



MOHAMED SATHAK A J COLLEGE OF ENGINEERING

Sponsored by Mohamed Sathak Trust

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

Siruseri IT Park, Egattur, Chennai 603 103

B.E – ELECTRONICS AND COMMUNICATION ENGINEERING

S.NO	Name of the course that include experiential learning through Project work/ Internship
1	IT6005- Digital Image Processing
2	EC6001- Medical Electronics
3	EC6303- Signals and Systems
4	EC6502- Digital Signal Processing
5	EC6703- Embedded and Real Time Sytems
6	EC6405- Control System Engineering
7	EC6801- Wireless Communication
8	EC6504- Microprocessor and Microcontroller
9	EC6702-Optical Communication and Network
10	EC6201 - Electronic Devices
11	EC6802- Wireless Networks
12	CS6551- Communication Networks



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The student should be made to:

- Learn digital image fundamentals.
- Be exposed to simple image processing techniques.
- Be familiar with image compression and segmentation techniques.
- Learn to represent image in form of features.

UNIT I DIGITAL IMAGE FUNDAMENTALS

8

Introduction - Origin - Steps in Digital Image Processing - Components - Elements of Visual Perception - Image Sensing and Acquisition - Image Sampling and Quantization - Relationships between pixels - color models.

UNIT II IMAGE ENHANCEMENT

10

Spatial Domain: Gray level transformations - Histogram processing - Basics of Spatial Filtering- Smoothing and Sharpening Spatial Filtering - **Frequency Domain:** Introduction to Fourier Transform - Smoothing and Sharpening frequency domain filters - Ideal, Butterworth and Gaussian filters.

UNIT III IMAGE RESTORATION AND SEGMENTATION

9

Noise models - **Mean Filters** - Order Statistics - Adaptive filters - Band reject Filters - Band pass Filters - Notch Filters - Optimum Notch Filtering - Inverse Filtering - Wiener filtering **Segmentation:** Detection of Discontinuities-Edge Linking and Boundary detection - Region based segmentation- Morphological processing- erosion and dilation.

UNIT IV WAVELETS AND IMAGE COMPRESSION

9

Wavelets - Subband coding - Multiresolution expansions - **Compression:** Fundamentals - Image Compression models - Error Free Compression - Variable Length Coding - Bit-Plane Coding - Lossless Predictive Coding - Lossy Compression - Lossy Predictive Coding - Compression Standards.

UNIT V IMAGE REPRESENTATION AND RECOGNITION

9

Boundary representation - Chain Code - Polygonal approximation, signature, boundary segments - Boundary description - Shape number - Fourier Descriptor, moments- Regional Descriptors - Topological feature, Texture - Patterns and Pattern classes - Recognition based on matching.

TOTAL: 45 PERIODS**OUTCOMES:**

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

- Discuss digital image fundamentals.
- Apply image enhancement and restoration techniques.
- Use image compression and segmentation Techniques.
- Represent features of images.

TEXT BOOK:

1. Rafael C. Gonzales, Richard E. Woods, "Digital Image Processing", Third Edition, Pearson Education, 2010.

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REFERENCES:

1. Rafael C. Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Processing Using MATLAB", Third Edition Tata Mc Graw Hill Pvt. Ltd., 2011.



**IDENTIFICATION OF BRIGHT LESION IN RETINAL IMAGES
USING DYNAMIC SHAPE FEATURES FOR DIABETIC
RETINOPATHY SCREENING**

A PROJECT REPORT

Submitted by

MOSINA THABASSUM.V

(REG NO:311813106037)

LUBNA AMATHUL WADHOODH

(REG NO:311813106032)

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

BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

MOHAMED SATHAK A.J COLLEGE OF ENGINEERING



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APRIL 2017



ANNA UNIVERSITY: CHENNAI 600 025

BONAFIDE CERTIFICATE

Certified that this project report "IDENTIFICATION OF BRIGHT SPOTS IN RETINAL IMAGE USING DYNAMIC SHAPE FEATURE FOR DIABETIC RETINOPATHY SCREENING" is the bonafide work of "V.MOSINA THABASSUM (311813106037) , LUBNA AMATHUL WADHOODH (311813106032)" who carried out the project work under my supervision.

SIGNATURE:



MRS. E.DHIRAVIDACHELVI ,(Ph.D) .,

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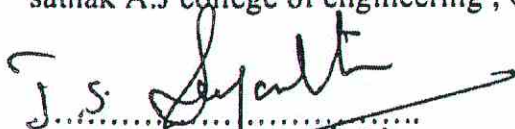
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.....
INTERNAL EXAMINER

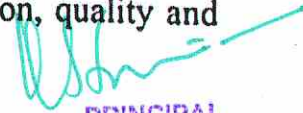



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EXTERNAL EXAMINER

ABSTRACT

Diabetic retinopathy does not show any symptom of the disease till the person is fully affected with it. The fundus of the eye opposite the lens and includes the retina, optic disc, macula and fovea and the posterior pole. This eye fundus must be examined periodically by ophthalmoscope or fundus photography. This fundus examination can easily denote any changes in the retina due to the very less number of ophthalmologists some automated screening process is need to be developed in order to cover all the diabetes affected people. Automatic telemedicine system for computer-aided screening and grading of diabetic retinopathy depends on detection of retinal lesions in fundus pictures , a complete unique technique for automatic detection of each micro aneurysms and haemorrhages in colour fundus pictures is delineated and valid. The most contribution is a new set of form options, known as Dynamic form options, that don't need precise **segmentation** of the regions to be classified. These options represent the evolution of the form during image flooding and permit to discriminate between lesions and vessel segments. It proves to be strong with relevance variability in image resolution, quality and acquisition system.




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CHAPTER 5

CONCLUSION AND REFERENCES

5.1 CONCLUSION

A novel red lesion detection method based on a new set of shape features, the DSFs, was presented and evaluated on six different databases. The results demonstrate the strong performance of the proposed method in detecting both **MAs and HEs in fundus images** of different resolution and quality and from different acquisition systems. The method outperforms many state-of-the-art approaches at both per-lesion and per-image levels. **DSFs** have proven to be robust features, highly capable of discriminating between lesions and vessel segments. The concept of DSFs could be exploited in other applications, particularly when the objects to be detected do not show clear boundaries, and are difficult to segment precisely. Further work focusing on bright lesion and neo vessel detection will complete the proposed system and allow automatic DR grading.




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OPTIC DISC LOCALIZATION IN RETINAL IMAGES

BASED ON CUMULATIVE SUM FIELDS

A PROJECT REPORT

submitted by

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ASHWINI S (Reg.no:311813106009)

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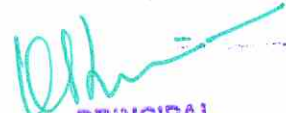
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IN

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APRIL 2017

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EXTERNAL EXAMINER

ABSTRACT

This paper describes an automatic technique for the optic disc localization in retinal images that is effective and reliable with multiple datasets. The algorithmic rule begins with a brand new vessel enhancement technique supported a changed corner detector. Subsequently, a weighted version of the vessel improvement is combined with morphological operators, to find the four main vessels orientations $\{0^\circ, 45^\circ, 90^\circ, 135^\circ\}$. These four image functions have all the mandatory info to work out initial optic disk localization, leading to 2 pictures that square measure respectively divided on the vertical or horizontal orientations with totally different division sizes. Every division is averaged making a 2D step perform, and additive total of the various sizes step functions is calculated within the vertical and horizontal orientations, resulting in an initial optic disk position.

The ultimate optic disk localization is decided by a vessel convergence algorithmic rule victimization its 2 most relevant features; high vasculature convergence and high intensity values. The planned technique was evaluated in eight publicly-available datasets, as well as the STARE and DRIVE datasets. The optic disk was localized properly in 1752 out of the 1767 retinal pictures (99:15%) with a mean computation time of 18:34 seconds.



CHAPTER 8

CONCLUSION

A new algorithm for the localization of the OD in retinal images was developed and presented in this paper. The algorithm reveals to be reliable and efficient. The robustness of the proposed technique is guaranteed by evaluating the method in eight publicly-available datasets. Experiments revealed an OD localization accuracy of 99:15% which is larger than other state-of-the-art methods. Although the used implementation .The proposed vessel enhancement proves to be effective in the preservation of elongated structures, and in the discrimination between vessel and non-vessel structures. It is important to emphasize that the vessel enhancement method does not provide a segmentation of the retinal vasculature.



A handwritten signature in blue ink, appearing to read "MS", followed by a horizontal line.

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UNIT I ELECTRO-PHYSIOLOGY AND BIO-POTENTIAL RECORDING 9

The origin of Bio-potentials; biopotential electrodes, biological amplifiers, ECG, EEG, EMG, PCG, lead systems and recording methods, typical waveforms and signal characteristics.

UNIT II BIO-CHEMICAL AND NON ELECTRICAL PARAMETER MEASUREMENT 9

pH, PO₂, PCO₂, colorimeter, Auto analyzer, Blood flow meter, cardiac output, respiratory measurement, Blood pressure, temperature, pulse, Blood Cell Counters.

UNIT III ASSIST DEVICES 9

Cardiac pacemakers, DC Defibrillator, Dialyser, Heart lung machine

UNIT IV PHYSICAL MEDICINE AND BIOTELEMETRY 9

Diathermies- Shortwave, ultrasonic and microwave type and their applications, Surgical Diathermy Telemetry principles, frequency selection, biotelemetry, radiopill, electrical safety

UNIT V RECENT TRENDS IN MEDICAL INSTRUMENTATION 9

Thermograph, endoscopy unit, Laser in medicine, cryogenic application, Introduction to telemedicine

TOTAL: 45 PERIODS

OUTCOMES:

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

- Discuss the application of electronics in diagnostic and therapeutic area.
- Measure biochemical and various physiological information.
- Describe the working of units which will help to restore normal functioning.

TEXTBOOKS:

1. Leslie Cromwell, "Biomedical Instrumentation and Measurement", Prentice Hall of India, New Delhi, 2007.
2. John G. Webster, "Medical Instrumentation Application and Design", 3rd Edition, Wiley India Edition, 2007

REFERENCES:

1. Khandpur, R.S., "Handbook of Biomedical Instrumentation", TATA Mc Graw-Hill, New Delhi, 2003.
2. Joseph J. Carr and John M. Brown, "Introduction to Biomedical Equipment Technology", John Wiley and Sons, New York, 2004.




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BONAFIDE CERTIFICATE

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ROBOTIC CONTROL USING ARDUINO CONTROLLER**" is the
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supervision.

