

CATALOGUE OF B.E. PROJECT
REPORTS

BATCH 2014

BRANCH- EXTC

ABSTRACTS



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Introduction

The Library and Information Resource Centre team is happy to bring out this catalogue listing B. E. Project Reports submitted by the 2013-14 batch students to the Institute. This document covers abstracts of 36 projects submitted by 2013-14 batch students and are listed in alphabetical order under each year by the project title. Each entry of the project provides the bibliographical details, such as authors (with Roll number), title, page numbers, year of submission, supervisor name and abstracts. Accession Numbers have been provided to enable the user to locate a specific entry in this catalogue.

Hope you will find this document useful. We would be happy to have your comments and suggestions, if any, to improve this catalogue further.

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Library and Information Resource Centre Team

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BIBLIOGRAPHIES OF PROJECT REPORTS- 2014

1. **TITLE:** A Sudoku Based Wet Paper Hiding Scheme.

AUTHORS: Manish Singh (65)
Shashank Mahajan (69)
Janet Miranda (70)
Rupesh Prabhu (71)

GUIDE: Prof. Sheetal Mahadik

ABSTRACT: *The basic requirements of any data hiding scheme are good visual quality, high hiding capacity and robustness. Any hiding scheme employs a trade-off between these three factors, depending upon the application. During the course of our project we have studied the work "A Sudoku based Wet Paper Hiding Scheme" and implemented the same. The scheme implemented randomly selects a subset of dry pixels from the grayscale cover image for embedding. Toral automorphism is then applied to maximize the number of dry pixel pairs. A Sudoku solution is used to enhance the hiding capacity and the secret message converted to base-9 numeral system is embedded into one dry pixel pair. The embedded message cannot be extracted without knowing the secret parameters used namely, the toral automorphism parameter k , the PRNG secret seed s , and the number of dry pixels K . The results obtained by us are a PSNR > 46dB and a hiding capacity of upto 1.5bpp. The scheme was verified for different values of the secret parameters.*

Acc No.: PR985/ ExTC 235

2. **TITLE:** Fingerprint Enhancement using Directional Filter.

AUTHORS: Nyzel D'souza(22)
Ainsley Downer(30)
Edwin Abraham(43)
Benet Fino(45)

GUIDE: Prof. Kavita Sakhardande

ABSTRACT: *The important step in fingerprint matching is the reliable fingerprint recognition. Automatic fingerprint recognition system relies on the input fingerprint for feature extraction. Hence, the effectiveness of feature extraction relies heavily on the quality of input fingerprint images. In this project we implement a method on fingerprint image enhancement which would aid in extraction of lesser number of false minutiae. The steps involved in this*

method include Histogram Equalization, Local Ridge Orientation and Gabor filtering. The results achieved when compared with those obtained through some other methods show some improvements in the minutiae detection process in terms of accuracy and efficiency.

Acc No.: PR986/ ExTC 236

3. **TITLE:** Robot Localization and Self-Navigation.

AUTHORS: Shrimohan Jhawar (Roll No: 42)
Pushkar Shirwaikar (Roll No: 48)
Santosh Shukla (Roll No: 49)
Stalen Rumao (Roll No: 63)

Guide: Dr. Gautam Shah

ABSTRACT: *Now-a-days, there is a trend to automate our environment to simplify and enhance our lifestyle such as using a robot for household chores, logistics, etc. To enable such applications, it is required to fulfill some basic goals like enabling a robot to locate itself in a particular environment and navigate to a desired location on its own with an additional capability of detecting and avoiding the obstacles in its path. For this purpose, Monte Carlo Localization, also known as particle filter localization, is incorporated for robot localization. Given a map of the environment, the algorithm estimates the probable position and orientation of a robot as it moves and senses the environment. It comprises of practical experiments illustrating that the approach is able to localize a mobile robot, to reliably keep track of the robot's position, and to recover from localization failures.*

Acc No.: PR987/ ExTC 237

4. **TITLE:** Face Detection by Genetic and Ant Colony Optimization Algorithm.

AUTHORS: Akshay Belwalkar (Roll No.5)
Royson D'silva (Roll No.17)
Avishan D'souza (Roll No.18)
Neha Devale (Roll No.25)

Guide: Prof. Dr. A K Sen

ABSTRACT: *Face detection is a computer technology that determines the locations and sizes of human faces in arbitrary (digital) images and is one of the challenging problems in the image processing. It detects facial features and ignores anything else, such as buildings, trees and bodies. Human skin color is an effective feature used to detect faces, the basic difference is*

based on their intensity rather than their chrominance. This project is capped with two steps. First step is to identify different skin regions in the skin detected image.

