid unnecessary crowd in hospitals and will also help patients with minor problems get first aid at home. The website provides the facility to request and book an appointment for online consultations with doctors based on the need."Doctor-Patient Portal" is one of the most important and crucial website in this pandemic.

Covid-19 pandemic has changed a way of everyone's life. It also taught us how hygiene plays an important role in our lives. During this, we understand the necessity of a clear and reliable health care platform. In

"E-Commerce Portal: Grocery Delivery"

A Project Report Submitted in the partial fulfilment of

requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasanta Tukdoji Maharaj Nagpur University, Nagpur

Under the guidance of

Mr. Nitesh Ghodichor

Submitted by

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Vivek Shivprakash Raut (154) **Vipin Yadav (153)**

Suyash Shivshankar Ajbale (151) **Mahadev Saren (139)**

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NAGPUR-440019

CERTIFICATE

This is to certify that project report entitled - **"E-Commerce Portal: Grocery Delivery"** is a bonafide work done by the student **Monali Vijay Ramteke, Yash Rameshwar Agrawal, Vivek Shivprakash Raut, Vipin Yadav, Suyash Shivshankar Ajbale, Mahadev Saren .** The project report is submitted to **Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

Session 2020-2021

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ABSTRACT

This paper presents ShopWala an E-commerce portal for purchasing groceries online. The main motive behind making such portal is to reduce the spread of covid-19 virus in the State .This E-commerce websites helps to control the mass gatherings at supermarkets , Using the website customers can buy goods or products online just by visiting the website and ordering the item online by making payments online. This E-commerce portal is open 24*7*365 so that customers can purchase the products any time according to their requirements. The proposed work will helps in building a website to buy, sell products or goods online using internet connection. The purchasing of goods online, user can choose different products based on categories, secure online payments, delivery services and hence covering the disadvantages of the existing system and making the buying easier and helping the vendors to reach wider market. In existing system of buying goods has several disadvantages. It requires lots of time to travel to the particular shop to buy the goods.

Keywords: E-commerce, Products, Secure Payments, Delivery, Customer

1. INTRODUCTION

What is ShopWala?

Well ShopWala is an E-commerce portal for grocery products, Ecommerce is an umbrella term that covers everything there is to do with buying or selling online, it describes the act of performing business via the internet. Technology Used in the project Online E-Commerce Portal are HTML, CSS, JavaScript, react, Django, MySQL. A Home Page with good user interface, Home Page will contain an animated slider for images banner, user can sign in to their accounts, users can place order from their account by paying the amount of their products. An About us page will be available which will describe about the website, Contact us page will be available in the home page so that any users can reach us whenever they face trouble. For the best shopping experience for online shoppers, the e-commerce website needs to be easy to use. The interface should not be complicated at all. When we build an online grocery website, there are certain number of things that are needed to be kept in mind. The online grocery website must be responsive. That has always been our topmost priority and this is a necessity for every E-commerce website as well. This is why we always make sure that our sites are as functional on smartphones and tablets as they are on the desktop. What impresses our customers is that the websites E-commerce website that we have made is fast loading. It is also one of our topmost priorities that the loading time of the website should be as minimum as possible. Online grocery websites which we create just take split of seconds to load. This means that whatever one has to see or open from the categories, would not consume much time. This is one of the most important things that a customers expect and we give them a time-saving website in addition to this we have keep the best and relevant pictures for the online grocery website a Customers always need to see the pictures properly with the price tags and other important related things. These things have to be accurate when it comes to an online grocery website, pictures are not baited but are an essential part of the shopping which is needed for the smooth shopping experience. Last but not least, the thing that irritates the most to online customers is when they are unable to check out and pay properly. In the world of E-commerce website building and online grocery website, we guarantee that the checkout process we construct for the sites is simple. We keep it easy. If online customers see even a slight problem in checkout or online payment, the just leave the site and switch to other sites. To avoid this for our site, we make sure that customers do not encounter a problem in this realm.