SIGNATURE

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INTERNAL EXAMINER

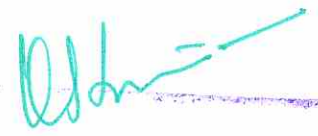
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ABSTRACT

To control the Robot, EEG and Eye-Blinking signals are needed. Here this report describes EEG and Eye-Blinking signals through a BCI interface. In this system, we have a tendency to use simple unipolar electrode to record EEG signal from the forehead to construct a Brain-Computer Interface (BCI) primarily controls electrical Robots through ZIGBEE for unfit patients. This project discussed about a brain controlled vehicle based on Brain-computer interfaces (BCI). BCIs are systems that can bypass conventional channels of communication to provide direct communication and control between the human brain and physical devices by translating different patterns of brain activity into commands in real time. Here, we analyze the brain wave signals. Human brain consists of millions of interconnected neurons. The patterns of interaction between these neurons are represented as thoughts and emotional states. According to the human thoughts, This pattern will be changing which in turn produce different electrical waves. A muscle contraction will also generate a unique electrical signal. All these electrical waves will be sensed by the brain wave sensor and it will convert the data into packets and transmit through Bluetooth medium. Level analyzer unit (LAU) will receive the brain wave raw data and it will extract and process the signal using MATLAB platform. Then the control commands will be transmitted to the vehicle module to process. If we are going to in drowsiness stage while travelling time we can get the alert through BUZZER in a seatbelt (or) steering.




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CHAPTER 6

RESULTS AND CONCLUSION

6.1 RESULT

The principle of operation is quite simple. Two dry sensors are used to detect and filter the EEG signals. The sensor tip detects electrical signals from the forehead of the brain. At the same time, the sensor picks up ambient noise generated by human muscle, computers, light bulbs, electrical sockets and other electrical devices. The second sensor, ear clip, is a grounds and reference, which allows Think Gear chip to filter out the electrical noise. The device measures the raw signal, power spectrum (alpha, beta, delta, gamma, theta), attention level, meditation level and blink detection. The raw EEG data received at a rate of 512 Hz. Other measured values are made every second. Therefore, raw EEG data is a main source of information on EEG signals using Mind Wave MW001. Then based on the attention level value Robot Move Forward Command will be send to the Robot module through ZigBee transmission. After three consecutive blink, the program will scan for a left blink and right blink to turn the Robot right and left respectively.

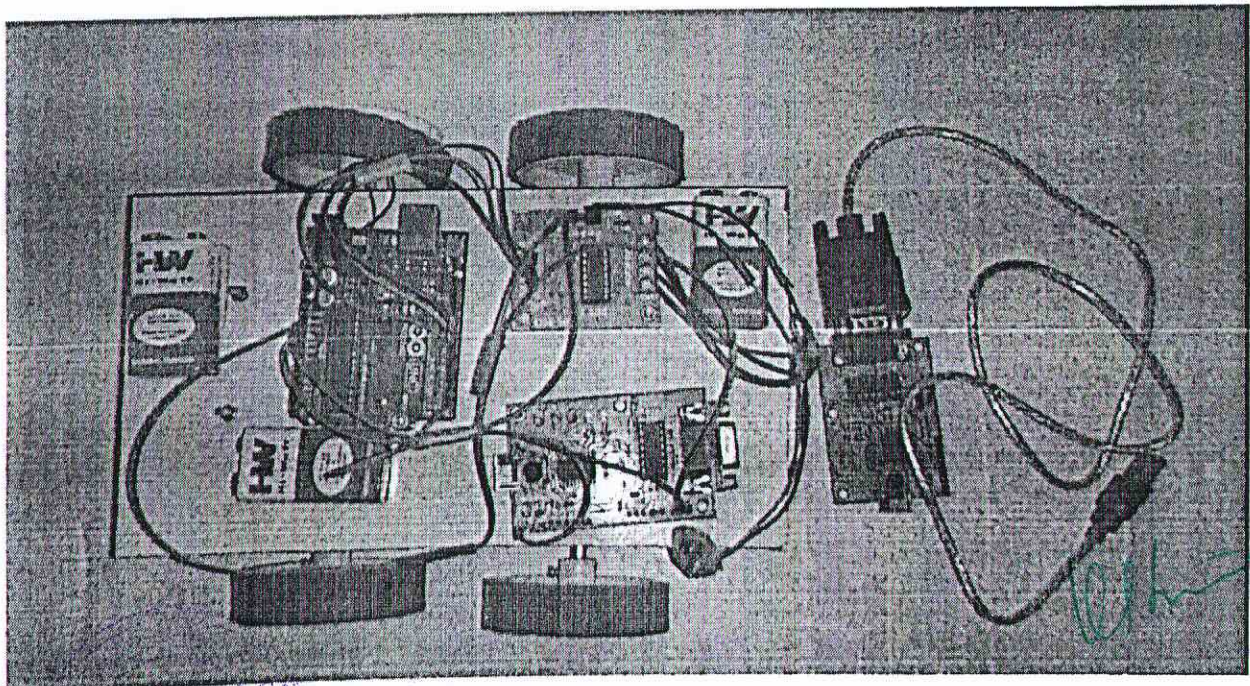


Fig 6.1 Hardware Setup

**A NOVEL METHOD OF COLOR IMAGE ENHANCEMENT OF
MRI IMAGES USING WAVELET ANALYSIS**

A PROJECT REPORT

Submitted by

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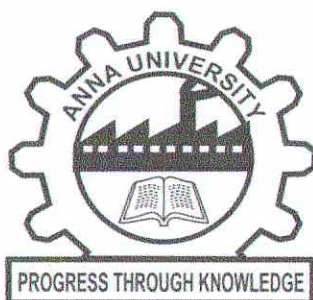
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BONAFIDE CERTIFICATE

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Associate professor

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Mr.C.KARTHICK M.E

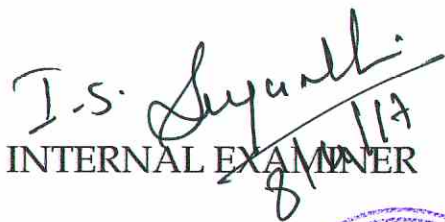
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INTERNAL EXAMINER



EXTERNAL EXAMINER

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ABSTARCT

Color Images usually converted to gray Image in traditional Image enhancement Algorithms. These algorithms enhanced noise while they enhanced image , Which leads to the characteristics entropy. A novel method of color image enhancement based on Hue Invariability with characteristics of human visual color consciousness in HIS color pattern Was Presented here.



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UNIT I CLASSIFICATION OF SIGNALS AND SYSTEMS

9

Continuous time signals (CT signals) - Discrete time signals (DT signals) - Step, Ramp, Pulse, Impulse, Sinusoidal, Exponential, Classification of CT and DT signals - Periodic & Aperiodic signals, Deterministic & Random signals, Energy & Power signals - CT systems and DT systems- Classification of systems – Static & Dynamic, Linear & Nonlinear, Time-variant & Time-invariant, Causal & Noncausal, Stable & Unstable.

UNIT II ANALYSIS OF CONTINUOUS TIME SIGNALS

9

Fourier series analysis-spectrum of Continuous Time (CT) signals- Fourier and Laplace Transforms in CT Signal Analysis - Properties.

UNIT III LINEAR TIME INVARIANT- CONTINUOUS TIME SYSTEMS

9

Differential Equation-Block diagram representation-impulse response, convolution integrals-Fourier and Laplace transforms in Analysis of CT systems

UNIT IV ANALYSIS OF DISCRETE TIME SIGNALS

9

Baseband Sampling - DTFT - Properties of DTFT - Z Transform - Properties of Z Transform

UNIT V LINEAR TIME INVARIANT-DISCRETE TIME SYSTEMS

9

Difference Equations-Block diagram representation-Impulse response - Convolution sum- Discrete Fourier and Z Transform Analysis of Recursive & Non-Recursive systems

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

OUTCOMES:

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

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

TEXT BOOK:

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

REFERENCES:

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



10/10/2019

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OBJECTIVES:

- To learn discrete Fourier transform and its properties
- To know the characteristics of IIR and FIR filters learn the design of infinite and finite impulse response filters for filtering undesired signals
- To understand Finite word length effects
- To study the concept of Multirate and adaptive filters

UNIT I DISCRETE FOURIER TRANSFORM

9

Discrete Signals and Systems- A Review - Introduction to DFT - Properties of DFT - Circular Convolution - Filtering methods based on DFT - FFT Algorithms -Decimation in time Algorithms, Decimation in frequency Algorithms - Use of FFT in Linear Filtering.

UNIT II IIR FILTER DESIGN

9

Structures of IIR - Analog filter design - Discrete time IIR filter from analog filter - IIR filter design by Impulse Invariance, Bilinear transformation, Approximation of derivatives - (LPF, HPF, BPF, BRF) filter design using frequency translation.

UNIT III FIR FILTER DESIGN

9

Structures of FIR - Linear phase FIR filter - Fourier Series - Filter design using windowing techniques (Rectangular Window, Hamming Window, Hanning Window), Frequency sampling techniques - Finite word length effects in digital Filters: Errors, Limit Cycle, Noise Power Spectrum.

UNIT IV FINITE WORDLENGTH EFFECTS

9

Fixed point and floating point number representations - ADC -Quantization- Truncation and Rounding errors - Quantization noise - coefficient quantization error - Product quantization error - Overflow error - Roundoff noise power - limit cycle oscillations due to product round off and overflow errors - Principle of scaling

UNITV DSP APPLICATIONS

9

Multirate signal processing: Decimation, Interpolation, Sampling rate conversion by a rational factor - Adaptive Filters: Introduction, Applications of adaptive filtering to equalization.

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

Upon completion of the course, students will be able to

- apply DFT for the analysis of digital signals & systems
- design IIR and FIR filters
- characterize finite Word length effect on filters
- design the Multirate Filters
- apply Adaptive Filters to equalization

TEXT BOOK:

1. John G. Proakis & Dimitris G.Manolakis, "Digital Signal Processing – Principles, Algorithms & Applications", Fourth Edition, Pearson Education / Prentice Hall, 2007.

REFERENCES:

1. Emmanuel C..Ifeachor, & Barrie.W.Jervis, "Digital Signal Processing", Second Edition, Pearson Education / Prentice Hall, 2002.
2. Sanjit K. Mitra, "Digital Signal Processing – A Computer Based Approach", Tata Mc Graw Hill, 2007.
3. A.V.Oppenheim, R.W. Schafer and J.R. Buck, "Discrete-Time Signal Processing", 8th Indian Reprint, Pearson, 2004.
4. Andreas Antoniou, "Digital Signal Processing", Tata Mc Graw Hill, 2006.




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**STOCHASTIC COMPUTATION OF GAMMATONE
FILTER HEARING AID FOR IMPAIRED PEOPLE**

A PROJECT REPORT

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S.SRIVIDHYA

(Reg.no:311813106062)

P.VISUTHA

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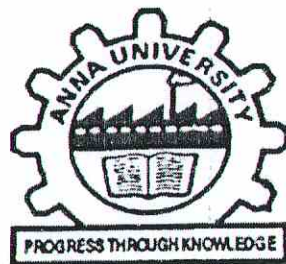
In partial fulfillment for the award of the degree

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Certified that this project report “ **STOCHASTIC COMPUTATION OF GAMMATONE FILTER HEARING AID FOR IMPAIRED PEOPLE**” is the bonafide work of **PRIYA.P (311813106045)**, **SRIVIDHYA. S (311813106062)**, **VISUTHA. P (311813106075)** who carried out the project work under our supervision.