The second step is to decide whether each of the skin regions identified is a face or not. This project aims to implement optimization technique, namely Ant Colony Optimization (ACO) and Genetic algorithm. Ant Colony Optimization adapts operations to enhance ant movement towards solution state and converges to the optimal final solution. Genetic algorithm is computationally intensive and possesses the ability with a global search quickly and stochastically.

Acc No.: PR988/ ExTC 238

5. **TITLE:** H.264/AVC Video Scrambling for Privacy Protection.

AUTHORS: Sandesh Dhavan (12)
Tracy Fernandes (32)
Rincy Gourea (37)

GUIDE: Prof. Susmita Dutta

ABSTRACT: *In this project, we aim to tackle the issue of privacy protection in video surveillance systems. Privacy protection in H.264/AVC will be achieved by scrambling the Region of Interest (ROI). The ROI is mapped, using H.264/AVC's error-resilience tool i.e. Flexible Macroblock Ordering, into foreground and background regions. We will be using transform domain approach for the scrambling process. The scrambling technique used is known as Pseudo Random Sign Inversion. This technique pseudo-randomly flips the sign of quantized AC coefficients. Another scrambling technique performs random permutation of transform coefficients in a block.*

Acc No.: PR989/ ExTC 239

6. **TITLE:** 3-D Visualization from 2-D Multislice MRI scans.

AUTHORS: Rahul Bangera (Roll No.50)
Tushal Desai (Roll No.51)
Bhoomika Ghosh (Roll No.55)
Pallavi Joshi (Roll No.59)

GUIDE: Prof. Vaqar Ansari

ABSTRACT: *In biomedical imaging, certain complex surgeries require information to be scanned at different angular planes which are non-obtainable from a regular MRI machine. 3-D reconstruction of the MRI would enable doctors to locate the tumor and estimate its dimensions explicitly. The purpose of obtaining three dimensional view is to give a perspective vision to the*

doctors, desirable for an unambiguous detection of tumor. 3-D reconstruction of MRI images involves implementation of various steps of extracting the tumor from the 2-D slices by various processes such as Mathematical Morphology and Image Segmentation. The volume of tumor has been estimated and the tumor has been smoothed to provide better visualization of the tumor. These processes can be implemented by using application software MATLAB and DICOM (Digital Imaging and Communications in Medicine) has been used for handling, storing, printing, and transmitting information in medical imaging.

Acc No.: PR990/ ExTC 240

7. **TITLE:** Versatile Wireless Foraging Robotic Arm.

AUTHORS: Gouri Desai (11)
Keith D'silva (16)
Bhaveshkumar Jha (58)
Joyce Joseph (62)

GUIDE: Prof. Dr. Deepak Jayaswal

ABSTRACT: *The primary objective of this project is to build a wirelessly navigable robotic arm whose movements can be controlled using a hand glove apparatus. The robotic arm can navigate using an array of white line sensors in presence of a light source to provide navigation to work as an obstacle detector and/or avoider. Wireless communication is enabled using Xbee S1 module. The mechanical assembly replicates casual human arm motions and additionally provides a 180° rotation of the arm which is made possible with servo actuators. The assortment of sensor modules available on the robot makes the robotic arm versatile and enables a prospective access to a wide spectrum of applications such as nocturnal forest foraging, routing during fatal electrical failure, victim detection during calamities and unmanned armored vehicle and weapon dispatch. In addition to the above features, the robot is integrated to perform stair climbing.*

Acc No.: PR991/ ExTC 241

8. **TITLE:** PID Control of Inverted Pendulum.

AUTHORS: Rushmere Fernandes (52)
Parth Gajera (54)
Ameya Patil (61)
Kuldeep Singh(64)

GUIDE: Prof. (Dr.) T.S. Rathore

ABSTRACT: *The motion of an inverted pendulum is similar to that of an unstable robot or a tall building swaying in presence of high winds. The instability in their motion arises due to the presence of external factors. This project aims at countering such factors by means of a control action.*

This project report is a brief history of the research done in the inverted pendulum. It discusses the evolution of inverted pendulum from a seismometer by Forbes to the rotary type pendulum by Futura. It also discusses the various mathematical models derived by Roberage.

A need for control theory rose during the World War II, but it reached its zenith during the cold war serving the purpose of controlling the launching of rockets. It is used in today's technology for balancing of robots, self-balancing vehicles and for keeping tall buildings steady in presence of winds. This provides for the motivation to implement control mechanism.

A control mechanism is required to sense the error and take the appropriate controlling action to keep the pendulum in an upright position. The MicroChip PIC acts as a Control System capturing and comparing error values; thus providing for the controlling action, thereby stabilizing the system. A Brief working of an H-bridge is provided. The H-bridge controls the action of geared dc-motor whose importance is explained. The control algorithm which directs the functioning of the Programmable Intelligent Computer is discussed.