"College Enquiry Chat-Bot"

A Project Report Submitted in the partial fulfilment of requirement of the Degree of

Bachelor of Engineering

in

Computer Technology

Rashtrasant Tukadoji Maharaj Nagpur University,

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2020-2021

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Introduction

1.1 Chat-Bot

A chatbot is, in essence, a piece of robotic software used to imitate human conversation through text chats and voice commands (a good example being Siri or Amazon Alexa). Not only the use of this application only text chat but also, we can integrate with our Web based Chat-Bot management system. In the past, companies had to develop Desktop applications which required a large team for deployment & maintenance. A lot of versions of deployment packages/codes had to be maintained by the companies. The development of web applications led to the centralized deployment and maintenance. Web applications are deployed in a web container and shared by all users. Some of the latest web technologies are trendy in the world of web application development trends. One such technology is a single page web application. It is a long scrollable page that provides complete information about the corresponding site to the users without navigating to any other web page. It has many benefits such as reduced cost of website designing, development and web hosting.

The media processed through the REST (Representational State Transfer) which utilizes the HTTP Protocol is cost-effective in terms of bandwidth and simplicity of use. In recent years, the design of the API that supports the REST interfaces is growing progressively. Micro-services are widely used in the web applications development world as larger, more complex applications that are better developed and managed as a combination of smaller services that work cohesively together for larger, application-wide functionality. Managing an academic institution and bringing together various bodies associated with the institution to accomplish the mission is always a big challenge. Transforming these institutions with technology-enabled automation tools to facilitate the academic and administrative activities will make it easier to accomplish the mission. To manage everyday tasks of institutions, education must be modernized with cloud, mobile and digital technologies to enhance operational efficiency and also to manage the institution effectively.

Students/guardians no longer have to stand for hours in the queue to get admission. Simplified registration and collection of fees through online forms, with the ability to send alerts and reminders via email, SMS alerts and push notifications makes the process easier. Design of a course curriculum that can be adapted to the changing needs of the academic institution is essential. Having Course Management System institutions will be able to accomplish a lot with limited resources. Creating and tracking the course-work, assignments, and exam papers in a classroom environment to support the goal of graduating students.

Abstract

Most of the Academic institutions face difficulty in managing records of students, attendance, accounts, admissions, etc., and track the information of their interest as they still rely on paperwork and manual processes. A web-based Student management Chat-Bot system will reduce the manual work by deploying centralized software incorporated with various loosely coupled services which interact with each other to address above mentioned issues and improves the communication between management and the student/guardian through notifications via email, SMS and push messages. As it is a server-side enterprise application it is designed to support desktop browsers, mobile browsers and native mobile applications. The use of micro-service architecture and REST (Representational State Transfer) architecture makes it easy for designing and developing loosely coupled web services.

Domain 7: Artificial Intelligence

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Artificial Intelligence	BECT402T/P	Artificial Intelligence
2	ELECTIVE-I Computational Intelligence	BECT403T	
3	ELECTIVE-III :Human Computer Interface	BECT408T	

BECT402T: Artificial Intelligence

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to AI: Definition of AI, Early work in AI, Importance of AI and related fields, Task domains of AI systems, Intelligent agents, Generic architecture of intelligent agent.

Basics of problem solving: Defining the problem on a state space search, Production systems, Problem characteristics, Production system characteristics, Issues in the design of search programs.

UNIT II

Heuristic search techniques: Generate and test, Hill climbing, Best-first search, Problem reduction, Constraint satisfaction, Means-ends analysis.

Knowledge Representation: Representation and mapping, Approaches and Issues. Introduction to proposition logic, Knowledge representation using predicate logic, Unification and resolution. Representing knowledge using rules, procedural Vs declarative knowledge, logic programming, forward Vs backward reasoning, matching.

UNIT III

Knowledge representation: Network representation schemes - Semantic networks, conceptual graphs, Conceptual dependency, Structured representation schemes – Frames, Scripts.

Statistical reasoning: Symbolic Vs Statistical reasoning, Nonmonontonic and monotonic reasoning, Probability and Bayes' theorem, Certainty factors and rule based systems, Baysian networks, introduction to fuzzy logic.

UNIT IV

Learning: General learning model, Types of learning - rote learning, learning by taking advice, learning by analogy, induction learning, learning by discovery.

Expert systems: Characteristic features of expert system, Architecture of expert system, Expert system shell, knowledge acquisition and validation, knowledge system building tools.

UNIT V

Natural Language Processing: Overview of linguistics, Grammer and languages, basic parsing techniques, semantic analysis and representation structures.

Game playing: Minimax search procedure, adding alpha-beta cutoffs.

