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)
Phone : 07104 – 236381, 237307, Fax : 07104 – 237681,
email : principal.pce.ngp@gmail.com, www.pcenagpur.edu.in

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

B.E – ELECTRONICS AND TELECOMMUNICATION ENGINEERING
(2019-20)

Sr. No	Name of the course that include experiential learning through Project work/ Internship	Subject Code	Domain
1	Electronic Devices and Circuits	BEETE302T/P	Analog & Digital Circuits
2	Analog Circuits & Design	BEETE503T/P	
3	Electronics Workshop Practice	BEETE606P	
4	Electromagnetic Fields	BEETE401T	
5	Digital Circuits and Fundamental of Microprocessor	BEETE404T/P	
6	Microprocessor & Microcontroller	BEETE502T/P	
7	Electronics Measurement and Instrumentation	BEETE303T/P	
8	Network Analysis And Synthesis	BEETE406T	Signal Processing
9	Software Workshop	BEETE407P	
10	Control System Engineering	BEETE603T	
11	Signals & Systems	BEETE403T	
12	DSP Processor & Architecture	BEETE701T/P	
13	Digital Signal Processing	BEETE602T/P	
14	Elective 2- Digital Image Processing	BEETE804T	
15	Advanced Digital System Design	BEETE701T/P	VLSI/Embedded System
16	Elective 2- Embedded System	BEETE804T	
17	Elective 1 - VLSI Signal Processing	BEETE705T	
18	Elective 3- Robotics and Automation	BEETE805T	
19	Elective 3- CMOS VLSI Design	BEETE805T	
20	Antenna & Wave Propagation	BEETE501T	Communication
21	Communication Electronics	BEETE504T	
22	Telecommunication Switching Systems	BEETE601T	
23	Digital Communication	BEETE604T/P	
24	Elective-1 Data Compression & Encryption	BEETE705T	
25	Optical Communication	BEETE703T/	
26	Television And Video Engineering	BEETE702T/P	
27	Wireless & Mobile Communication	BEETE803T	
28	Computer Communication Network	BEETE802T/P	
29	Microwave & Radar Engineering	BEETE801T/P	
30	Elective-2 Artificial Intelligence	BEETE804T	

31	Elective 3- Satellite Communication	BEETE805T	
32	Object Oriented Programming & Data Structure	BEENE304T/P	**Others**
33	Applied Mathematics- III	BEETE301T	
34	Applied Mathematics- IV	BEETE401T	
35	Environmental Studies	BEETE406T	
36	Industrial Visit	BEETE607P	

PRIYADARSHINI COLLEGE OF ENGG. NAGPUR
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Principal

B. E. Eighth Semester

(Electronics & Communication/ Electronics & Telecommunication Engg) Elective 2-

EMBEDDED SYSTEMS

Duration: 3 Hrs.
College Assessment: 20 Marks
University Assessment: 80 Marks

Subject Code: BEECE804T/ BEETE804T **[3 – 0 – 1 – 4]**

Objectives:

1. **To give sufficient background for understanding embedded systems design.**
2. **To give knowledge of RISC processor.**
3. **To understand connections of various peripherals with microcontroller based system**
4. **To study of embedded system design aspects.**

Outcome: By the end of the course, the students shall be able to

1. **design embedded based system .**
2. **design embedded system based on RTOS and communication protocols.**

UNIT I: EMBEDDED SYSTEM INTRODUCTION **(08)**

History, Design challenges, Optimizing design metrics, Time to market, NRE and UNIT cost design metrics, Application of embedded systems and recent trends in embedded systems.

UNIT II: EMBEDDED SYSTEM ARCHITECTURE **(08)**

Hardware and software architecture, Processor selection for Embedded System, Memory Architecture and IO devices , Interrupt Service Mechanism ,Context switching, Device Drivers.

UNIT III: ARM PROCESSOR **(10)**

Architecture and Programming: RISC and CISC, ARM organization, ARM Programmers model, operating modes, Exception Handling, Nomenclature, Core Extensions, ARM Assembly Language Programming, Introduction to ARM instruction set

UNIT IV: PROTOCOLS **(06)**

Bluetooth, IEEE 802.11 and IEEE 802.16, GPRS, MODBUS CAN, I2C and USB

UNIT V: REAL TIME OPERATING SYSTEM CONCEPTS **(08)**

Architecture of the kernel , Task scheduler , ISR , Semaphores , Mailbox , Message queues , Pipes, Events , Timers , Memory Management.

UNIT VI: CASE STUDY OF EMBEDDED SYSTEM: **(05)**

Based on Communication, Automation, Security, Automobile Fields

Text Books:

1) Raj Kamal, "Embedded Systems ", TMH Publications.
2) Frank Vahid, "Embedded System Design", Wiley Publications, New edition 2001.
3) Sloss endrew & Dominic Symes, "ARM system Developers Guide", Morgan Kaufmann , 2004 .

Reference Books :

1) Dr. K.V.K.K. Prasad , "Embedded / Real Time Systems", Dreamtech Publications
2) Iyer, Gupta , "Embedded Real systems programming", TMH Publications.
3) Steve Heath, "Embedded System Design", Neuwans Publications
4) Jonathan,W. Valvano, "Embedded Microcomputer System Realtime Interfacing", Cenage Publications, 3rd Edition.