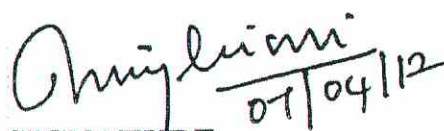
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ABSTRACT

The gammatone filter well expresses the performance of human auditory peripheral mechanism and has a potential of improving advanced speech communications systems, especially hearing assisting devices and noise robust speech recognition systems. This project introduces about gammatone filter based upon stochastic computation for area efficient hardware. In order to improve the computational reliability, gain-balancing techniques are provided that represent the original gain as the product of multiple larger profits introduced at the second-order sections. The proposed stochastic **gammatone filters** are designed and evaluated using **MATLAB software** that achieves a high dynamic range of 71.71 dB compared with a low dynamic range of 5.47 dB in the straight forward implementation. The proposed techniques maintain the original gain of the filter while improving the computational accuracy. In order to increase the dynamic range, the gain-balancing techniques have been proposed that split the original small gain to multiple larger gains. Using the gain-balancing techniques, the computation accuracy at each **IIR filter** is improved, leading to a high dynamic range.



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CHAPTER -7

CONCLUSION

Infants may be born with hearing loss caused by a viral infection that was acquired during pregnancy. Other times the cause is genetic and therefore due to changes in the genes involved in the **hearing process**. Sometimes, hearing loss is due to a combination of genetic and environmental factors.

It is very useful for hearing disability person. Voice input given to mic after that we use some **filters** to compress the voice. Cleared voice stored in storage device of controller, after processing of controller give the another section depends upon the channel selection. In decompress section retrieve the given input voice but it has less amplitude so we have to amplify the signal. After amplification we use transducer for converting sound signal into vibrating signal.




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

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

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

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

UNIT II EMBEDDED COMPUTING PLATFORM DESIGN**9**

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

UNIT III PROCESSES AND OPERATING SYSTEMS**9**

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

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

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

UNIT V CASE STUDY**9**

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

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

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


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TEXT BOOK:

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



REFERENCES:

1. Jonathan W.Valvano, "Embedded Microcomputer Systems Real Time Interfacing", Third Edition Cengage Learning, 2012.
2. David. E. Simon, "An Embedded Software Primer", 1st Edition, Fifth Impression, Addison-Wesley Professional, 2007.
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4. C.M. Krishna, Kang G. Shin, "Real-Time Systems", International Editions, Mc Graw Hill 1997
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SMART CONTROLLER
A COMPUTERISED MACHINE FOR SECONDARY
MANUFACTURING PROCESS

A PROJECT REPORT

Submitted by

A.ANSAR BASHA (311813106005)

A.R.GAUTAM (311813106020)

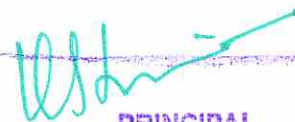
In partial fulfilment for the award of the degree

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EXTERNAL EXAMINER
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ABSTRACT

In the manufacturing field, particularly in the area of working with raw materials and modifying into a whole new product, CNC technology has reinvigorated the energy in the evolution of new tech manufacturing industries.

Even in early days before computers became standard fixtures in every company and in many homes, the machine tools equipped with Numerical Control system found their special place in the growth of high end technologies.

The recent evolution of micro electronics and the never ceasing computer development, including its impact on Numerical Control has brought significant changes to the manufacturing sector in general.

Here we simplest form of Computer Numerical Controller for secondary manufacturing industries for making a design of any raw material.

The cost of CNC is too high and is of huge weight where it needs a 300-450sqft of space to accommodate so we are introducing the machine (known as car in this design) and a drastic change in size with a shape of square and a dimension of just 45cm.



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CHAPTER 7

CONCLUSION AND DISSCUSION

Since this is a prototype, the car used is not perfect. In order to travel in bumpy roads such as cave, the car would need to be modified for to suit such purpose. The current car works fine in normal circumstances. In cave, it might not be able to move as well as the car is not equipped with suspension to travel bumpy road. The power source for this car can also be changed to sustain longer usage.

As for the DPAD, the code has been refined and it is controlled by Smartphone via Bluetooth. The reason of using Bluetooth here is that all Smartphone is equipped with Bluetooth module and Bluetooth module may not be interrupted so easily as the Bluetooth is set to only bond with the Smartphone itself. However, for future improvement, it can be changed to Wi-Fi connection. Autonomous mode code has also been refined to handle all condition as listed in the test case section.

At the end of this project, we have accomplished the main purposes that we have put at the beginning of the work. First of all, and after taking a general look on the metal forming, and particularly the flow forming, the design of the machine was made using the program Solid Works. The design was based on several calculations and it was accomplished in many stages according to the results of calculations which were the basic of the dimensioning of every single part of the machine. The calculation includes the dimensions of the metallic parts, the forces acting on the roller, the motors and the gearboxes.



64

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BIOMETRIC BASED VOTING SYSTEM

A PROJECT REPORT

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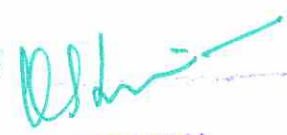


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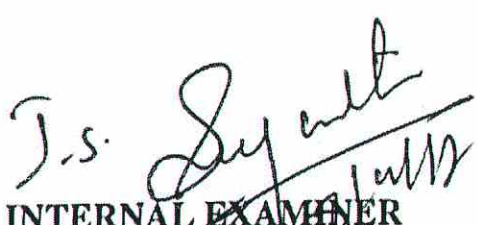
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ABSTRACT

It has always been an arduous task for the election commission to conduct free and fair polls in our country, the largest democracy in the world. Crores of rupees have been spent on this to make sure that the elections are not free. But, now-a-days it has become common for some forces to indulge in rigging which may eventually lead to a result contrary to the actual verdict given by the people.

This paper aims to present a new voting system employing in order to avoid rigging and to enhance the accuracy and speed of the process. The system uses thumb impression for voter identification as we know that the thumb impression of every human being has a unique pattern. Thus it would have an edge over the present day voting systems.

As a pre-poll procedure, a database consisting of the thumb impression of all the eligible voters in a constituency is created. During election, the thumb impression of a voter is entered as input to the system. This is then compared with the available records in the database. If the particular pattern matches with any one in the available record, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected. Also the police station nearby to the election in a **network**, through which the data transfer takes place to the main host. The result is instantaneous and counting is done finally at the main host itself. The overall cost for conducting election gets reduced and so does the maintenance cost of the systems.



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CONCLUSION

The electronic voting machine using **RFID** and fingerprint module has been designed successfully. Database consisting of the details like name, address, age, gender, fingerprint of the people should be updated every time before election.

This biometric voting system has many advantages over the present voting system. Some of these advantages faster tabulation of results, improved accessibility, greater accuracy and lower risk of human and mechanical errors.

This system affords additional security by allowing voter to vote only once by imparting unique identification that is fingerprint. It is very difficult to design an ideal **e-voting** system which allows perfect security and privacy with no compromise.



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**INTEGRATION OF TRIANGULAR LOCATION DETECTION,
IOT & OPEN CV BASED USER AUTHENTICATION FOR
SECURE ATM**

A PROJECT REPORT

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V.ARCHANA (Reg.no:311813106007)

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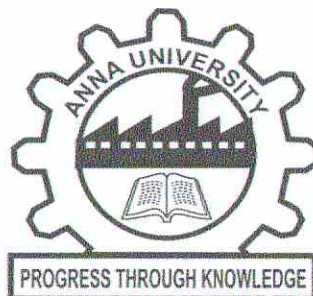
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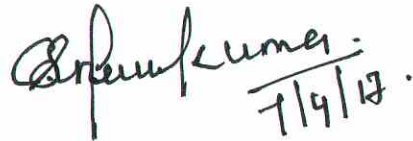


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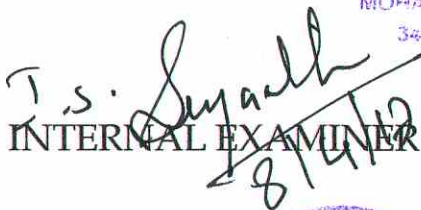
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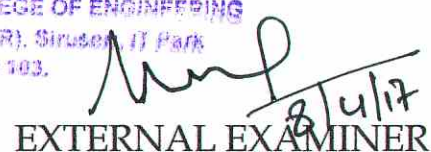
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ABSTRACT

The process of logistics involves the cash flow which is very complicated. To avoid the loss of the payments, most of the suppliers and consumers trade with bank credits. This way not only makes transactions very complex, but can produce unnecessary costs. This project is designed to handle the cash boxes in the logistics vehicles using open CV and **Zigbee technology** by making the locks electronic and password protected. Cash box of the vehicle is allowed to open only at the respective place to avoid misuse of the cash. To ensure this, the system uses **pattern recognition** and Zigbee device pairing and address verification to know the exact location of the vehicle by reading the address of the corresponding Zigbee fixed at the respective destination points (say, ATMs). Then using wireless technology, the values are compared with the database and the lock is allowed to open using a random One Time Password (OTP). The OTP will be sent to the personnel's phone who is handling the Cash Box in the vehicle. The OTP should be entered correctly on the device connected to the cash box. If the OTP is correct then the person can open the cash box using the locker key and can transfer the cash. During emergency and abnormal period, an alarm is generated to alert the main controlling department from the vehicle




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CHAPTER -10

CONCLUSION

Thus this system will be able to thwart physical attacks on the ATM and alerts necessary people to take action at any time and save people from lot of hardships involved in the **ATM** attacks. The process of logistics involves the cash flow which is very complicated. To avoid the loss of the payments, most of the suppliers and consumers trade with bank credits. This way not only makes transactions very complex, but can produce unnecessary costs. This project is designed to handle the cash boxes in the logistics vehicles using open CV and **Zigbee technology** by making the locks electronic and password protected. Cash box of the vehicle is allowed to open only at the respective place to avoid misuse of the cash.



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SMART BOOK READER FOR BLIND PEOPLE USING RASPBERRY PI

A PROJECT REPORT

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S.SURYA PRAKASH

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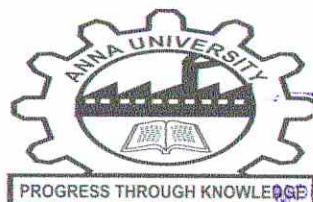
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ABSTRACT

An OCR (Optical Character Recognition) system which is a branch of computer vision and in turn a sub-class of Artificial Intelligence. Optical character recognition is the translation of optically scanned bitmaps of printed or hand written text into audio output by using of Raspberry Pi. OCRs developed for many world languages are already under efficient use. This method extracts moving object region by a mixture-of-Gaussians-based background subtraction method. A text localization and recognition are conducted to acquire text information. To automatically localize the text regions from the object, a text localization and Tesseract algorithm by learning gradient features of stroke orientations and distributions of edge pixels in an Ada boost model. Text characters in the localized text regions are then binaries and recognized by off-the-shelf optical character recognition software. The recognized text codes are output to blind users in speech. Performance of the proposed text localization algorithm. As the recognition process is completed, the character codes in the text file are processed using Raspberry pi device on which recognize character using Tesseract algorithm and python programming, the audio output is listened.