UNIT VI

Artificial Neural Network: Introduction, Neural Network representation, neural learning, Knowledge representation in ANN, application of neural networks.

Genetic Algorithm: Motivation, GA cycle, genetic operators, GA based Machine Learning, illustrative example.

TEXT BOOK:

1. E. Rich & K. Knight, S. B. Nair "Aritificial Intellegence", Tata McGraw Hill Publications, 2008.
2. D. W. Patterson, "Introduction to Artificial Intelligence and Expert System", PHI Pub., 1997.
3. K. Uma Rao, "Aritificial Intelligence and Neural Networks" Pearson Education, 2011.
4. David E. Goldberg, "Genetic Algorithms in search, optimization and machine learning",Pearson Education, 2002.

BECT402P: Artificial Intelligence lab: Practical based on above syllabus

Load	Credit	Total marks	Sessional marks	University marks	Total
2 hrs (Practical)	1	50	25	25	50

BECT403T: Elective-I Computational Intelligence

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

UNIT I

Introduction to Computational Intelligence, Intelligence machines, Computational intelligence paradigms, Short history.

UNIT II

Rule-Based Expert Systems and Fuzzy Expert Systems, Rule-based expert systems, Uncertainty management, Fuzzy sets and operations of fuzzy sets, Fuzzy rules and fuzzy inference, Fuzzy expert systems, Case Studies.

UNIT III

Artificial Neural Networks, Fundamental neuro computing concepts: artificial neurons, activation functions, neural network architectures, learning rules, Supervised learning neural networks: multi-layer feed forward neural networks, simple recurrent neural networks, time-delay neural networks, supervised learning algorithms, Unsupervised learning neural networks: self-organizing feature maps , Radial basis function networks, Deep neural networks and learning algorithms.

UNIT IV

Evolutionary computation, Chromosomes, fitness functions, and selection mechanisms, Genetic algorithms: crossover and mutation, Genetic programming, Evolution strategies.

UNIT V

Swarm intelligent systems: Introduction, ant colony systems, development of ant colony systems, working of ant colony systems.

UNIT VI

Hybrid Intelligent Systems, Neural expert systems, Neuro-fuzzy systems, Evolutionary neural networks.

Text Books:

1. Andries P. Engelbrecht, "Computational Intelligence: An Introduction", Wiley Publication.
2. Yegnanarayana B, "Artificial Neural Networks", PHI, 2012.
3. Timothy J. Ross, "Fuzzy Logic with Engineering Applications", McGraw Hill, June 2011.
4. David E. Goldberg, "Genetic algorithms in search, optimization & Machine Learning", Pearson Education, 1989.
5. Jang J. S. R., Sun C.T. and Mizutani E, "Neuro-Fuzzy and Soft computing", Pearson Education 2003.
6. Mitchell Melanie, "An Introduction to Genetic Algorithm", Prentice Hall, 1998.
7. Andries Engelbrecht, "Computational Intelligence: An Introduction", Wielly India, 2007.

BECT408T: Elective-III Human Computer Interface

Load	Credit	Total marks	Sessional marks	University marks	Total
4 hrs (Theory) 1 hr (Tutorial)	5	100	20	80	100

Unit I

Introduction: Importance of user Interface: definition, importance of good design. Benefits of good design. A brief history of Screen design, The graphical user interface - popularity of graphics, the concept of direct manipulation, graphical system, Characteristics, Web user - Interface popularity, characteristics- Principles of user interface.

Unit II

Design process: Human interaction with computers, importance of human characteristics human consideration, Human interaction speeds, and understanding business junctions.

Unit III

Screen Designing: Design goals: Screen planning and purpose, organizing screen elements, ordering of screen data and content, screen navigation and flow, Visually pleasing composition - amount of information -focus and emphasis - presentation information simply and meaningfully - information retrieval on web -statistical graphics - Technological consideration in interface design.

Unit IV

Windows: New and Navigation schemes selection of window, selection of devices based and screen based controls. Components: text and messages, Icons and increases - Multimedia, colors, uses problems, choosing colors.

Unit V

Software tools: Specification methods, interface, Building Tools. Components - text and messages, Icons and increases - Multimedia, colors, uses problems, choosing colors.

Unit VI

Interaction Devices: Keyboard and function keys, pointing devices, speech recognition digitization and generation - image and video displays drivers.