PROJECT REPORT

On

"ANDROID APP FOR INDUSTRIAL AUTOMATION"

Submitted in partial fulfillment of requirement for the degree of
Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

SAKSHI SINHA
NIKITA WADEKAR

DHANASHREE RAUT
MAYAN KUMAR

Under the guidance of
DR. V. K. TAKSANDE

Department of Electronics and Telecommunication Engineering
Priyadarshini College of Engineering,
Nagpur - 440019

2019-20

CERTIFICATE

This is to certify that the project entitled **"ANDROID APP FOR INDUSTRIAL AUTOMATION"** has been carried out by **SAKSHI SINHA, DHANASHREE RAUT, NIKITA WADEKAR** and **MAYAN KUMAR** under my guidance and submitted the partial fulfillment for the Degree of Bachelor of Engineering (B.E.) in Electronics and Telecommunication Engineering, during the Academic year 2019-20 is a bonafide work prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University,Nagpur.

Place: Nagpur
Date: 13/03/20

Dr. V.K.Taksande
Head of Department
& Project Guide

Dr. M.P.Singh
Principal

Principal
Priyadarshini College of E[illegible]
Nagpur

CHAPTER-I
INTRODUCTION

1.1 Introduction

Automation is the innovation by which a procedure or system is finished with least human help. Automation or programmed control is the utilization of different control frameworks for working gear, for example, apparatus, and process in an industry. Automation will in general decline the preparing time just as human work required to finish the errand. Programmed arranging will expand the effectiveness and will in this manner decline the cost required and the work.

Automation is a strategy, technique, or arrangement of working or controlling a procedure by electronic gadgets with decreasing human contribution to a base. The essential of building an automation framework for an office or home is expanding step by step with various advantages.It makes a productive as well as a practical utilization of the power and water and lessens a great part of the wastage. Android Automation award to individuals and things to be associated any-time, wherever, with anybody, in a perfect world utilizing any system and any assistance. Automation is another significant use of IoT advancements. It is the observing of the vitality utilization and the Controlling the earth in structures, schools, workplaces and exhibition halls by utilizing various sorts of sensors and actuators that control lights, temperature, and stickiness.

The hardware consist of ESP8266 with NodeMCU, Relay, SMD-Resistor, Transistor, Diode and PCB. NodeMCU is mostly used in Home Automation but here it will provide WIFI support. The software basically consists of MIT App Inventor which supports Block Programming and NodeMCU/ESP- Arduino Embedded C Programming. And the database is present in Google Firebase and hence can be accessed in the Firebase Database.

B. E. Fifth Semester

(Electronics / Electronics & Communication/ Electronics & Telecommunication Engg)

MICROPROCESSOR AND MICROCONTROLLERS

Duration: 3 Hrs. College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEENE502T/ BEECE502T/ BEETE502T [4 – 0 – 1 – 5]

Objectives:

The course objectives are:

To study fundamentals of microprocessor and microcontroller systems.

To study architecture of microprocessor & to understand the concept of memory organization, stack memory, Assembly language programming.

3. To study different interrupt techniques.

To study interfacing of microprocessor & microcontroller with different peripheral devices.

Outcome:

After completing this course students shall be able to:

Describe internal organization of 8086/8088 microprocessors & 8051microcontrollers.
Describe the concept of addressing modes and timing diagram of Microprocessor.
Interface 8086 & 8051 with Keyboard/ Display, ADC/DAC, Stepper motor etc.
Demonstrate the concept of interrupts and its use.
Demonstrate the concept of Serial & parallel data communication
Describe Handshaking concept and interfacing with peripheral devices.
Describe the concept of DMA & Pentium.
Describe 8087 Numeric coprocessor & its use in practical application.
Interface various hardware with microprocessor.

Unit I: Intel 8086/8088 microprocessor & Programming: (09)

8086/8088 microprocessor, Pin diagram, Architecture, features and operating modes, Clock generator 8284, memory organization & interfacing, Addressing modes, complete instruction set.

Unit II: 8086 & Peripheral Interfacing I: (11)

Assembly language programming of 8086,Interrupt structure, I/O interfacing, Interfacing of peripherals like 8255 PPI, multiplexed 7-seg display & matrix keyboard interface using 8255. Programmable Keyboard/Display controller 8279, Organization, Working modes, command words & interfacing.

Unit III: 8086 & Peripheral Interfacing II: (10)

Programmable interval timer/counter 8254; Architecture, working modes, interfacing 8259 PIC,

Organization, control words, interfacing, cascading of 8259's. Serial communication, Classification & transmission formats. USART 8251, Pins & block diagram, interfacing with 8086 & programming.

Unit – IV: Numeric Co-processor & DMA Controller: 8086 maximum mode pin diagram, Closely coupled & loosely coupled multiprocessor system, 8087 Numeric coprocessor, architecture, interfacing with 8086, instruction set.DMAC 8237, Architecture, interfacing & programming, Introduction to Pentium.