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6.2 CONCLUSIONS:

In this paper, we have described a prototype system to read printed text on hand-held objects for assisting blind persons. In order to solve the common aiming problem for blind users, we have proposed a motion-based method to detect the object of interest, while the blind user simply shakes the object for a couple of seconds. To extract text regions from complex backgrounds, we have proposed a novel text localization algorithm based on models of stroke orientation and edge distributions. The corresponding feature maps estimate the global structural feature of text at every pixel. Block patterns project the proposed feature maps of an image patch into a feature vector. Adjacent character grouping is performed to calculate candidates of text patches prepared for text classification. An Adaboost learning model is employed to localize text in camera-based images. Off-the-shelf OCR is used to perform word recognition on the localized text regions and transform into audio output for blind users. Our future work will extend our localization algorithm to process text strings with characters fewer than three and to design more robust block patterns for text feature extraction. In this paper, the camera acts as input for the paper. As the Raspberry Pi board is powered the camera starts streaming. The streaming data will be displayed on the screen using GUI application. The obtained data will be pronounced through the ear phones using Flite library. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. In this by using highly advanced ARM11 board this paper has been implemented.



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UNIT I CONTROL SYSTEM MODELING

9

Basic Elements of Control System – Open loop and Closed loop systems - Differential equation - Transfer function, Modeling of Electric systems, Translational and rotational mechanical systems - Block diagram reduction Techniques - Signal flow graph

UNIT II TIME RESPONSE ANALYSIS

9

Time response analysis - First Order Systems - Impulse and Step Response analysis of second order systems - Steady state errors - P, PI, PD and PID Compensation, Analysis using MATLAB

UNIT III FREQUENCY RESPONSE ANALYSIS

9

Frequency Response - Bode Plot, Polar Plot, Nyquist Plot - Frequency Domain specifications from the plots - Constant M and N Circles - Nichol's Chart - Use of Nichol's Chart in Control System Analysis. Series, Parallel, series-parallel Compensators - Lead, Lag, and Lead Lag Compensators, Analysis using MATLAB.

UNIT IV STABILITY ANALYSIS

9

Stability, Routh-Hurwitz Criterion, Root Locus Technique, Construction of Root Locus, Stability, Dominant Poles, Application of Root Locus Diagram - Nyquist Stability Criterion - Relative Stability, Analysis using MATLAB

UNIT V STATE VARIABLE ANALYSIS

9

State space representation of Continuous Time systems - State equations - Transfer function from State Variable Representation - Solutions of the state equations - Concepts of Controllability and Observability - State space representation for Discrete time systems. Sampled Data control systems – Sampling Theorem - Sampler & Hold - Open loop & Closed loop sampled data systems.

TOTAL: 45 PERIODS**OUTCOMES:**

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

- Perform time domain and frequency domain analysis of control systems required for stability analysis.
- Design the compensation technique that can be used to stabilize control systems.

TEXTBOOK:

1. J.Nagrath and M.Gopal, "Control System Engineering", New Age International Publishers, 5th Edition, 2007.

REFERENCES:

1. Benjamin.C.Kuo, "Automatic control systems", Prentice Hall of India, 7th Edition, 1995.
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5. Richard C. Dorf and Robert H. Bishop, "Modern Control Systems", Addison - Wesley, 1999.



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CONTROL OF POWER THEFT IN ELECTRICITY BOARD USING INDUSTRIAL AUTOMATION

A PROJECT REPORT

Submitted by

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S.SABANA PARVEEN(311813106050)

in partial fulfilment for the award of the degree

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IN

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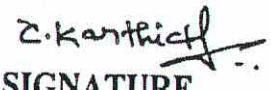
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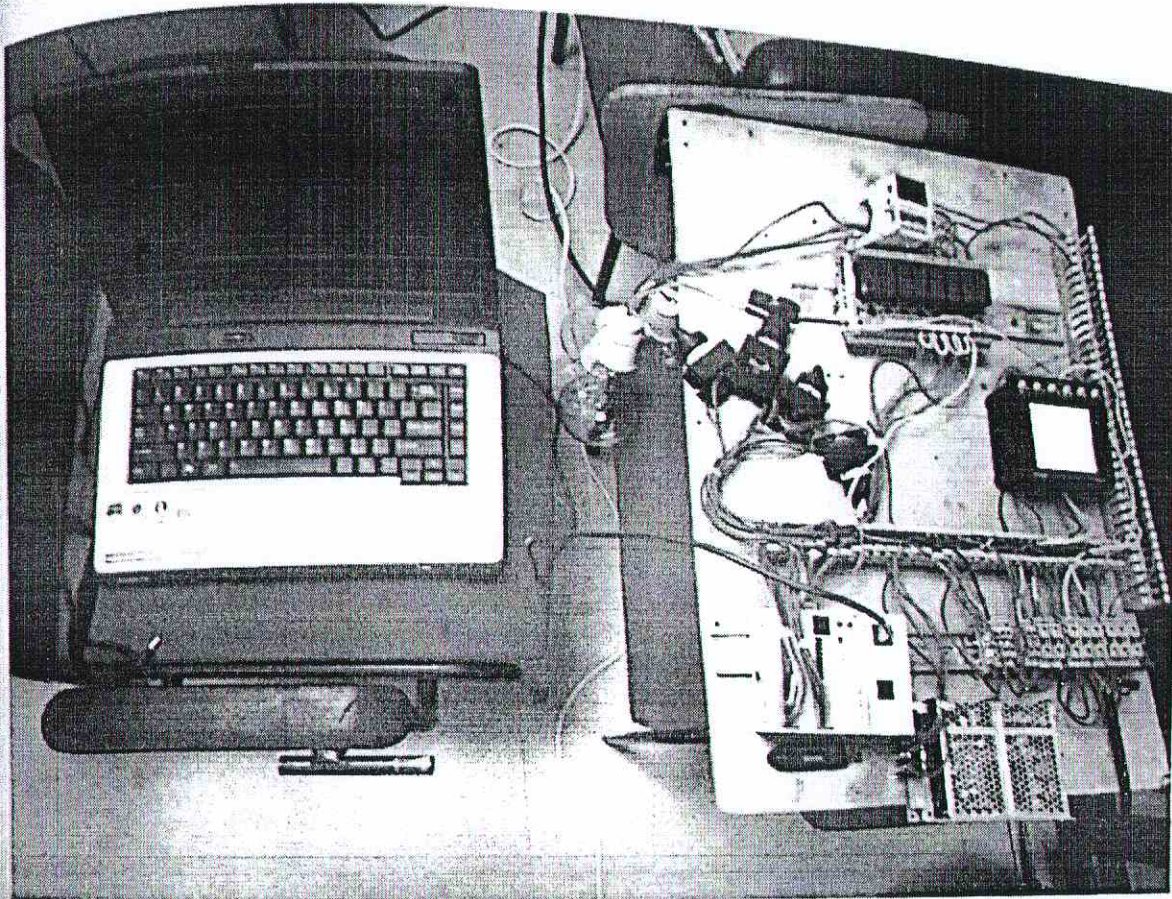
ABSTRACT

The project we are trying to explore is "Control of power theft in electricity board" through the medium of "Industrial Automation". The project subsisted the industrial control system software SCADA and peripheral device such as PLC that is used to monitor and control facilities and infrastructure in industries. Communication protocols unifies the SCADA and PLC. The project describes the situation where the Electricity board in government has a control over domestic premises for the units of electricity used and the limit formulated. The people and the industries in domestic premises use electricity more than determined limit or do not pay the required charge by bribing the officials, this is where situation should be looked into. The automatic power cut from the transformer is possible in present time through SCADA. Since a decade domestic premises had analog system for measurement of units consumed and was in need of person from the electricity board to take the reading. Momentarily it can be digitalized, the platform of "Industrial Automation" can be brought into implementation. It should be done to have overall control on the energy used and to stop the deception. The project will impact in drastic manner to save energy and restrain power.



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HARDWARE SETUP :



CONCLUSION :

The project evaluates the current situation of consequences being faced by the government to bring control over the distribution of current. If the situation we have proposed is brought into implementation, we would make the changes to stop the deception and have control over limit framed in contrast to the usage against it.



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AUTOMATIC VEHICLE SPEED CONTROL IN SAFETY ZONE USING RF TECHNOLOGY

A PROJECT REPORT

Submitted by

A.H.SHAHUL HAMEED(311813106056)

M.NISHANTH(311813106042)

R.SANTHOSH KUMAR(311813106052)

In partial fulfillment for the award of the degree

Of

BACHELOR OF ENGINEERING

IN

ELECTRONICS AND COMMUNICATION



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INTERNAL EXAMINER



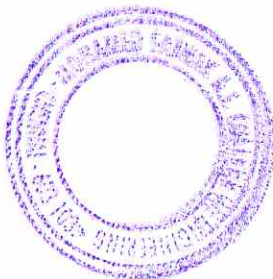
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EXTERNAL EXAMINER

ABSTRACT

Road traffic crashes are one of the world's largest public health and injury prevention problems. According to the World Health Organization (WHO), more than a million people are killed in road accidents. Each year all over the world, there are thousands of highway deaths and tens of thousands of serious injuries due to Run-Off-Road accidents. Everything from simple driver inattentiveness, to fatigue, callousness, to drunk driving is responsible. This Project will give the idea to prevent accident in the early stage and present a practical road safety measure for the user to prevent them from the accident using the various **sensing** application. Modern technologies are used to here to prevent the road accident.



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CHAPTER 6

CONCLUSION

- The basic idea of choosing this project is to save the life of many humans and protect them any natural occurring accidents.
- Although it is a real time project , we chose this to implement in a hardware kit since there is short time period

FUTURE SCOPE

With this prototype, a cost effective **embedded system** has been successfully implemented which helps in curbing road accidents and flouting of traffic rules while also providing safety measures of driving



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AUTONOMOUS PLANT IRRIGATION ROBOT

A PROJECT REPORT

Submitted by

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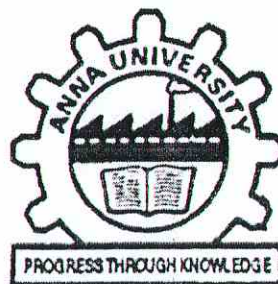
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in

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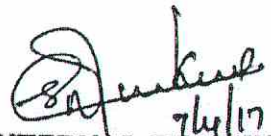
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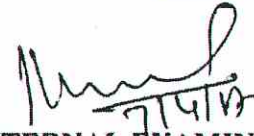
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EXTERNAL EXAMINER

ABSTRACT

The project we have undertaken is "Automatic Plant Irrigation System".

This project is taken up as India is an agriculture oriented country and the rate at which water resources are depleting is a dangerous threat hence there is a need of smart and efficient way of irrigation.

In this project we have implemented sensors which detect the humidity in the soil (agricultural field) and supply water to the field which has water requirement.

The project is Arduino-uno microcontroller based design which controls the water supply and the field to be irrigated.

There are sensors present in each field which are not activated till water is present on the field. Once the field gets dry **sensors** sense the requirement of water in the field and send a signal to the microcontroller.