Testing and comparing various algorithms are required in order to choose the most efficient algorithm. Designing of a circuit board is required to incorporate the sensors, PIC and pendulum. This will provide a hardware on which the algorithm will be tested; thus the balancing of pendulum can be observed.

Acc No.: PR992/ ExTC 242.

9. **TITLE:** Gait Analysis of Quadruped Robot.

AUTHORS: Mahesh Band (03)
Jessica Crescentia Jerome (41)
Cletus Menezes (44)
Vinod Gowda (57)

GUIDE: Prof. Vaqar Ansari

ABSTRACT: *The purpose of the study is to realize a quadruped robot with two degrees of freedom for each leg. The mobility and versatility are the two most important reasons for building quadruped robots. The robot will consist of eight joints, one at knee and one at the hip for each leg. The quadruped robot will be capable of performing different walking styles like walking in a straight line, walking in circular path and taking soft left and right turns. The actuator used for the robot's legs are high torque dc servo motor coupled with a gear assembly for torque amplification. Each leg will consist of two servo motors at the joints. Using the*

Arduino Mega the robot can be controlled manually to perform different gaits as and when required.

Acc No.: PR993/ ExTC 243.

10. **TITLE:** Wireless Data Transfer between Specific Pendrives.

AUTHORS: Rebecca Almeida (Roll No.01)
Clinton Dsouza (Roll No.19)
Bhavin Golavia (Roll No.56)
Mehul Mashrani (Roll No.60)

GUIDE: Prof. (Dr.) Uday Pandit Khot

ABSTRACT: *The project 'Wireless Data Transfer between Specific Pendrives' is based on Embedded system technologies. The aim of this project is to transfer data contents between data storage devices wirelessly. A pendrive is a flexible and portable data storage device. The project consists of a centralized module which comprises of a microcontroller, FTDI host controller interfaced together. The pendrives are connected to the FTDI host controller. The contents of the pendrive are selected by using the keypad and display. The project has certain advantages such as low power consumption, high portability and the ability to transfer data anywhere, anytime. Thus a compact, portable and wireless system to transfer data between pendrives is accomplished.*

Acc No.: PR994/ ExTC 244.

11. **TITLE:** 3D CANVAS.

AUTHORS: Nitesh Bawane (Roll No 02)
Suryabhan Bind (Roll No 03)
Frenciya D'cunha (Roll No 05)
Gration D'silva (Roll No 14)

GUIDE: Dr. Gautam Shah

ABSTRACT: *Drawing is a creative visual ability of the mind. Imagine waving the fingers in the air and magic, creation of a masterpiece, without using any paper or pen. The project aims at designing a system that can help realize this idea and create an interactive paint program in 3D consisting of hardware, a microcontroller, and a PC running MATLAB. All three modules strongly interacting to allow the artist to wave a pen around in space and see their*

movements translated in real time to various projections on the computer using ultrasonic technology.

The project is divided into two stages, estimation of the tri-lateraled position of the electronic pen and plotting this point using MATLAB. The former stage involves two major hardware stages, pen having the ultrasonic transmitter and an ultrasonic receiver set-up containing three ultrasonic receivers interfaced to a microcontroller. The pulse emitted from the pen will reach all the receivers at different time and this fact proves helpful to find co-ordinates of the point estimated by the brain of the project, the microcontroller. The data obtained is the sent to the later stage, the software MATLAB, for further plotting. This system can be used to serve as a facilitator of creativity but also finds certain relevant applications in today's times.

Acc No.: PR995/ ExTC 245.

12. **TITLE:** Wireless E.C.G. System.

AUTHORS: Vikas Gupta (38)
Akshay Jain (39)
Jayesh Jaiswal (40)
Nisharg Shah (47)

GUIDE: Prof. Mrs. Kavita Sakhardande

ABSTRACT: *The project is based on the measurement of ECG signals which are transmitted wirelessly using the low cost zigbee module. At the receiver side same type of zigbee module is used for receiving the wireless signals, transmitted by the transmitter module. The ECG signals are taken from the body using the disposable sensor, these signals are then forwarded to the port of PC for further processing of ECG signal, which are handled by a software to read the data packets and find data bytes which contain the measurement information and then to compare between the various predefined signals to detect abnormality conditions.*

Acc No.: PR996/ ExTC 246.

13. **TITLE:** Directional DCT for Image Coding.

AUTHORS: Roland D'sa (Roll No. 13)
Jason D'silva(Roll No. 15)
Melwyn D'mello(Roll No. 27)
Orison Fonseca(Roll No. 53)

GUIDE: Prof. Dr. T.S Rathore

ABSTRACT: *DCT is a technique used for converting a signal into elementary frequency components. However it cannot be applied to a block in a direction other than vertical and horizontal. This limitation is overcome by using Directional DCT (DDCT). DDCT allows an image to be processed in different directions assigned to each block in the image. DDCT is used in the images having dominant directional edges. In this project we implement a technique in which the first transform may follow a direction other than vertical or horizontal one, while the second transform is arranged to be only in a horizontal one. By comparing the results from all the modes, the mode having the highest PSNR is selected. The project serves as a basis to highlight the differences between DCT and DDCT.*

Acc No.: PR997/ ExTC 247.