Unit – V: 8051 microcontroller & programming:

Introduction to 8051 microcontroller; Pin diagram, architecture, features & operation, Ports, memory organization, SFR's, Flags, Counters/Timers, Serial ports. Interfacing of external RAM & ROM with 8051. 8051 Interrupt structure, Interrupt vector table with priorities, enabling & disabling of interrupts

Unit – VI: 8051 microcontroller interfacing:

Instruction set of 8051; data transfer, logical, arithmetic & branching instructions, Addressing modes, Assembly language programming examples, counter/timer programming in various modes. Serial communication, Operating modes, serial port control register, Baud rates. I/O expansion using 8255, Interfacing keyboard, LED display, ADC & DAC interface, stepper motor interface

Books:

Text Books:

1. Programming & Interfacing of 8086/8088, D.V. Hall, TMH.
2. Microprocessor 8086/8088 Family Programme Interfacing: Liu & Gibson

M.A. Mazidi & J.G. Mazidi, the 8051 Microcontroller and Embedded system, 3rd Indian reprint, Pearson Eduction

The Intel Microprocessor 8086 & 80486 Pentium and Pentium Pro. Architecture Programming and Interfacing – Brey.

Reference Books:

1. Intel Reference Manuals, Microprocessors & Microcontrollers: Intel

Microcontrollers – Peatman, Mc Graw Hill.

Microprocessors & Microcomputers based system design by Md. Rafiquzzaman.

8086/8088 Microprocessors, Walter Triebel & Avtar Singh

Introduction to Microprocessors for Engineers and Scientists, P. K. Ghosh, P. R. Sridhar, PHI Publication. 6. The 8051 Microcontroller & Embeded Systems, Kenneth J. Ayala, Dhanvijay V. Gadre, CENGAGE Learning.

peripherals like 8255 PPI, multiplexed 7-seg display & matrix keyboard interface using 8255.

1.1 INTRODUCTION

It has application in Car, Bikes and all other vehicles. This project has a GSM modem which send SMS to owner of vehicle when there is fuel theft going on. Vehicle Petrol or diesel theft is one of the main concerns of many bike owners and car owners. Many times, we have heard or some of us have already faced that petrol from their bike or cars has been stolen. Main intention of this project is to avoid such situation. In SMS based petrol theft detection system, we have used a Limit sensor switch to detect the petrol theft in petrol tank. If someone try to open petrol tank cap the limit switch press and these sensor gives a particular signal to the microcontroller. Then microcontroller turns on the buzzer and sends SMS to the car/bike owner. Microcontroller is a main heart or Central Processing Unit of the system.

If we are driving our car or bike, in this case petrol or the diesel level will decrease which can trigger the microcontroller through the level sensor. To avoid this situation, we have taken a signal from ignition key. Whenever the bike owner or car owner or driver inserts key into the ignition lock and switch it on then at that time a signal will be given to the microcontroller. This way microcontroller understands that the bike/car has been started and so it will not monitor fuel level. We have provided bike ignition key with this project. Limit sensor is turned on only when the key is removed from the ignition lock. So once the person gets out of the car then he/she will remove the key and system is activated.

B. E. Seventh Semester

(Electronics /Electronics & Communication/ Electronics & Telecommunication

Engg) OPTICAL COMMUNICATION

Duration : 3 Hrs. College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEECE703T/ BEETE703T/ BEENE703T **[4 – 0 – 0 – 4]**

Objectives:

1. To understand optical fiber technology to sophisticated modern telecommunication systems.
2. To understand the fundamental behavior of the individual optical components, describes their interactions with other devices in an optical fiber.
3. To measure & analyze different measurements, parameters & properties of optical fiber.

Outcome: **By the end of the course, the students shall be able to**

1. learn the basic elements of optical fiber.
2. understand the different kinds of losses, signal distortion in optical wave guides & other signal degradation factors.
3. classify various optical source materials, LED structures, LASER diodes.
4. learn the fiber optic receivers such as PIN, APD diodes, receiver operation & performance.
5. understand the operational principal of WDM, SONET, measurement of attenuation, dispersion, refractive index profile in optical fibers.

UNIT I : OVERVIEW OF OPTICAL FIBER COMMUNICATION (05)

Introduction, advantages, disadvantages and applications of optical fiber communication, Ray theory, class

UNIT II: TRANSMISSION CHARACTERISTICS OF OPTICAL FIBERS (10)

Fiber manufacturing & Fiber materials, manufacturing methods, *Attenuation, Absorption, scattering losses, bending loss, dispersion, Intra modal dispersion, Inter modal dispersion.*

UNIT III: OPTICAL SOURCES AND COUPLERS & CONNECTORS OF FIBER (08)

Introduction, fiber alignment and joint loss, single mode fiber joints, fiber splices, fiber connectors and fiber couplers.

Optical sources: LED's, LASER diodes.

UNIT IV: OPTICAL DETECTORS AND RECEIVER (06)

Photo detectors, Photo detector noise, Response time, comparison of photo detectors

*Optical Receiver Operation, receiver sensitivity, quantum limit, coherent detection, burst mode receiver operation, Analogreceivers*UNIT V: ANALOG AND DIGITAL LINKS (08)

Analog links – overview of analog links, CNR, multichannel transmission techniques, Digital links – point–to–point links, System considerations, link power budget, rise time budget, transmission distance for single mode links.