Text Books:

1. Wilbert O Galitz, "The essential guide to user interface design", Second Edition, Wiley Dream Tech., 2002.
2. Ben Shneidermann, "Designing the user interface", Third Edition; Pearson Education, 2009.

Reference Books:

1. Alan Dix, et.al, "Human - Computer Interaction", Third Edition, Pearson Education, 2003.
2. Prece, Rogers and Sharps, "Interaction Design", 3rd Edition, Wiley Dream Tech., 2011.
3. Soren Lauesen, "User Interface Design", Pearson Education, 2005.
4. D.R.Olsen, "Human -Computer Interaction", First Edition; Cengage Learning, 2009.

FACE MASK DETECTION SYSTEM USING DEEP LEARNING

A Project Report Submitted in the partial fulfilment of requirement of the Degree of

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in

COMPUTER TECHNOLOGY

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masked face detection has been becoming a widely recognized challenging task in face detection. It is still necessary to construct large datasets and develop effective and efficient models for masked face detection. To detect face mask dataset which is denoted as MAFA is created. The dataset consists of 30,811 internet images, in which 35,806 masked human faces are manually annotated. Annotation process ensure that each image contains at least one face occluded by various types of masks. The six main attributes of each masked face, including locations of faces, eyes and masks, face orientation, occlusion degree and mask type, are manually annotated and cross-checked by nine subjects.

Main characteristics of masked faces in MAFA is that most facial attributes can be lost in heavily occluded faces, while the highly diversified masks can bring in various types of noises. We propose LLE-CNNs for masked face detection, because of that recovery of missing facial cues and suppressing non-facial cues in the feature subspace. Proposed approach consists of proposal module, embedding module and a verification module. Proposal module first extracts a set of face proposals and then they characterize each proposal with a 4096d descriptor with a pre-trained VGG-Face model. The descriptor of a masked face can be incomplete or noisy, further embedded it into a feature subspace formed by two dictionaries that consist of the descriptors from representative normal faces and non-faces. Dictionaries are learned from a large pool of normal faces, masked faces and non-faces from previous datasets and the training set of MAFA. So, this similarity-based descriptor is fed into the Verification module that consists of a Deep Neural Networks with only Fully-Connected layers so as to identify the real faces.

Main contributions of this project are -

1. The dataset that we present have masked faces which can be used as additional training source for developing new face detectors.
2. For masked face detection we propose LLE-CNNs which outperforms 6 state-of-the-art face detectors in detecting masked faces.

INTRODUCTION

Facial mask detection is one of the most important area in today's pandemic situation. Detecting facial mask, identifying person with mask and without mask, face cover. World is going through Covid-19 pandemic & in this situation wearing mask to protect others and ourselves from this virus and to stop spreading of virus is indeed. By the fast improvement and changing technology, facial mask detection is possible. Deep learning has various vision areas such as object detection, object classification, face detection etc. Deep learning algorithm do not require manual design. By training images using CONVOLUTION NEURAL NETWORK(CNN) is very widely popular method. CNN successively apply filters and leads to create the train data set which help to save time and human resources. Data set with huge data/images can be easily trained using CNN which is not possible manually. The key feature of face mask detection that we can help various organization and countries to detect people violating rules and regulation. By using computer vision like face mask detection, we can help our society and maintain social health. Facial recognition is now using for security purpose. There are many techniques like fingerprint sensor, voice (recognition) sensor for security purpose. But Facial Recognition is full proof technique for identification of person. Face detection is one of the techniques of Facial Feature Recognition. Face detection is to locate the facial area in the image and to extract features so as to recognize face. We can use face recognition techniques to extract these features from the image. In applications like image database management, video surveillance, face recognition, the first step is human face localization and detection. Though it is assumed that normalized face image is available locating. Second reason is facial features from the occluded parts are no longer available in the detection process as the existence of masks inevitably bring in certain kinds of noise. With insufficient training and testing data and inaccurate features,

ABSTRACT

The pandemic of corona virus is still extending worldwide. It affecting every possible sector due to which economy of many countries drastically decreased and still decreasing. According to WHO (World Health Organization) we can reduce the impact of Covid-19 by simply wearing the face mask. So, in this project we proposed a model which will control the growth of corona virus by detecting the persons in public places like offices, shopping malls, schools etc. These places will be under the surveillance of CCTV (Closed circuit television cameras). The system will generate the warning sound as it detects the person with no masks and also for situation like if someone is violating the rule of social distancing. A deep learning module is train with dataset of large amounts of images of Masked & Non-masked faces. The module also contains many confusing so as to get accuracy better. This model is built by using computer vision libraries in Python.