14. **TITLE:** Affective Visualization and Retrieval for Music Video.

AUTHORS: Joel Alva (02)
Samar Chavan (08)
Lionel D'souza (20)
Anneleishea D'souza (21)

GUIDE: Mrs. Savita Kulkarni (Assistant Professor)

ABSTRACT: *Music Videos (MV) are an important form of entertainment to people in their leisure time, as they bring about both audio and visual experiences to audiences. By combining psychological basis and computer science, affective video content analysis identifies emotional information in videos by extracting the Arousal and Valence features and fusing these features in established affective models through Linear Regression. An integrated system is proposed to sort as well as personalize Music Videos for affective analysis, visualization and retrieval according to the user's feedback. This system can be evolved into mobile device applications, giving the user an altogether different experience.*

Acc No.: PR998/ ExTC 248.

15. **TITLE:** Steganographic Data Embedding in Digital Images using HoEMD Method.

AUTHORS: Yash Chhajed (07)
Geethu Aricatt (66)
Yonelle D'souza (67)
Renita Furtado (68)

GUIDE: Prof. Sheetal Mahadik

ABSTRACT: *The Internet with the ever expanding modernization around the world, today, uses various different methods to hide data by embedding it in various file formats by the*

process of Steganography, which refers to the science of “Invisible Communication”. There exists a large variety of Steganographic techniques, some are more complex than others and all of them have respective strong and weak points. The methods used in pragmatic applications till date are LSB (Least Significant Bit), PVD (Pixel Value Differencing), LSB with PVD and EMD (Exploiting Modification Direction) but all sustain a major problem of the trade-off between the embedding capacity and the quality of the image. Also, the data hidden using these methods are easily perceptible and can be detected. Our project study is to overcome the problems of the previous methods is achieved by using the proposed method of Highlight of Exploiting Modification Direction (HoEMD) and Adaptive Exploiting Modification Direction (AdEMD). Adaptive Exploiting Modification Direction (AdEMD) method uses the module operation and takes into account the sensitive nature of the human visual system. The AdEMD approach exploits the pixel directions. A pixel with a larger change implies more pixel directions and ultimately, a largely embedding capacity. To successfully extract a message, the differencing value is maintained on the same level before and after a data is concealed; a delicate adjusting phase is used as well. The user defined values of k1 and k2 determines the embedding capacity of the image. For maximum values of k1 and k2, there is a trade-off between embedding capacity and distortion. Thus values of keys should be in the range of 2-12.

Acc No.: PR999/ ExTC 249.

16. **TITLE:** Online Signature Verification.

AUTHORS: Amol Desai (10)
Praveen D’souza (23)
Joslyn Fernandes (31)
Siddheya Ghadigaonkar (34)

GUIDE: Prof. Pallavi Patil

ABSTRACT: *Signature, a form of handwritten depiction, has been and is still widely used as a proof of the writer’s identity/intent in human society. Online signatures represent the dynamic process of handwriting as a sequence of feature vectors along time. Dynamic time warping (DTW) has been popularly adopted to compare sequence data of varying length. This system can be used as a security system such as verification for assessing entry application and password substitutions. Online Signature Verification technology requires primarily a digitizing tablet and a special pen connected to the universal serial bus port (USB port) of a computer. An individual can sign on the digitizing tablet using the special pen regardless of his signature size and position. The signature is characterized as pen-strokes consisting x-y coordinates and pressure with the data being stored in the signature database in the form of a .txt file. These characteristics uniquely identify a person and cannot be mimicked or stolen. This system accepts 30% of forged signatures and rejects 10% of true signatures using linear discriminant analysis while it accepts 0% of forged signatures and rejects 2% of true signatures using quadratic discriminant analysis.*

Acc No.: PR1000/ ExTC 250.

17. **TITLE:** Real Time Bus Arrival Prediction System.

AUTHORS: Sharon Dias (Roll No.26)
Livia Ferrao (Roll No.33)
Armando Gonsalves (Roll No.35)
Frank Rodrigues (Roll No.46)

GUIDE: Prof. (Dr.) Uday P Khot

ABSTRACT: *The project “Real time bus arrival prediction system” is based on global positioning system. This project aims to obtain the real time of bus arrival at the bus stop by using a GPS system. The GPS system is used in order to receive the location and the speed of the bus. Transmitting this data to the receiver, the receiver will calculate the arrival time of the bus which will be displayed to the commuter using that particular bus service. The system will be a transparent real time system and a standalone system. The independent behavior of the system is a significant asset of this project. It proves to be cost effective as there is no need of a control unit. This has thus no hassles regarding overcrowding of the control server. The challenge is to make a real time project wherein an attempt is made to make an instantaneous system which also considers the halt time so that the real time condition is accomplished.*

Acc No.: PR1001/ ExTC 251.