Microcontroller then supply water to that particular field which has water requirement till the sensors is deactivated again.

In case, when there are more than one signal for water requirement then the **microcontroller** will prioritize the first received signal and irrigate the fields accordingly.



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CHAPTER 7

EXTENTIONS IN THE PROJECT

The working of above project is basically dependent on the output of the humidity sensors. Whenever there is need of excess water in the desired field(RICE crops) then it will not be possible by using **sensor technology**. For this we will have to adopt the **DTMF** technology. By using this we will be able to irrigate the desired field & in desired amount.



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BRAIN-COMPUTER INTERFACE ROBOTIC CONTROL USING ARDUINO MICROCONTROLLER

A PROJECT REPORT

Submitted by

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APRIL 2017



OBJECTIVES:

The student should be made to:

- Know the characteristic of wireless channel
- Learn the various cellular architectures
- Understand the concepts behind various digital signaling schemes for fading channels
- Be familiar the various multipath mitigation techniques
- Understand the various multiple antenna systems

UNIT I**WIRELESS CHANNELS**

9

Large scale path loss - Path loss models: Free Space and Two-Ray models -Link Budget design - Small scale fading- Parameters of mobile multipath channels - Time dispersion parameters- Coherence bandwidth - Doppler spread & Coherence time, Fading due to Multipath time delay spread - flat fading - frequency selective fading - Fading due to Doppler spread - fast fading - slow fading.

UNIT II CELLULAR ARCHITECTURE

9

Multiple Access techniques - FDMA, TDMA, CDMA - Capacity calculations-Cellular concept- Frequency reuse - channel assignment- hand off- interference & system capacity- trunking & grade of service - Coverage and capacity improvement.

UNIT III DIGITAL SIGNALING FOR FADING CHANNELS

9

Structure of a wireless communication link, Principles of Offset-QPSK, p/4-DQPSK, Minimum Shift Keying, Gaussian Minimum Shift Keying, Error performance in fading channels, OFDM principle - Cyclic prefix, Windowing, PAPR.

UNIT IV MULTIPATH MITIGATION TECHNIQUES

9

Equalisation - Adaptive equalization, Linear and Non-Linear equalization, Zero forcing and LMS Algorithms. Diversity - Micro and Macrodiversity, Diversity combining techniques, Error probability in fading channels with diversity reception, Rake receiver,

UNIT V MULTIPLE ANTENNA TECHNIQUES

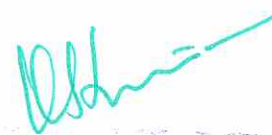
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MIMO systems - spatial multiplexing -System model -Pre-coding - Beam forming - transmitter diversity, receiver diversity- Channel state information-capacity in fading and non-fading channels

OUTCOMES:

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

- Characterize wireless channels
- Design and implement various signaling schemes for fading channels
- Design a cellular system
- Compare multipath mitigation techniques and analyze their performance
- Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance



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TEXTBOOKS:

1. Rappaport, T.S., "Wireless communications", Second Edition, Pearson Education, 2010.
2. Andreas.F. Molisch, "Wireless Communications", John Wiley - India, 2006.

REFERENCES:

1. David Tse and Pramod Viswanath, "Fundamentals of Wireless Communication",



WIRELESS INTEGRATED ALARM SIGNAL FROM BABY INCUBATOR TO NURSING STATION AND CARE GIVERS

A PROJECT REPORT

Submitted by

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HABEEBA.K.A

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(311813106031)

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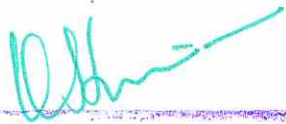
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APRIL 2017



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INTERNAL EXAMINER

EXTERNAL EXAMINER



ABSTRACT

The project involves the design and implementation of an intensive care incubator prototype that has a control system **embedded in a microcontroller** based on the technique of fuzzy logic, capable of maintaining the temperature of the newborn through two operation ways: baby and air. Similarly, it controls the humidity of the chamber according to the gestational age of the patient. The prototype also come with a piece of software, with which vital variables of the patient are monitored in real-time, that is to say, skin temperature, ambient temperature, humidity, oxygen saturation in the blood and heart rate, using for this, the **Zig Bee** communication protocol, chosen for its easy implementation and connectivity, and communicates wirelessly with the incubator station. The system has a set of alarms displayed in the main panel of the computer and monitoring software, which works visually and will sound in the event of failures as disconnection of sensor, over temperature, controller failure or supply failure.

With the advancement in technology, medical industry has also evolved and reached sky-high in the current day world. The mortality rates of the premature newborn infants have been brought under control. Baby incubators play an important role in this. Even after the advancements in technology, there is a need for instrument- health caregiver (HC) interactions due to varied reasons. Unfortunately, due to the higher patient: HC ratio the workload on the HCs is very high. This paper discusses about the development of a wireless transmission of incubator indicator alarms to the neonatal nursing station for the early intervention of the HC. The developed technology will reduce the workload of the HCs.

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CONCLUTION

In the current study, addition of surface temperature measuring unit which will be functioning independently from the temperature controlling unit. An unexpected rise in the body surface temperature of the baby will immediately transmit an audio-visual alarm to the nursing station & the parents. This might help in preventing fatal accidents related to malfunctioning of the temperature controlling unit. Apart from the above, babies often wet the bed. It is not possible to manually supervise the bed-wet continuously.

Keeping this in mind, a bed-wet alarm system has also been incorporated into the incubator model. Occurrence of bed-wet will wirelessly transmit an alarm signal to the neonatal nursing station. Addition of respiratory sensor for monitoring the breath rate helps in Seizure monitoring systems. They are specially designed to sound an alarm if a person has a seizure. The alarm can sound remotely in your room, signaling that your child is having a seizure. A wireless web camera monitoring system for continuous monitoring of child's activities inside the incubator chamber.

The project is designed keeping in mind the medical conditions available in rural areas. This equipment can be efficiently used by the technicians in a small health care centre. It can be a life saving machine for low birth weight infants. The chamber is sufficient enough to accommodate the baby comfortably. And it is design at low cost.



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OBJECTIVES:

The student should be made to:

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

UNIT I THE 8086 MICROPROCESSOR

9

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

UNIT II 8086 SYSTEM BUS STRUCTURE

9

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

UNIT III I/O INTERFACING

9

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

UNIT IV MICROCONTROLLER

9

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

UNIT V INTERFACING MICROCONTROLLER

9

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

OUTCOMES:

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

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

TEXT BOOKS:

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

REFERENCE:

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



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**AN ADVANCED ELECTRICITY DISTRIBUTION
MANAGEMENT SYSTEM FACILITATED
BY GSM WITH AUTOMATED POWER
SCHEDULING SYSTEM FOR EB**

A PROJECT REPORT

Submitted by

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BONAFIDE CERTIFICATE

Certified that this project "**AN ADVANCED ELECTRICITY DISTRIBUTION MANAGEMENT SYSTEM FACILITATED BY GSM WITH AUTOMATED POWER SCHEDULING SYSTEM FOR ELECTRICITY BOARD**" is the bonafide work of

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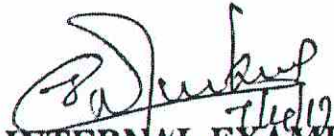
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EXTERNAL EXAMINER



ABSTRACT

Previous research and development where been carried out in the field of electric meter such as remote wireless energy measurement from meter based on **RFID,GSM** based electric metering system.

But none of found to be an effective tool to eliminate the problems associated with power demand by designing an energy meter that effectively handle the power consumed by the consumer with the power available on that time.

Giving the flexibility to the consumer to determine which devices or loads to be operated in particular time which reduces the misuse of the power and effective power saved can be given to other places or industries for the better of the country's growth.

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CHAPTER 7

CONCLUSION

In this project we have solved the problems associated with power demand by designing an energy meter that effectively handle the power consumed by the consumer with the power available on that time. Giving the flexibility to the consumer to determine which devices or loads to be operated in a particular time which reduces the misuse of the power and effective power saved can be given to other places or industries for the better of the country's growth. **Prototype hardware** is developed to demonstrate the efficient of the system.



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**SIXTH SENSE TECHNOLOGY COLLABORATIVE
SECURED ATM MACHINE**

A PROJECT REPORT

Submitted by

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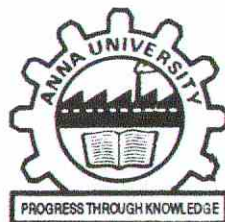
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PROJECT GUIDE

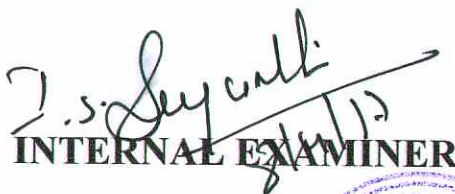
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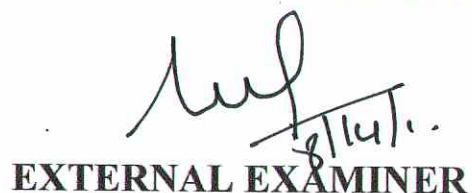
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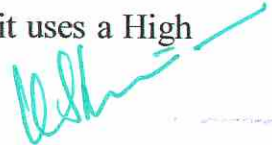
INTERNAL EXAMINER



EXTERNAL EXAMINER

ABSTRACT

AUTOMATED teller machines in their modern form have been around for almost 50 years. And, given that ATMs represent an apparently unattended box packed with cash, criminals have been keen on them for all that time. But attacks on cash machines – to steal not only money but customer data too – have been increasing significantly in recent years. How can they be stopped? ATM Security has always been one of the most prominent issues concerning the daily users and the not so frequent ones as well. While the ATM is used in large amount in the commercial banks and postal savings to deposit and draw conveniently and praised by the users, but dispute cases and financial crimes about it are increasing day by day. This paper emphasizes on the hypothetical, yet very possible scenario of an individual's ATM machine Security with a low but Efficient cost hardware system. Our proposed model uses certain factors which would be monitored right from the initiation, to the end of the respective transaction. We have proposed a sixth sense Atm which uses No touching of any objects but by just using your gestural interface it lets us do the normal operations of ATM authentication system. Also it uses a High alert security system for reducing or eliminating ATm thefts.



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CHAPTER 15

CONCLUSION

- In future this project can be elevated to an android based transaction system. This can also be a contact less ATM module. The number of sensors for the security purpose can be increased.




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**BOAT LOCALIZATION AND WARNING SYSTEM FOR
BORDER IDENTIFICATION**

A PROJECT REPORT

Submitted by

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V.KARTHIKA	(Reg.no:311813106029)

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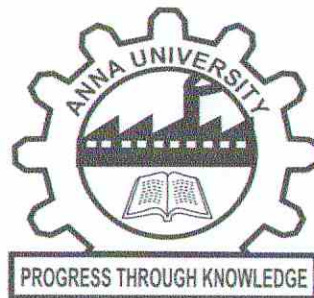
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ABSTRACT

The technology proliferation of Received Signal Strength Indication(RSSI) is used to provide location based positioning and time details in all climatic conditions and even anywhere any time. In telecommunications, **received signal strength indicator (RSSI)** is a measurement of the power present in a received radio signal. RSSI can be used internally in a wireless networking card to determine when the amount of radio energy in the channel is below a certain threshold at which point the network card is clear to send (CTS). Once the card is clear to send, a packet of information can be sent. The end-user will likely observe a RSSI value when measuring the signal strength of a **wireless network** through the use of a wireless network monitoring tool like Wireshark, Kismet or InSSIDer. To become a revolutionizing tool for fisherman boat's border crossing issues. The proposed system coins a low cost border crossing alert system that amalgamating the potency of **RSSI device**. It continuously monitoring, tracking, alerting and controlling the fisherman's activity from the remote station located on the shore.