"AI BASED CRIME DETECTION SYSTEM & ALERT"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

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in

Computer Technology

Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

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based methods only utilize some basic features of images and depend on artificial experience to extract sample features. Deep learning based methods can extract more complicated face features. Deep learning is making crucial advances in solving problems that have restricted the best attempts of the artificial intelligence community for many years. It has proven to be excellent at revealing complex structures in high-dimensional data and is therefore applicable to lots of domains of science, business and government. It addresses the problem of learning hierarchical representations with a single algorithm or a few algorithms and has mainly beaten records in image recognition, natural language processing, semantic segmentation and many other real world scenarios. There are different deep learning approaches like Convolutional Neural Network (CNN), Stacked Auto encoder, and Deep Belief Network (DBN). CNN mostly used algorithms in image and face recognition. CNN is a kind of artificial neural network that employs convolution methodology to extract the features from the input data to increase the number of features. CNN was firstly proposed by LeCun and was firstly applied in handwriting recognition. His network was the origin of much of the recent architectures, and a true inspiration for many scientists in the field. Krizhevsky, Sutskever and Hinton achieved best results when they published their work in the ImageNet Competition. It is widely regarded as one of the most influential publications in computer vision and showed that CNNs outperform recognition performances compared to handcrafted based methods. Moreover, with computational power of Graphical Processing Units (GPUs), CNN has achieved remarkable cutting edge results over a number of areas, including image recognition, scene recognition, semantic segmentation, and edge detection. The main contribution of this paper is to obtain a powerful recognition algorithm with high accuracy.

1.1Introduction

Crime scene prediction from a camera is very important while working on a field of computer vision. In the modern era of science and technology, people set up surveillance cameras in different areas to get rid of crime. Still, it cannot help people as quickly as people want to respond. Usually after occurring at a crime scene, law enforcement agencies come to the area and take the footage from the video that was recorded at the time of the crime scene. Then, law enforcement agencies analyze the video and take necessary evidence of the crime scene. We believe this is a very slow process to act on a crime scene. For this reason, we wanted to make a system that can quickly act on a crime scene. Moreover, there are a lot of cameras being installed in different areas by law enforcement agencies or by any organization. They have to monitor all the cameras at a time with human beings. If a computer system can detect the threatening objects and give an alert to the authority just after detection, the proper authority can quickly take action to stop the potential criminal before he commits any crime. For example, 1st July of 2016, an incident occurred in Dhaka in a restaurant. The Terrorists went to the restaurant with guns, hand grenades and knives etc. But initially law enforcement agencies did not understand how dangerous the terrorists were. If the camera installed over there can give information to law enforcement agencies by any media (IP camera or control from police station etc.) just after exposing the weapons, law enforcement agencies can respond to the scene very quickly and may save important lives. This incident helped us to think more deeply to make a system that can be learned to detect threatening objects. In our project, we worked on detecting revolvers, machine guns, shotguns, and knives using convolutional neural networks. Also we are using the face recognition process in our project. Face recognition is the process of recognizing the face of a relevant person by a vision system. It has been a crucial human-computer interaction tool due to its usage in security systems, access- control, video surveillance, commercial areas and even it is used in social networks like Facebook as well. After rapid development of artificial intelligence, face recognition has once again attracted attention due to its non-intrusive nature and since it is the main method of person identification for humans when it is compared with other types of biometric techniques. Face recognition can also be easily checked without the subject person's knowledge in an uncontrolled environment. Traditional methods based on shallow learning have been facing challenges like pose variation, facial disguises, lighting of the scene, the complexity of the image background, and changes in facial expression. Shallow learning

Abstract

Nowadays Closed Circuit Television (CCTV) Cameras are installed everywhere in public places to monitor illegal activities like armed robberies. Most CCTV footage is used as post evidence after the occurrence of crime. In many cases a person might be monitoring the scene from CCTV but the attention can easily drift on prolonged observations.

Efficiency of CCTV surveillance can be improved by incorporation of image processing and object detection algorithms into the monitoring process.