18. **TITLE:** Hexapod Robot using Optical Odometry.

AUTHORS: Godson Dabre(Roll No.24)
Roger D’mello(Roll No.28)
Lawson D’monte(Roll No.29)
Searock Gonsalves(Roll No.36)

GUIDE: Prof. Dr A K Sen

ABSTRACT: *One of the most important issues for autonomous mobile Robots is their ability to navigate safely and reliably within their environments. Hexapod robot is one of the robots used in this situation because of its stability and flexibility during the motion on any type of surface. The objective is to design and demonstrate a Hexapod Robot by using concept of Optical Odometry. This Robot consists of six legs. The actuator used for the legs are high torque dc servo motors coupled with a gear assembly for torque amplification. Each leg will consist of three servo motors at the joints. This motors being controlled by arduino mega 2560 and optical*

sensor IC provides the co-ordinates. The X and Y coordinates provided by optical sensor can be used to determine the distance and direction in which robot has traveled. The purpose of the hexapod robot with Optical Odometry is to ease the movement either on the flat surface or on the inclined surface.

Acc No.: PR1002/ ExTC 252.

19. **TITLE:** Design of Butter-Cheby Bandpass Filters.

AUTHORS: Jason Pereira (23)
Aldon Vaz (43)
Jagdish Yadav (53)
Jaikisan Mishra (60)

GUIDE: Mr. Inderkumar Kochar

ABSTRACT: Bandpass filters (BPF's) are used extensively in Wireless Communication systems. They also find applications in multiplexers which are instrumental in reducing the mass and volume of these systems. Thus, the design of bandpass filters is important and the type of the filter depends on the filtering functions being used. In this report, a design method for bandpass filters with an even number of resonators is presented to have equal termination impedances for compact size and ripples for a wider bandwidth. Since the filter to be designed has advantages of both Butterworth and Chebyshev filters, it is called Butter-Cheby filter to distinguish it from conventional filters. To verify the design method, a Butter-Cheby Bandpass filter is fabricated with distributed and lumped elements and measured at the designed center frequency of 1GHz. The results are in good agreement with the predicted results taking into account the various losses encountered.

Acc No.: PR1003/ ExTC 253.

20. **TITLE:** BER Performance of MIMO System.

AUTHORS: Niranjana Naik (14)
Ashton Nunes (16)
Rohan Raj (26)
Edwin George (42)

GUIDE: Prof. Kavita A. Sakhardande

ABSTRACT: MIMO technology has made much advancement in the field of communication. We study the working of a MIMO system with its benefits and limitations; we

also have a brief idea of how multipath propagation affects the system positively. We also study the various aspects of wireless propagation which include different types of wireless channels, the different types of fading and a study of channel coefficients. We simulate a Multiple Input Multiple Output(MIMO) wireless systems using Zero Forcing Equalization over Flat channels. We calculate the BER for different antenna configurations; we keep the number of transmit antennas constant and increase the number of receive antennas and observe that the BER plot improves as the number of receive antennas increases. We also plotted the BER for the system with the simultaneous increase in the transmit and receive antennas.

Acc No.: PR1004/ ExTC 254.

21. **TITLE:** Secret Sharing Technique Using QR Codes.

AUTHORS: Tanmay Sawant (31)
Payal Shah (35)
Radhika Sule (37)
Cleon Quadras (65)

GUIDE: Prof. Susmita Dutta

ABSTRACT: Secret sharing using QR Codes can be used for exchange of data which requires high security. A secret data is divided into shares to improve the security of data using Shamir's secret sharing mechanism. QR codes are employed to store the shares which further enhance the secrecy. The secret data can be retrieved correctly only when the number of shares in QR code form is equal to or greater than the predefined threshold.

Acc No.: PR1005/ ExTC 255.

22. **TITLE:** Monitoring and Controlling of LAN using GSM Devices.

AUTHORS: Kirk Quadros (25)
Merin Shaila (59)
Tracy Monteiro (61)
Neal Andrade (63)

GUIDE: Prof. Jayasudha Koti

ABSTRACT: This project aims at creating an access to the desktops and LAN of remote computer systems with the use of a Java based cellular phone. This process will be carried out using Virtual Network Computing based architecture. A user will be able to access and manipulate the desktops of remote computers through a VNC viewer that will be provided on the user's cell-phone. Conditions that must be followed are that a VNC server must be installed

on the person's computer which will be monitored and it must be connected to a network. The user can access and manipulate the desktop. The image of the desktop is compressed before it is transmitted to the cellular phone. There are several functions provided so as to ease the viewing on cellphones. The prototype is already implemented using java and tested on a java based cellular phone.