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**AUTOMATIC VEHICLE DETECTION AND TRACKING IN
SURVEILLANCE IN LOCKING MECHANISM AND TRACKING FOR
NEGLIGENCE OF INSURANCE PAYMENT**

A PROJECT REPORT

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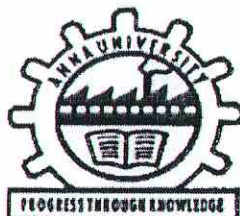
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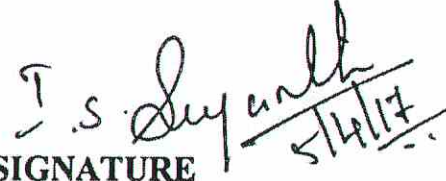
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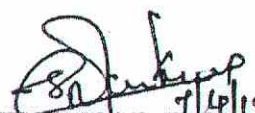

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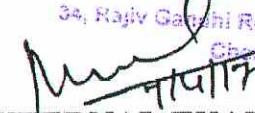
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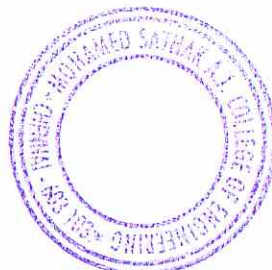

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INTERNAL EXAMINER


EXTERNAL EXAMINER

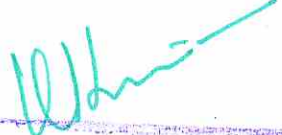



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ABSTRACT

An **embedded system** is a special-purpose computer system designed to perform a dedicated function. Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. As the technology develops, security becomes a major concern. The security not only means securing the important things but also the data's. Nowadays we hear lot of problems for tracking the vehicles in the bus stops, for particular vehicles. We may also be one of the victims of that issue. So we here use a simpler technique to track the vehicle. This method can achieve and find using vehicles without using paying insurance.




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10. CONCLUSION

By implementing this project,

- Avoid accidents.
- Proper rules can be followed .
- Reduce theft of the vehicle.
- More protective and secured for both vehicle and people.
- People can't escape without paying the insurance.

Further this project can be implemented in other vehicle too. In this case seat belt will be detected instead of helmet. Even if the helmet is locked with the vehicle without wearing , it can be detected by using **PIR sensor** . For future enhancement we can feed some particular number in the vehicle in case of emergency which sends the voice alert to the related person.



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LOW COST SMART PHONE CONTROLLED CAR SECURITY SYSTEM

A PROJECT REPORT

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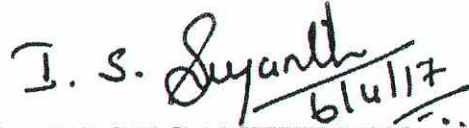
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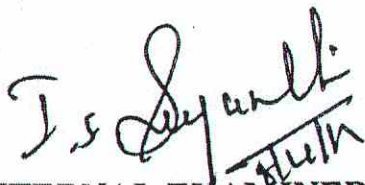


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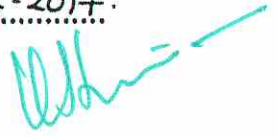
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ABSTRACT

Vehicle security and keeping pace of advancement in car features with technology have been major concern in automobile industries. Many people have to face difficulties in locking/unlocking and switching ON/OFF the car Engine upon losing the car key. In addition to that in most of the higher range car, people have to wait for few minutes after turning on the car engine to allow the car engine to attain its normal operating temperature to get better performance of the car engine and improve its life. Moreover, if a car gets stolen and used for some illegal activities banned by the government then a car owner will face many legal hitches. So to tackle all these issues, an electronic system is designed and implemented in a real car that does not provide only car security feature but provides additional features such as unlocking and locking of the car, and switching ON and OFF the car engine remotely using smart phone. This paper basically discusses the technical aspects of such electronic system.

Key Word: GSM modem, GPS modem, Microcontroller, Relays, Transistors.




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CONCLUSION AND REFERENCES

CONCLUSION

Hence this paper uses sophisticated technology to track the vehicles that violates the traffic signal and rash the driving. This system provides protection from robberies. When the theft is identified, the vehicle engine can be turned off by sending a signal from the monitor unit to the vehicle unit. The simulation of the whole system had been done using PROTEUS software. This technology highly promotes safe and security of the car.

Many people might have implemented a car security system in dummy car using microcontroller and GPS/GSM modem but implementing this system on the realistic car with additional features such as locking/unlocking and switching ON/OFF the car engine is a challenge and that is performed here as a part of system design and implementation. It eliminates the major complaints the people upon losing a car key by providing an alternative way to control the car using smart phone. System like this car get quite popular within a community as it provides more features to the car user at lower cost.



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DRIVER MONITORING AND VEHICLE ACCIDENT INTIMAION SYSTEM

A PROJECT REPORT

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ABSTRACT

This system provides a unique method to curb drunken and drowsy people. This system has an alcohol sensor, eye blinking sensor and vehicle sensor embedded in the vehicles. Whenever the driver start vehicle, the sensors senses the eye blink and measures the content of alcohol in his breathe and automatically sends the signal to buzzer.

In this system the outputs of sensors are given to the microcontroller for comparison. And if the accident is occurred the message will be passed to the register number and location of the accident is sent by the GSM. This will help to save life of the people. The motorcycle accident is a major public problem in many countries. Despite awareness campaign, this problem is still increasing due to rider's poor behaviors such as speed driving, drunk driving, riding with no helmet protection, riding without sufficient sleep, etc.

The numbers of death and disability are very high because of late assistance to people who got the accident. These cause huge social and economic burdens to people involved. Therefore, several research group and major motorcycle manufacturers including have developed safety devices to protect riders from accidental injuries. However, good safety device for motorcycle is difficult to implement and very expensive.



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CONCLUSION

In this project we present the safety of the driver. We have integrated many functions for the driver monitoring system. By using the sensors we can avoid the accident from different ways. The Gas sensor, Eye blink sensor, and Accident sensor are the sensors which plays an important part of the project.

This project also presented the details of electrical design, communication system and all the sensory system.



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GO CASHLESS FOR BUS TICKETING SYSTEM

A PROJECT REPORT

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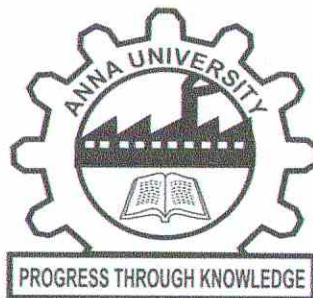
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ABSTARCT

Smartcard payment system makes an important role for making the casless country. In this system we are using smartcard for taking ticket without conductor. Smartcard will read by RF reader and keypad used to enter the no. of passengers. The door will be opened details are verified by microcontroller and data will be send to bus out. again smard card will be read then only door will be opend for bus out. The amount will be detected and the message will be arrived in our mobile using GSM.



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OBJECTIVES:

- To Facilitate the knowledge about optical fiber sources and transmission techniques
- To Enrich the idea of optical fiber networks algorithm such as SONET/SDH and optical CDMA.
- To Explore the trends of optical fiber measurement systems.

UNIT I INTRODUCTION TO OPTICAL FIBERS

9

Evolution of fiber optic system- Element of an Optical Fiber Transmission link-- Total internal reflection- Acceptance angle -Numerical aperture – Skew rays Ray Optics-Optical Fiber Modes and Configurations -Mode theory of Circular Wave guides- Overview of Modes-Key Modal concepts- Linearly Polarized Modes -Single Mode Fibers-Graded Index fiber structure.

UNIT II SIGNAL DEGRADATION OPTICAL FIBERS

9

Attenuation - Absorption losses, Scattering losses, Bending Losses, Core and Cladding losses, Signal Distortion in Optical Wave guides-Information Capacity determination -Group Delay-Material Dispersion, Wave guide Dispersion, Signal distortion in SM fibers-Polarization Mode dispersion, Intermodal dispersion, Pulse Broadening in GI fibers-Mode Coupling -Design Optimization of SM fibers-RI profile and cut-off wavelength.

UNIT III FIBER OPTICAL SOURCES AND COUPLING

9

Direct and indirect Band gap materials-LED structures -Light source materials -Quantum efficiency and LED power, Modulation of a LED, lasers Diodes-Modes and Threshold condition -Rate equations -External Quantum efficiency -Resonant frequencies -Laser Diodes, Temperature effects, Introduction to Quantum laser, Fiber amplifiers- Power Launching and coupling, Lencing schemes, Fiber -to- Fiber joints, Fiber splicing-Signal to Noise ratio , Detector response time.

UNIT IV FIBER OPTIC RECEIVER AND MEASUREMENTS

9

Fundamental receiver operation, Pre amplifiers, Error sources - Receiver Configuration- Probability of Error - Quantum limit.Fiber Attenuation measurements- Dispersion measurements - Fiber Refractive index profile measurements - Fiber cut- off Wave length Measurements - Fiber Numerical Aperture Measurements - Fiber diameter measurements.

UNIT V OPTICAL NETWORKS AND SYSTEM TRANSMISSION

9

Basic Networks - SONET / SDH - Broadcast - and -select WDM Networks -Wavelength Routed Networks - Non linear effects on Network performance -Link ~~Power budget~~ -Rise time budget- Noise Effects on System Performance-Operational Principles of WDM Performance of WDM + EDFA system - Solutions - Optical CDMA - Ultra High Capacity Networks.

OUTCOMES:

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

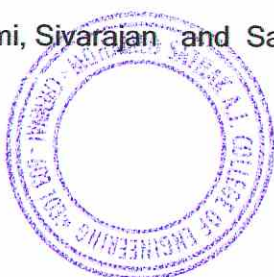
- Discuss the various optical fiber modes, configurations and various signal degradation factors associated with optical fiber.
- Explain the various optical sources and optical detectors and their use in the optical communication system.
- Analyze the digital transmission and its associated parameters on system performance.

TEXT BOOKS:

1. Gerd Keiser, "Optical Fiber Communication" Mc Graw -Hill International, 4th Edition., 2010.
2. John M. Senior , "Optical Fiber Communication", Second Edition, Pearson Education, 2007.

REFERENCES:

- 1.Ramaswami, Sivarajan and Sasaki "Optical Networks", Morgan Kaufmann, 2009.