The object detection algorithms, previously implemented in CCTV video analysis, detect pedestrians, animals and vehicles. These algorithms can be extended further for face detection and detect persons holding weapons like firearms or sharp objects like knives in public or restricted areas.

Crime scene prediction without human intervention can have an outstanding impact on computer vision. In this project, we present CNN in the use of detect knives, swords and guns in order to predict whether a crime has occurred in a particular image. We emphasized on the accuracy of detection so that it hardly gives us wrong alerts to ensure efficient use of the system. This project uses Non linearity ReLu, Convolutional Neural Layer, Fully connected layer and dropout function of CNN to reach a result for the detection. We use Tensor flow open source platform to implement CNN to achieve our expected output. This system can achieve the test accuracy of 90.2 % for the datasets we have that are very much competitive with other systems for this particular task.

"SKIN DISEASE RECOGNITION USING TEXTURE ANALYSIS"

A Project Report Submitted in the partial fulfillment of requirement of the Degree of

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in

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Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur

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This is to certify that project report entitled - **"Skin Disease Recognition using Texture Analysis "** is a bonafide work done by the student **Hemant Kamble, Ashish Thakre, Yash Bonde, Supriya Modak, Ankit Wankhede and Renuka Mushnamwar.** The project report is submitted to **Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur** in partial fulfillment of the requirements for the degree of **Bachelor of Engineering in Computer Technology.**

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3

INTRODUCTION

Composed of epidermis, dermis and subcutaneous tissues, skin is the biggest organ of the human body, containing blood vessels, lymphatic vessels, nerves and muscles, which can sweat and see the outside temperature and secure the body. Covering the complete body, the skin can protect multiple tissues and organs within the body from outside attacks counting manufactured skin harm, chemical harm, adventitious infections and people resistant system. Besides, skin can moreover maintain a strategic distance from the loss of lipids along side water inside epidermis and dermis so that skin boundary work can be sterilized. In spite of defense and obstruction system, skin isn't indestructible in that skin tends to be always impacted by a assortment of outside and genetic components. The skin itself can be isolated into three distinctive layers which are epidermis, dermis and subcutaneous. The two layers that make up the human skin is known as epidermis. In the interim, dermis is the thick layer of living tissues underneath the epidermis that shapes the genuine skin and contains a part of imperative structures such as blood capillaries, nerve endings, sweat organs, hair follicles and other structures.

Recognition of human skin is an critical task for both computer vision and graphics. For computer vision, exact recognition of skin surface can significantly help algorithms for human face recognition or facial feature tracking. In computer graphics, facial movement is an critical problem which requires solid skin surface recognition. In expansion to computer vision and graphics, skin recognition is valuable in dermatology and a few industrial areas. In dermatology, the skin acknowledgment can be utilized to create strategies for computer-assisted determination of skin disarranges, whereas within the pharmaceutical industry; measurement is valuable when connected to measuring mending progress.

A lot of observations can be made regarding the nature of the skin just by analyzing the skin texture and the color of the skin. In order to design the system for the recognition of the skin disease, there are a few steps that must be taken which are including image processing, segmentation of the image, image feature extraction and data classification using neural network. The most difficult part in designing the skin disease recognition system is to identify the disease itself. This difficulty is due to the huge similarities between different classes. In addition, the common symptoms shared by these skin disease leads to the confusion in detecting and

ABSTRACT

Skin is the primary part of our body, One of the major issues we are facing presently days that's skin illness due to high air pollution. In this research, we are trying to skin illness recognition by using Neural Network which is based on texture analysis. There are many skin infections like Eczema, Acne, Hives, rosacea, psoriasis, etc. In common, these diseases have similarities in the design of contamination and side effects such as redness and rash. Diagnosis and recognition of skin illness take a really long time to handle. The infection determination and recognition gets to be troublesome as the complexity and number of highlights of the infection increases. Thus, a computer helped diagnosis and recognition system is presented. Computer algorithm which contains few steps that are image processing, image feature extraction, segmentation, and classification .of information has been executed with the assistance of a Convolutional neural network (CNN). The CNN can learn designs of side effects of specific infections and makes it speedier.

1.2 Project Description:

This report describes an approach of creating a system identifying fruit and vegetables in the retail market using images captured with a video camera attached to the system. The system helps the customers to label desired fruits and vegetables with a price according to its weight.