UNIT VI : WDM CONCEPTS AND COMPONENTS **(08)**

Operational Principles of WDM, basic applications and types of optical amplifiers, semiconductor optical amplifiers, EDFA. Measurement of Attenuation and dispersion. Study of various application of optical fiber communication.

TEXT BOOKS:

1. "Optical Fiber Communication", Gerd Keiser, 3rd Ed., McGraw Hill,
2. "Optical Fiber Communications", John M. Senior, Pearson Education. 3rd Impression, 2007.

REFERENCE BOOK:

1. Fiber Optic Communication - Joseph C Palais: 4th Edition, Pearson Education.
2. "TextBook on Optical Fiber Communication & its Application", S.C. Gupta, PHI Publications
3. "Optical Communication & Networks", M.N. Bandopadhyay, PHI Publications

PROJECT REPORT

ON

"IoT Based Smart Solar Street Light Battery/Panel Fault Detection"

Submitted in partial fulfillment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

OMPRAKASH SINGH — **PRANALI IKHAR**

RUCHA DESHPANDE — **MANISH HEADOO**

Under the guidance of

Dr.(Mrs). Y.A. NAFDE

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering,

Nagpur - 440019

2019-20

CERTIFICATE

This is to certify that the project entitled **"IoT Based Smart Solar Street Light Battery/Panel Fault Detection"** has been carried out by **OMPRASKASH SINGH, PRANALI IKHAR, RUCHA DESHPANDE, MANISH HEADOO** under my guidance and submitted the partial fulfilment for the Degree of Bachelor of Engineering (B.E.) in Electronics and Telecommunication Engineering, during the academic year 2019-20 is a bonafide work prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University,Nagpur.