Acc No.: PR1006/ ExTC 256.

23. **TITLE:** Automated Electricity and Gas Meter Reading.

AUTHORS: Vrushali Mestry
Jimit Salvi
Akash Jain
Chirag Vasani

GUIDE: Prof. Sheetal Mahadik

ABSTRACT: *Presently electronics energy measurement is continuously replacing existing technology of electro-mechanical meters .Our Projects aims to study wireless digital energy meter which would offer great convenience to the meter reading task Initially we started to work on a hardware based meter reading system using Bluetooth technology. The major issues related with Bluetooth technology is connectivity issue. The same problem was encountered with zigbee based system. Also the system became too complex with zigbee and the cost was also increased. Solution to this issue was found by using Android Technology. We then created a server based application using android technology wherein the issue related to connectivity was eliminated with the use of GPRS technology for connectivity. The Energy Reader can collect the energy consumption reading from the Energy Meter wirelessly based on Android. Thus a system where we can retrieve the meter reading with little human intervention is implemented.*

Acc No.: PR1007/ ExTC 257.

24. **TITLE:** Automated Music Genre Classifier.

AUTHORS: Shejal lopes (08)
Sterina Pen (22)
Sneha Rodrigues (27)
Sarah Sequeira (33)

GUIDE: Prof. Santosh Chapaneri

ABSTRACT: *Music genres can be seen as categorical descriptors used to classify music based on various characteristics such as pitch, rhythmic structure, instrumentation and harmonic contents. Automatic music genre classification is important for music retrieval in large*

music collections on web. In our project we have used various features such as MFCC, zero crossing, spectral centroid, root mean square, spectral flux etc. to represent each music clip and Support Vector Machine (SVM) is used for classification. We have achieved an accuracy of 63% with SVM classifier. Our project demonstrates music genre classification for 4 genres- metal, pop, jazz and classical.

Acc No.: PR1008/ ExTC 258.

25. **TITLE:** M-Payment using NFC.

AUTHORS: Shruti Pawar (21)
Prajakta Sane (30)
Anuja Wani (44)
Roshni Kothari (45)

GUIDE: Mrs Savita Kulkarni (Assistant Professor)

ABSTRACT: *The Near Field Communication (NFC) technology allows mobile phone to communicate with the surrounding devices just by placing it in the near field region, M-Payment using NFC can be an alternative mobile based solution that aims at replacing current payment solutions like credit card, debit cards and cash with a simple touch to a NFC enabled device like a reader. This reader acts as an initiator which can be used to replace swipe machine and it continuously generates RF field at 13.56 MHz. A user can take an advantage of this system by downloading an android application on his NFC enabled smartphone.*

Acc No.: PR1009/ ExTC 259.

26. **TITLE:** Smart Robot Navigation and Control using Mobile.

AUTHORS: Ajinkya Kulkarni (05)
Tejas Kulkarni (06)
Hardik Shah (67)
Virendra kumar Sharma (68)

GUIDE: Prof. (Dr.) Uday Pandit Khot

ABSTRACT: *This project aims to design a smart robot which is controlled by a phone using DTMF technology. DTMF is a forgotten technology and has a major advantage over Radio frequency that it provides a much larger range as large as the entire coverage area of the cell. The robot is equipped with a mobile in auto answer mode which will receive dtmf tones from the sender mobile when called. These dtmf tones are used to direct the robot and an infrared sensor is used to avoid obstacles in its path and retain the same direction. There are two aspects of the project one is control via mobile and second is obstacle avoidance. The designed robot was*

found to give satisfactory performance when tested. The project has wide range of applications especially in fields such as military, industrial, domestic and medical.

Acc No.: PR1010/ ExTC 260.

27. **TITLE:** Turbo Decoding.

AUTHORS: Zeyn Misquitta(Roll No.12)
Allan Selvan (Roll No.32)
Heena Sharma (Roll No.36)
Tincy Mary Varghese (Roll No.41)

GUIDE: Mr. Inder kumar Kochar

ABSTRACT: *This project proposes to implement an improved Max-Log maximum a posteriori (MAP) algorithm for turbo decoding that achieves almost reliable data communication at signal to noise ratios very much close to Shannon limit. The algorithm utilizes MacLaurin Series to expand the logarithmic term in the Jacobian logarithmic function of the Log-MAP algorithm. Using simulation results, we intend to compare the performance of the algorithm over additive-white-Gaussian noise channel and Rayleigh fading channels for different SNRs using BER tool.*

Acc No.: PR1011/ ExTC 261.