The purpose of the system is to minimize the number of human computer interactions, speed up the identification process and improve the usability of the graphical user interface compared to existing systems. To accomplish creating a system improving these properties, an idea of implementing machine learning to identify the products aroused.

Instead of assigning the responsibility to the user, who usually identify the products manually, the responsibility is given to a computer. To classify an object, different convolutional neural networks have been tested and retrained. The networks have been retrained on data sets collected from ImageNet. To improve the accuracy, the networks have also been retrained on images where the background environment is similar to the environment the networks are supposed to perform in. The networks tested in this report are MobileNet and Inception. The networks have different propagation time and varies in accuracy. MobileNet performs the classification about seven times faster than Inception, but Inception gives more accurate results. To improve the systems further, usability testing has been performed on the graphical user interface of existing system and resulted system. To test the usability, a heuristic evaluation has been performed in combination of a second test produced by the authors.

The tests concluded that the resulted system was more user friendly compared to existing systems. The hardware of the system constitutes of a Raspberry Pi, camera, load cell and a case. The software includes Python-code to label an image, a graphical user interface to interact with the user

and a server created with Machine Learning. The graphical user interface has been programmed with JavaScript supplemented with the React library. To conclude, implementing convolutional neural networks to classify images and developing a new user interface resulted in a faster identification process together with fewer usabilityflaws.

CHAPTER 2: LITERATURE REVIEW

CHAPTER 7:

MODULES

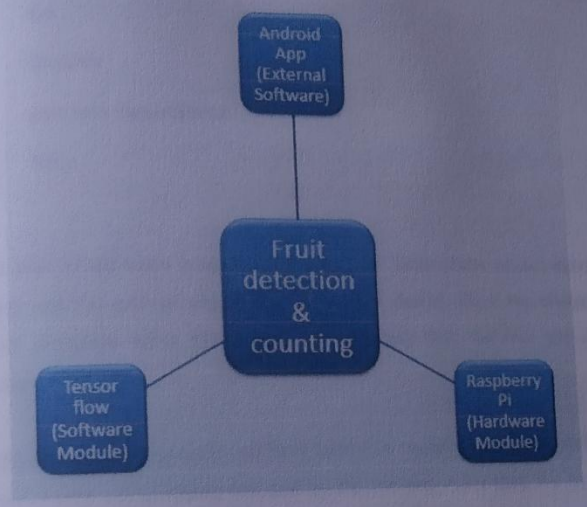

Fig. 12 System Modules Classification

7.1 Raspberry Pi (Hardware Module)

The Raspberry Pi is a tiny and affordable computer that you can use to learn programming through fun, practical projects. The Raspberry Pi is a very cheap computer that runs Linux, but it also provides a set of GPIO (general purpose input/output) pins, allowing you to control electronic components for physical computing and explore the Internet of Things (IoT).

First of all, we will import the required libraries in the code. Here we are using the following set of libraries and Tensor modules:

- os
- cv2
- Numpy

conveyor belt. When a fruit named orange is detected, then the servo will move to drop it in a basket and keep it separated from other fruits. You can see the total number of fruits detected as they are counted in the Python terminal. It will also save the total number of fruits detected in the text file with a timestamp in the database.

7.2 Android Application (External Software)

Android is an open source and Linux-based operating system for mobile devices such as smartphones and tablet computers. Android was developed by the Open Handset Alliance, led by Google, and other companies. This tutorial will teach you basic Android programming and will also take you through some advance concepts related to Android application development.

The official language for Android development is Java. Large parts of Android are written in Java and its APIs are designed to be called primarily from Java. It is possible to develop C and C++ app using the Android Native Development Kit (NDK), however it isn't something that Google promotes. According to Google, "the NDK will not benefit most apps. As a developer, you need to balance its benefits against its drawbacks. Notably, using native code on Android generally does not result in a noticeable performance improvement, but it always increases your app complexity."

Android Application is implemented to show the fruit detection result on a GUI to look amazing. It is working real-time, as the fruit is placed in front of raspberry pi camera module the app will show the detected fruit and the accuracy with freshness percentage on the screen.

7.3 Tensor Flow (Internal Software)

Tensor Flow Object Detection API. The Tensor Flow object detection API is the framework for creating a deep learning network that solves object detection problem. There are already pretrained models in their framework.