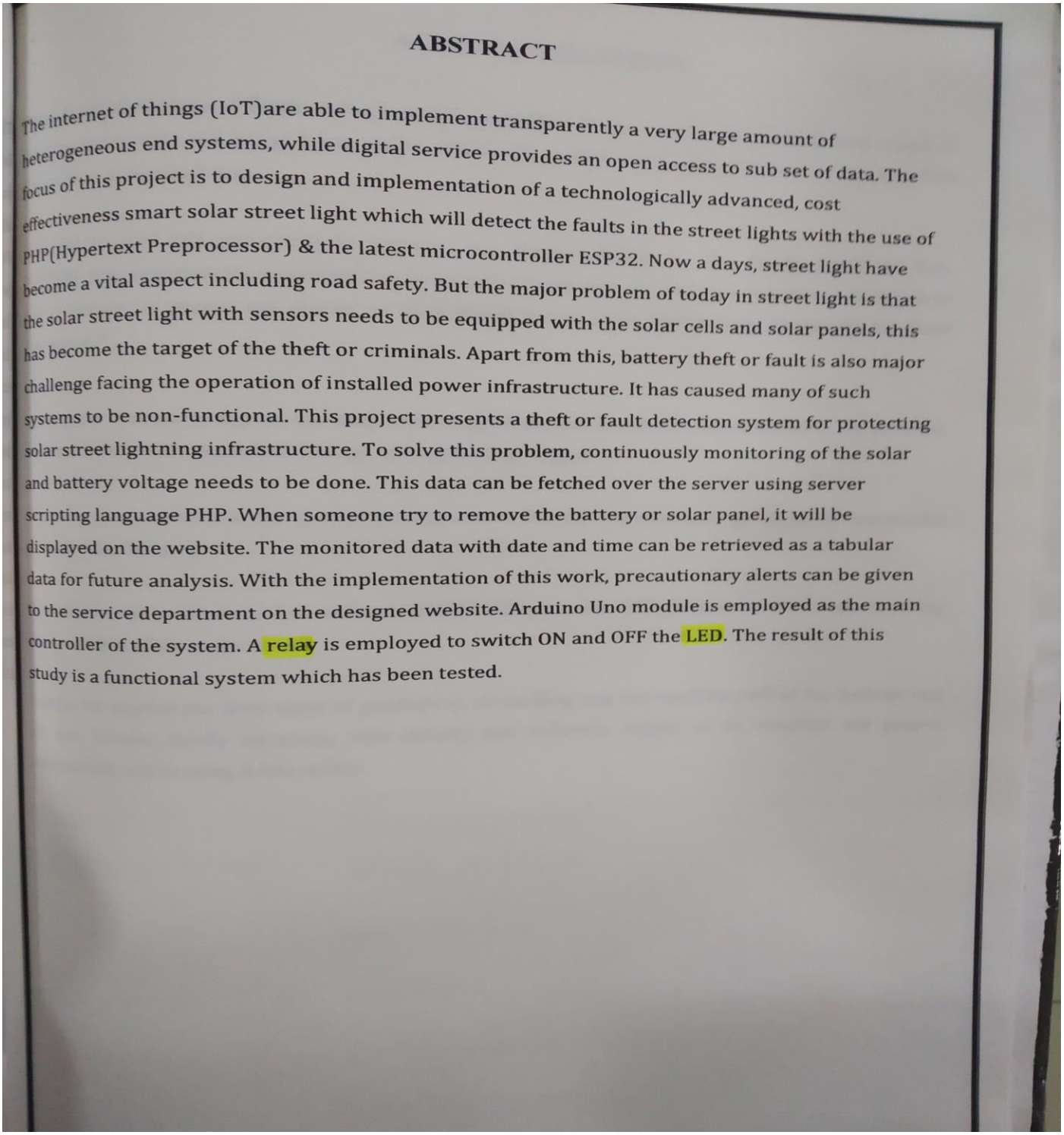
Place: Nagpur

Date: 23/12/2020

Dr.(Mrs) .Y.A. NAFDE
Guide

Dr.V.K.Taksande
Head of Department

Dr.M.P.Singh
Principal



ABSTRACT

The internet of things (IoT)are able to implement transparently a very large amount of heterogeneous end systems, while digital service provides an open access to sub set of data. The focus of this project is to design and implementation of a technologically advanced, cost effectiveness smart solar street light which will detect the faults in the street lights with the use of PHP(Hypertext Preprocessor) & the latest microcontroller ESP32. Now a days, street light have become a vital aspect including road safety. But the major problem of today in street light is that the solar street light with sensors needs to be equipped with the solar cells and solar panels, this has become the target of the theft or criminals. Apart from this, battery theft or fault is also major challenge facing the operation of installed power infrastructure. It has caused many of such systems to be non-functional. This project presents a theft or fault detection system for protecting solar street lightning infrastructure. To solve this problem, continuously monitoring of the solar and battery voltage needs to be done. This data can be fetched over the server using server scripting language PHP. When someone try to remove the battery or solar panel, it will be displayed on the website. The monitored data with date and time can be retrieved as a tabular data for future analysis. With the implementation of this work, precautionary alerts can be given to the service department on the designed website. Arduino Uno module is employed as the main controller of the system. A relay is employed to switch ON and OFF the LED. The result of this study is a functional system which has been tested.

(Electronics & Communication/ Electronics & Telecommunication Engg) Elective 2- DIGITAL IMAGE PROCESSING

Duration : 3 Hrs. College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEECE804T/ BEETE804T **[3 – 0 – 1 – 4]**

Objectives:

1. Provide the student with the fundamentals of digital image processing.
2. Introduce the students to some advanced topics in digital image processing.
3. Give the students a useful skill base that would allow them to carry out further study in the field of Image processing.

Outcome: By the end of the course, students shall be able to

1. have an appreciation of the fundamentals of Digital image processing including the topics of filtering, transforms and morphology, and image analysis and compression.
2. implement basic image processing algorithms in MATLAB.
3. have the skill base necessary to further explore advanced topics of Digital Image Processing.
4. make a positive professional contribution in the field of Digial Image Processing

Unit 1: Digital Image Fundamentals **(06)**

Components of Image Processing System. , Image Sensing and Acquisition, Image Sampling & Quantization, Spatial and Gray Level Resolution, Basic Relationships between Pixels. Statistical parameters, Measures and their significance, Mean, standard deviation, variance, SNR, PSNR etc.

Unit 2: Image Enhancement **(10)**

Enhancement in Spatial Domain: basic gray level transformations, histogram processing, equalization, Arithmetic and logical operations between images, Basics of spatial filtering, smoothening and sharpening spatial filters, Image Enhancement in frequency Domain: smoothening and sharpening frequency domain filters, Fundamental of color image processing: color models, RGB, CMY, YIQ, HIS, Pseudo Color Image processing: Intensity filtering, gray level to color transformation, Basics of full color image processing.

Unit 3: Image Transforms **(08)**

2D-DFT, FFT, DCT, the KL Transform, Walsh/Hadamard Transform, Haar Transform, slant Transform , Basics of wavelet transform.

Unit 4: Image Coding and Compression **(08)**

Image Coding Fundamentals, Image Compression Model, fundamentals- redundancy: coding, interpixel, psychovisual, fidelity criteria, Basic

Predictive, Lossy Compression- Lossy Predictive. Fundamentals of JPEG, MPEG, fractals.

Unit 5: Image Analysis **(08)**

Segmentation: Point, line, Hough Transform, Edge detection, Boundary detection andThersholding, Region Based segmentation.

Representation & Description :Boundary representation by chain codes, signature & skeleton

Boundary descriptors, shape number, Fourier descriptors ,Basics of Regional descriptor, boundary representation by chain codes and B splines, Hough Transform, Morphological Image Processing: Dilation, Erosion, Opening, Closing on Binary Images.

Unit 6: Image restoration and reconstruction (05)

Image Degradation Mode, Noise Models, and Restoration in Presence c Noise in spatial Domain. Inverse Filtering, wiener filtering, Introduction to Image reconstruction from projections applications of Image Processing.