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**CREATING NEW MUSEUM EXPERIENCES FOR
VISIBLE LIGHT COMMUNICATION**

A PROJECT REPORT

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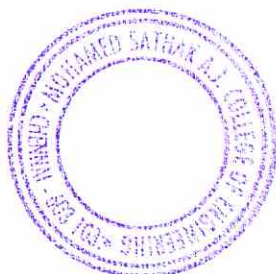


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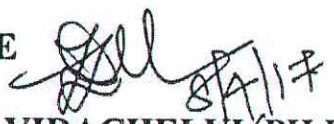


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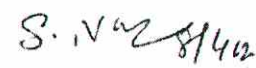

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INTERNAL EXAMINER


EXTERNAL EXAMINER



ABSTRACT

Visible Light Communication (VLC) is a new technology that may become an alternative choice for wireless communication in the future. The technology may be used in many indoor applications. The specific presentation of VLC in this study is with the use of light emitting diodes (LEDs) as the medium for transmission. Digital information will be sent through the LEDs as light pulses, and then a receiver will be able to collect the light pulses as a code and translate it to a corresponding audio data. In this study, the visible light communication system uses modulation schemes, such as on-off keying, so that the digital HIGHS and LOWs are representations of the binary code to be transmitted. Acknowledgement lights incorporated in the receiver are also utilized to make multicasting possible, and to signal that transmission is successful.



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CHAPTER 7

CONCLUSION

The possibilities are numerous and can be explored further. If this technology can be put into practical use, every bulb can be used something like a **WIFI hotspots** to transmit wireless data



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OBJECTIVES:

The student should be made to:

- Be exposed to basic electronic devices
- Be familiar with the theory, construction, and operation of Basic electronic devices.

UNIT I SEMICONDUCTOR DIODE

9

PN junction diode, Current equations, Diffusion and drift current densities, forward and reverse bias characteristics, Switching Characteristics.

UNIT II BIPOLAR JUNCTION

9

NPN -PNP -Junctions-Early effect-Current equations – Input and Output characteristics of CE, CB CC-Hybrid - π model - h-parameter model, Ebers Moll Model- Gummel Poon-model, Multi Emitter Transistor.

UNIT III FIELD EFFECT TRANSISTORS

9

JFETs - Drain and Transfer characteristics,-Current equations-Pinch off voltage and its significance- MOSFET- Characteristics- Threshold voltage -Channel length modulation, D-MOSFET, E-MOSFET- ,Current equation - Equivalent circuit model and its parameters, FINFET,DUAL GATE MOSFET.

UNIT IV SPECIAL SEMICONDUCTOR DEVICES

9

Metal-Semiconductor Junction- MESFET, Schottky barrier diode-Zener diode-Varactor diode -Tunnel diode- Gallium Arsenide device, LASER diode, LDR.

UNIT V POWER DEVICES AND DISPLAY DEVICES

9

UJT, SCR, Diac, Triac, Power BJT- Power MOSFET- DMOS-VMOS. LED, LCD, Photo transistor, Opto Coupler, Solar cell, CCD.

TOTAL: 45 PERIODS**OUTCOMES:**

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

- Explain the theory, construction, and operation of basic electronic devices.
- Use the basic electronic devices

TEXT BOOKS

1. Donald A Neaman, "Semiconductor Physics and Devices", Third Edition, Tata Mc GrawHill Inc. 2007.

REFERENCES:

1. Yang, "Fundamentals of Semiconductor devices", McGraw Hill International Edition, 1978.
2. Robert Boylestad and Louis Nashelsky, "Electron Devices and Circuit Theory" Pearson Prentice Hall, 10th edition, July 2008.

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ENERGY HARVESTING USING PELTIER THROUGH COLD AND HOT JUNCTION

A PROJECT REPORT

Submitted by

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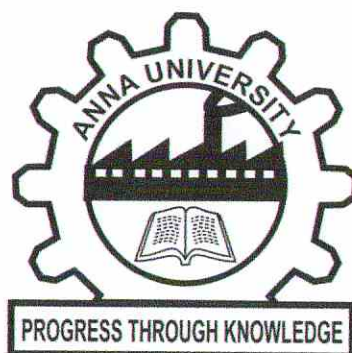
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IN

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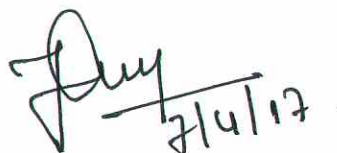
Certified that this project report “**ENERGY HARVESTING USING PELTIER THROUGH COLD AND HOT JUNCTION**” is the bonafide work of “**SUGALEKA.M (311813106063), SUSHMITHA.M (311813106067), VARNIKHA.N.T (311813106071)**” who carried out the project work under our supervision.



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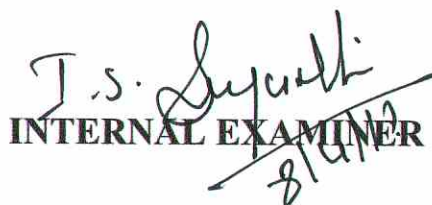


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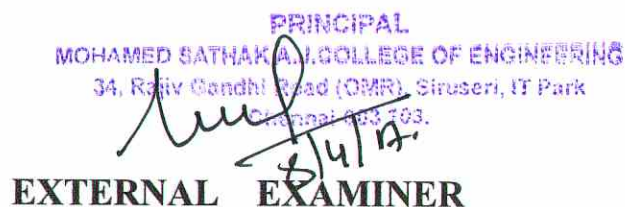
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INTERNAL EXAMINER



EXTERNAL EXAMINER



ABSTRACT

This paper presents the hardware design and implementation of a system that ensures a perpendicular profile of the peltier the different sources are heat and cold combination to generate power. Generated power will be stored in battery the stored battery will be used for mobile charging. Temperature **sensor** is used to find the temperature of the peltier. The various forms of energy are there like solar, wind and heat due to their availability and cleanliness. With the advancements in power, now it is able to harvest energy from sources which are impossible to harvest using traditional energy conversion methods (peltier module). If abnormal value is detected by microcontroller, it will automatically switch on the cooling FAN. Generated power will be stored in battery, and the stored energy will converted to ac power. Here, we are using sepic booster which is used to boost the voltage upto 12v to 40v. Renewable energy is rapidly gaining importance as an energy resource as fossil fuel prices Fluctuate. Generated power also used for load.



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CHAPTER 8

CONCLUSION

There is an increase in the demand for energy for our day to day activities, from simple devices to complex systems. All these systems depend on the **electricity board** or the power company for its operation. At one point of time, the scarcity for fuels occurs causing the scarcity in electricity. Hence, it is important to conserve energy. This project aims to conserve the electrical energy to some extent, by trapping the heat from the sunlight and cold from the coolers or air conditioners. This project can also be applicable in home appliances, where the heat from sunlight can be trapped for producing electrical energy. By the efficient use of this energy, we can save some amount of energy for home appliances and mobile charging.



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LOW COST MILE METER

A PROJECT REPORT

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S.MANSOOR (Reg.no:311813106033)

S.MOHAMMED KHAN (Reg.no:311813106034)

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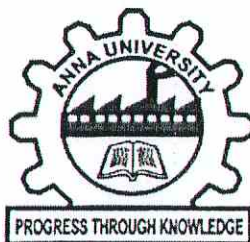
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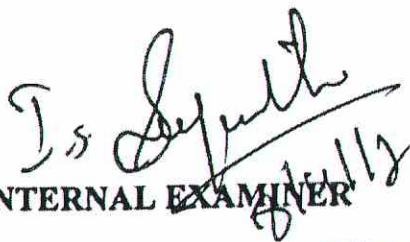
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INTERNAL EXAMINER



EXTERNAL EXAMINER



Abstract:

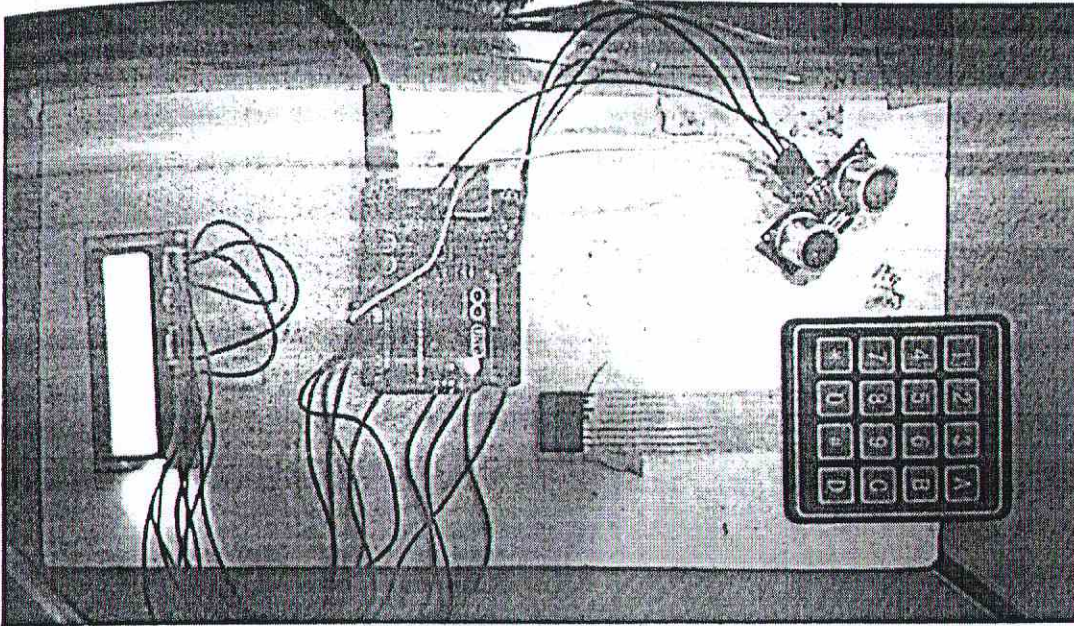
Today in this digitized world, if the fuel **indicator** in the automobiles is also made digital it will help to know the exact amount of fuel available in the fuel tank. The above furnished fact is considered in our project and we found out a proper solution for indicating the exact availability of fuel in the tank digital. Here, we are indicating the amount of fuel in the tank in litres. This value in litres will be in numerical digits. This project mainly concentrates about the indication of fuel level in two- wheeler tanks. Various other features like the distance can be travelled to the corresponding fuel is added with this arrangement which will explain the clear performance of the vehicle to the corresponding fuel.