28. **TITLE:** Automatic Emotion recognition From Hindi Speech.

AUTHORS: Abhi Naik (13)
Nupur Patel (19)
Swati Pote (24)
Shruti Kuppikar (46)

GUIDE: Prof. Santosh Chapaneri

ABSTRACT: *Recently increasing attention has been directed to the study of the emotional content of speech signals, and hence, many systems have been proposed to identify the emotional content of a spoken utterance. Two channels have been distinguished in human interaction: one transmits explicit messages, which may be about anything or nothing; the other transmits implicit messages about the speakers themselves. Both linguistics and technology have invested enormous efforts in understanding the first, explicit channel, but the second is not as well understood. Understanding the other party's emotions is one of the key tasks associated with the second, implicit channel. This project of Emotion Recognition from Hindi Speech addresses to three main aspects of design of speech emotion recognition system. The first one is the choice of suitable features for speech representation. The second issue is the design of an*

appropriate classification scheme and the third issue is the proper preparation of an emotional speech database for evaluating system performance.

For our project we have used Mel Frequency Cepstral Coefficients (MFCC) to calculate the features of the input speech signal and sparse DTW algorithm has been implemented for feature recognition. Using Sparse DTW for feature recognition has improved space efficiency and time complexity. Our implementation of automatic emotion recognition system (using matlab) provides an accuracy of over 75% for 5 emotions namely: happy, sad, surprise, anger and neutral over a database containing large variety of speakers.

Acc No.: PR1012/ ExTC 262.

29. **TITLE:** Enhanced PAPR in an OFDM System.

AUTHORS: Abhishek Joshi (02)
Jay Joshi (03)
Pooja Kamthe (04)
Divyesh Mehta (10)

GUIDE: Prof. Jayasudha Koti

ABSTRACT: Orthogonal frequency division multiplexing (OFDM) is a special case of multicarrier transmission where a single data stream is transmitted over a number of lower rate subcarriers for high data rate transmission. Yet, OFDM consists of high Peak to Average Power Ratio (PAPR) as a drawback. There are many techniques like distortion techniques, coding techniques and scrambling techniques for reducing the PAPR and overcoming problems caused by high PAPR. In this project, one of the distortion techniques known as Clipping has been used with different channel coding and modulation techniques to obtain a lower PAPR. Obtaining a higher efficiency with enhancement in the PAPR of the OFDM system is the ultimate goal of the project.

Acc No.: PR1013/ ExTC 263.

30. **TITLE:** Handwritten Indian Script Identification.

AUTHORS: Aakanksha Jadhav (1)
Richa Patel (20)
Vishal Saini (28)
Mili Shah (34)

GUIDE: Ms. Pallavi Patil (Asst. Prof)

ABSTRACT: India is a country with many religions and the number of languages is as vast as the cultures. It has a total of 13 scripts which are used to write 23 official languages. For development of General Optical Character Recognizer (OCR) for a particular language in India,

the script by which the document is written needs to be identified first. The task is more challenging when it comes about handwritten documents. In this report, a technique for word-wise identification of Roman, Devanagari, Urdu and Kannada scripts from a document is projected. Using characteristics of different scripts, the identification scheme was developed. For Mathematical features, Structure based features and Script dependent features, series of classifiers are used. In the scheme, the script of a character group is identified combining different character features obtained from structural shape, profile behavior, component size information, water reservoir concept, etc. The overall accuracy of the system developed is found to be ranging from 94.38% to 96.99% for different scripts.

Acc No.: PR1014/ ExTC 264.

31. **TITLE:** Automatic Ambulance Rescue System.

AUTHORS: Kashish Teli (39)
Shreya Hegde (54)
Siddhesh Jagdale (55)
Vishal Karkera (57)

GUIDE: Dr. T S Rathore

ABSTRACT: *The delays in approaching to the place of accident and in the arrival of ambulance to the hospital may cause the loss of life. Such delays are mainly caused by the waiting of the ambulance in the traffic signals. This project is, therefore, aimed to reducing these delays. For easy access, a database is maintained by a server and hence it will have a unique identity for addressing it and its GPS coordinates are also stored in the database. Thus using these data the ambulance is guided to the hospital by the server through the shortest route and along the path which has less traffic density. We are simulating the entire network of traffic signals using C# language.*

Acc No.: PR1015/ ExTC 265.

32. **TITLE:** Securing AODV Routing Protocol from Black-Hole Attack.