Text Books

1. Gonzalez and Woods, "Digital Image Processing", Pearson Education,
2. Arthur Weeks Jr., "Fundamentals of Digital Intake Processing", PHI.
3. S Jayaraman, “Digital Image Processing”, Tata McGraw Hill Publications.
4. A. K. Jain, "Fundamentals of Digital Image Processing"; Pearson Education

Reference Book

1. Pratt William, "Digital Image Processing", John Wiley & Sons
2. Milan Sonka, Vaclav Hlavac and Roger Boyle, “Image Processing, Analysis and Machine Vision”, Second Edition, Thomson Learning, 2001
3. Milan Sonka, Vaclav halvac , “Image Processing analysis & Machine Vision”, Cenage Learning

PROJECT REPORT

ON

"FACE IMAGE PROCESSING BASED SMART BANK LOCKER USING PYTHON"

Submitted in partial fulfilment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

SHIWALEE SONTAKKE

ACHAL NIMSARKAR

ANURADHA CHOUDHARI

SHUBHAM DHANVIJAY

Under the guidance of

Guide

DR.MRS.A.R.KONDELWAR

Co -Guide

MR. SANDEEP SONASKAR

(V. S. Informatics)

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering

Nagpur – 440019

2019-2020

CERTIFICATE

This is to certify that the project entitled **"Face image processing based smart bank locker using python"** has been carried out by **SHIWALEE SONTAKKE,ANURADHA CHOUDHARI,ACHAL NIMSARKAR** and **SHUBHAM DHANVIJAY** under my guidance and submitted the partial fulfilment for the Degree of Bachelor of Engineering (B.E) in Electronics and Telecommunication Engineering during academic year **2019-2020** is abonafidework prepared by them.

This work fulfils the requirement relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur

Place: Nagpur

Date: 24-03-2020

DR.(MRS)A.R.KONDELWAR

Guide

Dr. V. K. TAKSANDE

Head of Department

Dr. M. P. SINGH

Principal

ABSTRACT

Today we are facing security issues in every aspect. So we have to resolve these issues by using updated technology. In this project, we are using the Face recognition module tocapture human images and to compare with stored database images. If it matches with the authorized user then the system will unlock the door by an electromagnetic lock. The need for facial recognition system that is fast and accurate that continuously increasing which can detect intruders andrestricts all unauthorized users from highly secured areas and aids in minimizing human error. Face recognition is one of the most Secured System than biometric pattern recognition technique which is used in a large spectrum of applications.: The main goal of this project is to design and implement a highly secured and reliable smart bank locker security system.This specialized security is proposed through different modules in combination i.e. face detection technique & Password verification. In this system only the authentic person can open the lock and collect the important documents, jewellery or money from the lockers.

(Electronics & Communication/ Electronics & Telecommunication Engg)

Elective 2- ARTIFICIAL INTELLIGENCE

Duration: 3 Hr.
College Assessment: 20 Marks University Assessment: 80 Marks

Subject Code: BEECE804T/ BEETE804T **[3 – 0 – 1 – 4]**

Objectives:

1. **To introduce the fundamental concepts of artificial intelligence;**
2. **To equip students with the knowledge and skills in logic programming using Prolog;**
3. **To explore the different paradigms in knowledge representation and reasoning;**
4. **To explain the contemporary techniques in machine learning;**
5. **To evaluate the effectiveness of hybridization of different artificial intelligence techniques.**

Outcome: By the end of the course students shall be able to:

1. **understand the history, development and various applications of artificial intelligence;**
2. **familiarize with propositional and predicate logic and their roles in logic programming;**
3. **understand the programming language Prolog and write programs in declarative programming style; . 4. learn the knowledge representation and reasoning techniques in rule-based systems, case-based systems, and model-based systems;**
5. **understand how uncertainty is being tackled in the knowledge representation and reasoning process, in particular, techniques based on probability theory and possibility theory (fuzzy logic);**
6. **master the skills and techniques in machine learning, such as decision tree induction, artificial neural networks, and genetic algorithm;**
7. **apply and integrate various artificial intelligence techniques in intelligent system development as well as understand the importance of maintaining intelligent systems.**

Unit 1: Foundation **(08)**

Intelligent Agents, Agents and environments, Good behavior, The nature of environments, structure of agents, Problem Solving, problem solving agents, example problems, searching for solutions, uniformed search strategies, avoiding repeated states, searching with partial information.

Unit 2: Searching **(08)**

*Search and exploration, Informed search strategies, heuristic function, local search algorithms and optimistic problems, local search in continuous spaces, online search agents and unknown environments, Constraint satisfaction problems (CSP), Backtracking search and Local search for CSP, Structure of problems, Adversarial Search, Games: Optimal decisions in games, Alpha- Beta Pruning, imperfect real-time decision, games that include an element of chance.*Unit 3: Knowledge Representation (08)

First order logic, representation revisited, Syntax and semantics for first order logic, Using first order logic, Knowledge engineering in first order logic, Inference in First order logic, prepositional versus first order logic, unification and lifting, forward chaining, backward chaining,

Resolution, Knowledge representation, Ontological Engineering, Categories and objects, Actions - Simulation and events, Mental events and mental objects.

Unit 4: Learning **(08)**

Learning from observations: forms of learning, Inductive learning, Learning decision \trees, Ensemble learning, Knowledge in learning, Logical formulation of learning, Explanation based learning, Learning using relevant information, Inductive logic programming, Statistical learning methods, Learning with complete data, Learning with hidden variable, EM algorithm, Instance based learning, Neural networks - Reinforcement learning, Passive reinforcement learning, Active reinforcement learning, Generalization in reinforcement learning.