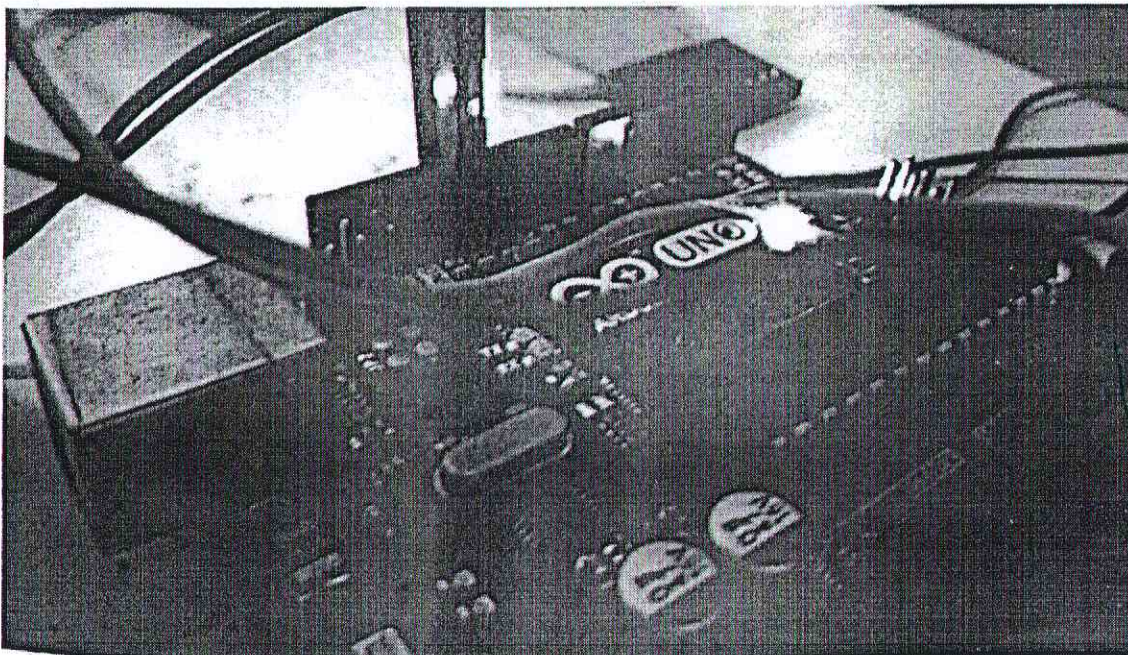
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CHAPTER-9

KIT and CONCLUSION



ARDUINO



**SMART COLLEGE BUS TRACKING AND ALERT
SYSTEM FOR STUDENTS USING RF BASED ID
CARD INDICATOR**

A PROJECT REPORT

Submitted by

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M.ELLUMALAI (311813106017)

K.IMRAN BASHA (311813106025)

In partial fulfilment for the award of the degree

of

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in

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APRIL 2017



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INTERNAL EXAMINER



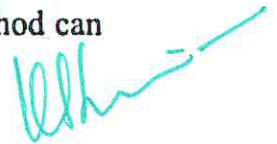
EXTERNAL EXAMINER

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Siruseri, 17 Km from Siruseri, Chennai-603 103.

ABSTRACT

An **embedded system** is a special-purpose computer system designed to perform a dedicated function. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. As the technology develops, security becomes a major concern. The security not only means securing the important things but also the data's. Nowadays we hear lot of problems for tracking the vehicles in the bus stops, for a particular vehicles. we may also be one of the victims of that issue. So we here use a simpler technique to track the vehicle which is nearer to our bus stop .This method can achieve without using advanced costlier techniques.

Unlike a general-purpose computer, such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. As the technology develops, security becomes a major concern. The security not only means securing the important things but also the data's. Nowadays we hear lot of problems for tracking the vehicles in the bus stops, for particular vehicles. We may also be one of the victims of that issue. So we here use a simpler technique to track the vehicle which is nearer to our bus stop .This method can achieve without using advanced costlier techniques.



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CONCLUSION

- Thus by advanced technology implementation, we can able to prevent delayed intimation of any accident to the respective institution.
- Students can be able to know whether the vehicle has passed the stop, so that they can move with any other alter ways.
- With the help of the **LED**, we are able to determine whether the vehicle has moved and also the current position of the vehicle.



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OBJECTIVES:

- To study about Wireless networks, protocol stack and standards.
- To study about fundamentals of 3G Services, its protocols and applications.
- To study about evolution of 4G Networks, its architecture and applications.

UNIT I WIRELESS LAN

9

Introduction-WLAN technologies: Infrared, UHF narrowband, spread spectrum -IEEE802.11: System architecture, protocol architecture, physical layer, MAC layer, 802.11b, 802.11a - Hiper LAN: WATM, BRAN, HiperLAN2 - Bluetooth: Architecture, Radio Layer, Baseband layer, Link manager Protocol, security - IEEE802.16-WIMAX: Physical layer, MAC, Spectrum allocation for WIMAX

UNIT II MOBILE NETWORK LAYER

9

Introduction - Mobile IP: IP packet delivery, Agent discovery, tunneling and encapsulation, IPV6- Network layer in the internet- Mobile IP session initiation protocol - mobile ad-hoc network: Routing, Destination Sequence distance vector, Dynamic source routing

UNIT III MOBILE TRANSPORT LAYER

9

TCP enhancements for wireless protocols - Traditional TCP: Congestion control, fast retransmit/fast recovery, Implications of mobility - Classical TCP improvements: Indirect TCP, Snooping TCP, Mobile TCP, Time out freezing, Selective retransmission, Transaction oriented TCP - TCP over 3G wireless networks.

UNIT IV WIRELESS WIDE AREA NETWORK

9

Overview of UTMIS Terrestrial Radio access network-UMTS Core network Architecture: 3G-MSC, 3G-SGSN, 3G-GGSN, SMS-GMSC/SMS-IW MSC, Firewall, DNS/DHCP-High speed Downlink packet access (HSDPA)- LTE network architecture and protocol.

UNIT V 4G NETWORKS

9

Introduction - 4G vision - 4G features and challenges - Applications of 4G - 4G Technologies: Multicarrier Modulation, Smart antenna techniques, OFDM-MIMO systems, Adaptive Modulation and coding with time slot scheduler, Cognitive Radio.

TOTAL: 45 PERIODS**OUTCOMES:**

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

- Conversant with the latest 3G/4G and WiMAX networks and its architecture.
- Design and implement wireless network environment for any application using latest wireless protocols and standards.
- Implement different type of applications for smart phones and mobile devices with latest network strategies.

TEXT BOOKS:

1. Jochen Schiller, "Mobile Communications", Second Edition, Pearson Education 2012.(Unit I,II,III)
2. Vijay Garg, "Wireless Communications and networking", First Edition, Elsevier 2007.(Unit IV,V)

REFERENCES:

1. Erik Dahlman, Stefan Parkvall, Johan Skold and Per Beming, "3G Evolution HSPA and LTE for Mobile Broadband", Second Edition, Academic Press, 2008.



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**IMPLEMENTATION OF VPN USING MPLS ON ISP
ROUTERS WITH VIRTUAL ROUTING AND
FORWARD INSTANCES**

A PROJECT REPORT

Submitted by

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SHRIMATHIMITHA.R.S	(311813106060)
VETRISSELVI.S	(311813106073)

in partial fulfillment for the award of the degree

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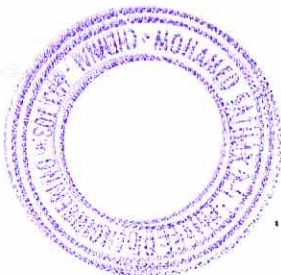
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APRIL -2017



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BONAFIDE CERTIFICATE

Certified that this project report for "**IMPLEMENTATION OF VPN USING MPLS ON ISP ROUTERS WITH VIRTUAL ROUTING AND FORWARD INSTANCES**" is the bonafide work of MUHILA DEVI.A (311813106039), SHRIMATHIMITHA.R.S (311813106060), VETRISSELVI.S (311813106073) who carried out the project work under our supervision.

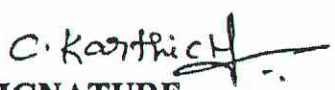

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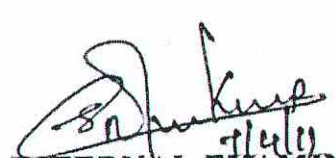
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Submitted to the viva-voce examination held on07.04.2017.....


INTERNAL EXAMINER


EXTERNAL EXAMINER



ABSTRACT

MPLS technology is being widely adopted by service providers worldwide to implement VPNs to connect geographically separated customer sites. VPNs were originally introduced to enable service providers to use common physical infrastructure to implement emulated point-to-point links between customer sites. A customer network implemented with any VPN technology would contain distinct regions under the customer's control called the customer sites connected to each other via the service provider network. In traditional router based networks, different sites belonging to the same customer were connected to each other using dedicated point-to-point links. The cost of implementation depended on the number of customer sites to be connected with these dedicated links. A full mesh of connected sites would consequently imply an exponential increase in the cost associated. Frame Relay and ATM were the first technologies widely adopted to implement **VPNs**. These networks consisted of various devices, belonging to either the customer or the service provider, that were components of the **VPN** solution.




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CHAPTER 7

CONCLUSION AND FUTUREWORK ENHANCEMENT

This provides effective design, pallets of technology and protocols to solve the most pressing network design problem. MPLS technology has succeeded in providing a way of protecting information being transmitted over the internet by allowing users to establish a virtual private tunnel to securely enter an internet network , accessing resources ,data and communication via an insecure network such as internet. It also provides a means of accessing a secure, private internal network over insecure public networks such as internet. Factors such as cost, reduction upto 50%,secured transmission, low complexity, high speed, fast re-routing, simplicity, QoS enhancement and priority identification this technology finds places in all recent applications. Experts believe that this technology will be used in the future proofing of routing technologies to such an extent that this technology will outdate all the previous and currently existing technologies.



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The student should be made to:

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

UNIT I FUNDAMENTALS & LINK LAYER

9

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

UNIT II MEDIA ACCESS & INTERNETWORKING

9

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

UNIT III ROUTING

9

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

UNIT IV TRANSPORT LAYER

9

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

UNIT V APPLICATION LAYER

9

Traditional applications - Electronic Mail (SMTP, POP3, IMAP, MIME) - HTTP - Web Services - DNS - SNMP

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

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


PRINCIPAL**TEXT BOOK:**

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

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REFERENCES:

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



**AUTOMATED AND SECURE CONFIGURATION
IN IPV6 WITH POLICY BASED ROUTING**

A PROJECT REPORT

Submitted by

HARRYS RICHARDSON P

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DHINESH KUMAR U

311813106014

in partial fulfillment for the award of the degree

of

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in

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APRIL 2017

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INTERNAL EXAMINER
EXAMINER

EXTERNAL



ABSTRACT

The internet is a worldwide publicly accessible system of interconnected computer networks. Currently, two versions of the Internet Protocol (IP) are in use on the Internet namely IPv4 and IPv6. In some sense, there is a competition going on between these protocols, as they are not directly compatible, the aim of this project is to show the compatibility of Ipv6 packets through IPv4 and network providers and users are being forced to determine whether to support one or both protocols for various network services. In this project we are taking IPv6 network in GNS3 simulation tool configuring on both tunneling & dual stack method also implemented with Policy Based Routing scheme. By using Policy Based Routing (PBR), we can implement policies that selectively cause packets to take different paths based on source address, protocol types or application types. Therefore PBR overrides the routers normal routing procedures.



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

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CONCLUSION

Automated and secured configuration in **IPV6** with **POLICY BASED ROUTING** is implemented to overcome all drawbacks and drops in ipv6 to ipv4 compatibility. This technology offers us a very smooth and excellent network communication. With security we can also transfer our information much more confidentially. Also with the help of **POLICY BASED ROUTING** we can achieve a direction of a better path of communication.



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