AUTHORS: Mukesh J Kumar (07)
Siddharth S Nair (15)
Sanketh S Nayak (62)
Pranav A Pai (64)

GUIDE: Prof. Gautam Shah

ABSTRACT: *Mobile Ad hoc Networks (MANETs) are extensively used in military and civilian applications. The dynamic topology of MANETs allows nodes to join and leave the network at any point of time. Ad hoc On Demand Vector (AODV) is a reactive routing protocol in*

MANETs. Although the protocol has been around for quite some time, but there are still security issues which have made it vulnerable to various attacks such as Black hole which tremendously affects the network performance. MANET nodes perform the routing functions themselves. Due to the limited wireless transmission range, the routing generally consists of multiple hops. Therefore the nodes depend on one another to forward packets to the destination. Network Simulator 2 (NS 2.35) is used to conduct simulations and consider scenario for detecting attacks.

Acc No.: PR1016/ ExTC 266.

33. **TITLE:** Image Inpainting based on Pyramids.

AUTHORS: Priyank Marthak (9)
Himanshu Vaidya (40)
Gayatri Nayak (47)
Janice Nazareth (48)

GUIDE: Prof. Pallavi Patil

ABSTRACT: Restoration of damaged images is as old a concept, as imagery itself. The historical images and old photographs suffer from breaks in the substrate, paint or the varnish. This can be caused by ageing, drying, mechanical factors and also due to cruelty of time and people. Hence they need a fine retouch by a skilled artist. Image Inpainting is a virtual restoration technique used to remove the damaged regions or recover missing regions in images from the information in its surroundings in a visually plausible manner. This technique will provide clues to art historians, museum curators and the general public of the damaged image in its initial state. This report presents an approach of image inpainting using the method based on pyramids. The pyramid technique is based on structural synthesis. The main idea here is to use reduce and expand functions. First the image is reduced to a value where the damaged region is overlapped by the surrounding pixels. Then we expand the image and add them in each level to get the final restored image.

Acc No.: PR1017/ ExTC 267.

34. **TITLE:** Medical Image Fusion.

AUTHORS: Ajinkya Rasam (49)
Nikita Redkar (50)
Aditya Sawant (51)
Krina Trivedi (52)

GUIDE: Prof. Vaqar Ansari

ABSTRACT: Joint analysis of medical data collected from different imaging modalities has become a common clinical practice. Therefore, image fusion techniques which provide an

efficient way of combining and enhancing information have drawn increasing attention from the medical community. The successful planning of a surgery depends on the accuracy of the image obtained from medical imaging techniques. Medical image fusion acts as a 'life saving tool' thus it has emerged as a promising research field in recent years. The aim of medical imaging is to obtain a high resolution image with more information for the sake of diagnostic purposes. Transform is applied to each source image. The resulting coefficients are fused and reconstructed using inverse transform rules. The results are efficient and improve the Entropy, PSNR, and MSE than other conventional methods and free from undesirable effect.

Acc No.: PR1018/ ExTC 268.

35. **TITLE:** Selective Encryption and Scalable Speech Coding for Voice Communication.

AUTHORS: Carl Oliveira (Roll No.17)
Ankesh Parasramka (Roll No.18)
Allan Tauro (Roll No.38)

GUIDE: Prof. Jayasudha Koti

ABSTRACT: *For wireless communication systems, improvements have been achieved in reducing bitrate and the bandwidth and to achieve reliable and efficient, yet secure, voice communication is important and so, providing bandwidth efficient speech coding along with security against passive eavesdropping solves this. The method includes the combination of scalable speech coding methods with selective encryption of the data stream. Scalable speech coding refers to the coding schemes that reconstruct the speech at different levels of accuracy and quality at various bit rates Selective encryption is a technique wherein only a selected subset of the transmitted data is protected and the remainder of the data stream is sent in the clear. By not encrypting the entire data stream, valuable node resources is conserved. Encryption of the core layer only is sufficient to ensure a high level of protection against eavesdroppers, thus significantly reducing the signal processing power needed for encryption and decryption in comparison to encryption of the full bit stream.*

Acc No.: PR1019/ ExTC 269.

36. **TITLE:** Channel Estimation for MIMO-OFDM System.

AUTHORS: Lijo Joseph (58)
Darpan Shah (66)
Elroy Silveira (69)
Wilfred William (70)

GUIDE: Prof. Savita Kulkarni (Assistant Professor)

ABSTRACT: *Wireless Communication Technology has developed many folds over the past few years. One of the techniques to enhance the data rates is called Multiple Input Multiple Output (MIMO) in which multiple antennas are employed both at the transmitter and the receiver. Multiple signals are transmitted from different antennas at the transmitter using the same frequency and separated in space.*

Various channel estimation techniques are employed in order to judge the physical effects of the medium present. In this project, analysis and implementation of various channel estimation techniques for MIMO OFDM Systems such as Least Square and Minimum Mean Square algorithm are carried out. These techniques are therefore compared to effectively estimate the channel in MIMO OFDM Systems.

Acc No.: PR1020/ ExTC 270.

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