Unit 5: Perception and Expert System **(06)**

Visual perception -Waltz's algorithm, Introduction to Expert System, Architecture and functionality, Example Expert system

Unit 6: Natural Language Understanding **(07)**

Why NL, Formal grammar for a fragment of English, Syntactic analysis, Augmented grammars, Semantic interpretation, Ambiguity and disambiguation, Discourse understanding, Grammar induction, Probabilistic language processing, Probabilistic language models.

Text Book

1. Stuart Russell, Peter Norvig, "Artificial Intelligence, A Modern Approach", 2nd Edition, Pearson Education / Prentice Hall of India, 2004.

Reference Books

1. Nils J. Nilsson, "Artificial Intelligence: A new Synthesis", Harcourt Asia Pvt. Ltd., 2000.
2. Elaine Rich and Kevin Knight, "Artificial Intelligence", 2nd Edition, Tata McGraw- Hill,
3. George F. Luger, "Artificial Intelligence-Structures and Strategies for Complex Problem Solving", Pearson Education / PHI, 2002.
4. Eugene charniak, "Introduction to Artificial Intelligence", Pearson Education.
5. Deepak Khemani, "A First Course in Artificial Intelligence", McGraw Hill Publications

PROJECT REPORT

ON

"FACE IMAGE PROCESSING BASED SMART BANK LOCKER USING PYTHON"

Submitted in partial fulfilment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

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Co -Guide

MR. SANDEEP SONASKAR

(V. S. Informatics)

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering

Nagpur – 440019

2019-2020

ABSTRACT

Today we are facing security issues in every aspect. So we have to resolve these issues by using updated technology. In this project, we are using the Face recognition module tocapture human images and to compare with stored database images. If it matches with the authorized user then the system will unlock the door by an electromagnetic lock. The need for facial recognition system that is fast and accurate that continuously increasing which can detect intruders andrestricts all unauthorized users from highly secured areas and aids in minimizing human error. Face recognition is one of the most Secured System than biometric pattern recognition technique which is used in a large spectrum of applications.: The main goal of this project is to design and implement a highly secured and reliable smart bank locker security system.This specialized security is proposed through different modules in combination i.e. face detection technique & Password verification. In this system only the authentic person can open the lock and collect the important documents, jewellery or money from the lockers.

B. E. Sixth Semester

(Electronics & Communication/ Electronics & Telecommunication Engg)

TELECOMMUNICATION SWITCHING SYSTEMS

Duration: 3
Hrs. College Assessment: 20
Marks University
Assessment: 80 Marks

Subject Code: BEECE601T/ BEETE601T **[4 – 0 – 1 – 5]**

Objectives:

The course objectives are:

1. To study the latest development of Telecommunication systems.
2. To study the architecture and major design issues related to switching systems.

Outcome:

After completing this course students shall able to:

1. Describe the need for switching systems and their evolution from analogue to digital.
2. Describe the Public Switched Telephone Network.
3. Describe private networks.
4. Describe integrated networks.

Unit 1: Telecommunication Switching Systems **(10)**

Principles of manual switching system, electronic telephone, local and central battery system, trunk exchange, junction working. Automatic telephony: strowger exchange, line switches and selectors, ringing and tone circuit, subscriber uniselector circuit, trunking diagram, cross bar switching system

Message switching, Circuit switching, manual switching and Electronic Switching. Digital switching: Switching functions, space division switching, time division switching, two dimensional switching, digital cross connect systems, digital switching in an analog environment.

Unit 2: Telecommunication Traffic **(10)**

Unit of Traffic, Traffic measurement, a mathematical model, Lost- call systems: Theory, traffic performance, loss systems in tandem. Queuing systems: Erlang Distribution, probability of delay, Finite queue capacity, systems with a single server, Queues in tandem, delay tables and application of Delay

formulae. Analysis: Traffic Characteristics: Arrival Distributions, Holding time Distribution. Loss Systems: Lost calls cleared, lost calls returning, lost calls Held, lost calls cleared.

Unit 3: Switching Networks **(12)**

Single Stage Networks, Gradings: Principle, Design of progressive grading, other gradings, Traffic capacity of gradings, Applications of gradings. Link Systems: General, Two stage networks, three stage networks.Grades of service of link systems: General, Two stage networks, three stage networks, Call packing, Rearrangeable networks, Strict sense non blocking networks, Sectionalized switching networks Control of Switching Systems: Call processing Functions: Sequence f operations, Signal exchanges, State transition diagrams. Common Control, Reliability, Availability and Security.

Unit 4: Network Synchronization and Management **(08)**

Timing: Timing Recovery, Clock Instability, Elastic Stores, Jitter measurements, systematic jitter. Timing Inaccuracy: Slips, Asynchronous Multiplexing, Waiting time jitter. Network Synchronization: Plesiochronous, pulse stuffing, mutual synchronization, Network master, Master – Slave synchronization, Hierarchical synchronization Processes. Network management: Routing control, Flow control.

Unit 5: Networks **(10)**

Data Networks: Data Transmission in PSTN, Data Communication Architecture, Link to link layers, End to End layers, Satellite based Data networks, LANs, MANs, Fiber optic networks, Data network Standards, Protocol stacks, Interworking. Integrated Services Digital Networks: ISDN, Network and protocol Architecture, Transmission Channels, User network interfaces, signaling, Numbering and Addressing, ISDN Standards, Broadband ISDN, Voice Data Integration

Unit 6: Cellular Telephone Concepts **(10)**

Mobile telephone services, cellular telephone, Frequency reuse, Interference, Cellular

System topology, Roaming and handoffs, Cellular telephone network components, Cellular telephone calls processing. Cellular Telephone systems: Digital cellular telephone

Books:

Textbooks:

1. J. E. Flood, “Telecommunications Switching, Traffic and Networks”, Pearson Education 2. John C. Bellamy, “Digital Telephony”, Third Edition; Wiley Publications

3. Thiagarajan Vishwanathan, “Telecommunication Switching Systems and Networks”; PHI Publications 4. Wayne Tomasi, “Electronic Communications Systems”; 5th Edition; Pearson Education

Reference Books:

1. P.Gnanasivam,”Telecommunication Switching and Networks. 2. Rappaport,”Wireless communication”

3. Tannenbaum”Datacommunicationandnetworks”4 Edition,TMH

PROJECT REPORT

ON

"VOIP BASED AUTODIALER SYSTEM USING RASPBERRY PI"

Submitted in partial fulfillment of requirement for the degree of

Bachelor of Engineering in

Electronics and Telecommunication Engineering

Submitted By

YASH D. KADWE

NILESH S. YEOLEKAR

AKSHAY S. BHIWAPURKAR

SACHIN A. SHENDURKAR

Under the guidance of
DR. V. G. GIRHEPUNJE

Department of Electronics and Telecommunication Engineering

Priyadarshini College of Engineering,

Nagpur – 440019

2019-2020

CERTIFICATE

This is to certify that the project entitled **"VOIP BASED AUTODIALER SYSTEM USING RASPBERRY PI"** has been carried out by

YASH D. KADWE **AKSHAY S. BHIWAPURKAR**

NILESH S. YEOLEKAR **SACHIN A. SHENDURKAR**

Under my guidance and submitted the partial fulfillment for the degree of Bachelor of Engineering (B.E.) In Electronics and Telecommunication Engineering, during the academic year 2019-20 is a bonafide work Prepared by them.

This work fulfills the requirements relating the standard of work for the award of Bachelor of Engineering in Electronics and Telecommunication to be awarded by Rashtrasant Tukdoji Maharaj Nagpur University, Nagpur.

Place: Nagpur
Date 5/03/2020

DR. V. G. GIRHEPUNJE
Guide

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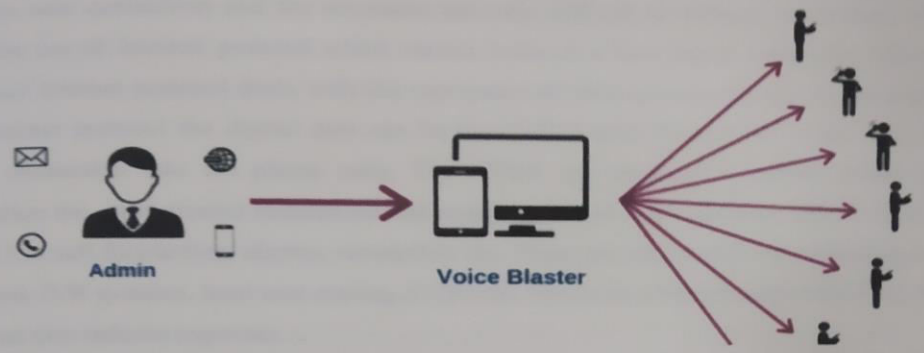
PRIYADARSHINI COLLEGE OF ENGINEERING • PCE • Nagpur

Dr. M. P. Singh
Principal

Principal
Priyadarshini College of Engg.
Nagpur

INTRODUCTION



Callblaster is an application written in PHP for Asterisk to send voice broadcasts. It can generate multiple simultaneous calls to a list of numbers and play a custom audio message. Callblaster can receive DTMF input options and connect to any predefined destinations. We can find different occasions where Callblaster can solve problems with minimum effort like event management, customer relations, staff management and where ever people like to hear from you. Call blaster is simple in design and user interface so that anyone can install and start call blasting within few minutes. Following paragraphs will make you an expert in call blasting.

A private branch exchange PBX, is telephone exchange that serve a particular business or office, as opposed to one that a common carrier or telephone company operates for many business or for the general public. PBX make connection among the internal telephones of a private organization usually a business and also connect them to the public switched telephone network i.e. PSTN via trunk lines. Because they incorporate telephone, fax machines, modems and more. The Electronic Private Automatic Branch Exchange (EPABX) is used by most of the organization for telephony communication with internal employees and with the outside world. It is a phone line sharing device and lets you connect to the extension. It is a mini telephone exchange that connects you to the extension. The extension is connected with copper cables to the central electronics system. PBX require lot of maintenance and manpower. It is less secure and less flexible. It require extra wiring for new extension which is very expensive and it does not support advance features like voicemail, call waiting, caller ID etc. The main disadvantage of PBX system is that the change of extension is very difficult. To overcome this problem, the PBX is replaced by internet protocol private branch exchange i.e. IP-PBX.