Bharatiya Vidya Bhavan's

SARDAR PATEL INSTITUTE OF TECHNOLOGY

Munshi Nagar, Andheri (West), Mumbai 400058.

LIST OF PROJECTS

Academic Year 2010-11

SR. NO.	NAME OF STUDENT	TITLE OF PROJECT	ABSTRACT
1	Iyer Anjana Paranjape Rhucha Sahare Hemangi Walavalkar Chaitali	**Rain rate monitoring and Flood prediction model**	This Project involves monitoring of rainfall rate from the degree of corresponding microwave attenuation, followed by prediction of time taken for a particular region to flood, given a particular rain-rate. The scope of the project is those cities which experience heavy rainfall and in turn suffer loss of life and property due to such rain floods. With this technique, it is possible to monitor rain-rate in real time and reduce the prediction time. Also this method of prediction can be applied to any region, provided the necessary data is available
2	Adsul Sneha Hule Shraddha Joanne Antony Naik Amita	**Emotion Detection & Recognition using Facial expressions & Body gestures.**	Affect sensing by machines has been argued as an essential part of next-generation human-computer interaction (HCI). In this project, we have extended this idea using multimodal emotion detection technique to recognize extreme emotions so that this concept can be used in various real time applications successfully. This project is made in view of its use in rating advertisements by detecting and recognizing emotions of a person viewing the advertisement. In our project, we have considered the fusion of two modalities viz. facial expressions and body gestures of the subject in concern.
3	D'Souza Cavill Mulkutkar Shreyans Savla Kinn	**Implementation of Swarm Intelligence in Wireless Sensor Networks**	The project aims to implement an adaptation of a Wireless Sensor Network (WSN) as a swarm of sensor nodes and replicate the behavior of naturally-occurring swarms in WSNs. It is intended to develop an energy-efficient, self-organizing structure and routing algorithm that increases network lifetime; and incorporate nature-inspired behavior for optimization purposes using Swarm Intelligence. Optimization Algorithms such as Particle Swarm Optimization (PSO) and Ant Colony Optimization (ACO) are being used.
4	Parab Nikhil Nathan Mark Gupte Chinmay	**Pattern Recognition and Feature Extraction for authentication of documents.**	Our project aims at authentication of blank documents using the scanned images of various types of papers. We try to extract the unique features of the underlying texture of the paper and use is for the characterization of the document for its identification and verification. The techniques used for authentication include region growing algorithm, LOG (Laplacian of Gaussian) and PCA (Principal Component Analysis).
5	Ghodake Amit Singh Rishu Vartak Neha Zafar Shaadab	**Offline Handwriting Recognition using Neural Network**	In this project, a robust method for offline handwriting recognition is presented. A basic algorithm for handwriting segmentation has been described here. With the help of this algorithm the input handwritten image is segmented into characters. Each of the segmented characters is then fed into the advanced neural network. The neural network has been designed for various algorithms. Also a robust algorithm has been suggested which chooses the best output among a pool of differently trained networks . The system has been tested to give an efficiency of 82% with the help of this algorithm. The final output of the system is the recognized text which can be further processed on a word application.

6	Agarwal Ishan Agashe Amod Bhivagaje Pratik	**Location Based Advertising and Passenger Convenience System Using GPS and GSM**	The project aims at creating a model of a cost-effective advertising method for small retailers in public transport systems. GPS is used as the core technology for the project. Passengers commuting through public transport buses usually have to wait at stops for their buses. This leads to a lot of inconvenience to passengers especially to people commuting through buses with low arrival frequency. The project also aims at developing a GSM based passenger convenience system which will respond to passenger requests about the bus' current location. This not only saves the valuable time of the passenger but also schedule their journey as per their convenience
7	Baliga Pooja Bhatt Yesha Doshi Karan	**Gesture Based Touchpad Security System.**	The proposed technique makes use of a touch sensitive device. Unlike other techniques, we would also take time into account to prevent password theft. A gesture input interface is configured to convert a continuous gesture from a user into an input trajectory. Using this device, a user enters a combination of symbols by using a finger. The dimensions used to represent the password are the shape of each symbol, and the time taken when doing each of the traces. Using this representation, the user is forced to think of and memorize passwords in a more qualitative manner, and is also prevented from using bad habits such as storing passwords in text files.
8	Patel Jeegar Patwardhan Jaydeep Sankhe Kunal	**Noise reduction using fuzzy image filtering.**	A filter for additive noise reduction is designed using fuzzy logic to overcome the inefficiency of conventional filters like median filter. The various stages are based on the different fuzzy rules which make use of membership functions and the specific techniques for fuzzification and defuzzification. The stages involve the fuzzified noise pixel determination algorithm and then the noise reduction algorithm. A fuzzy derivative is developed, which considers the neighbouring pixel values of a particular pixel for determination and then proper reduction of noise.
9	Bhatia Pratik Patil Rushikesh Supekar Shidhesh	**Intrusion Detection System using Neural Network**	This project aims to utilise the predictive and manipulative characteristic of Artificial Neural Network in the field of Network Security. Signatures of attacks can be used to train a neural network to a desired tolerance and the trained network can be further used to detect and classify the attacks. Our project uses Back propagation algorithm along with Tan-Sigmoidal activation function to train the network. The required training data is obtained from MIT-Lincoln labs DARPA training sets. The tcp-dump files are sniffed using PCAP utility and required characteristics are extracted. The Network thus trained can then be used to detect corresponding attacks with high efficiency.
10	Borkar Nishita Jain Dipesh Jain Jaimik	**RFID based Intelligent Book Shelving System**	In this project an RFID based library management system has been proposed. It eases the process of locating books in the library. (RFID) based intelligent book shelving system has been developed in this project, to provide an efficient mechanism of books' management and its monitoring through serial communication between the RFID reader and the books. By associating book-tag IDs with shelf-tag IDs through periodic tag scanning, we can identify the exact location of the book we are searching for by implementing the algorithm described in the project.

11	Kadam Amey Gudekar Amit Jajodiaya Krishna	**Electro Occulography Gesture Recognition**	This project describes an eye control method based on electro-oculography (EOG) to develop a system for assisted mobility. This project describes the development of a neural networks gesturer recognition system whereby one can control an electronic device by using the components of the brain wave bio-potentials. Such a system may be used as a control device through human eye-movements, facial muscle and brain wave bio-potentials. The trained neural network can effectively recognize user intention, left or right based on EOG signal. This technique could be useful in multiple applications such as mobility and communication aid for handicapped persons.
12	Kanade Saket Kokane Kiran Koul Manish	**Handheld Audio Spectrum Analyzer using ARM7**	In this project an ARM7 (LPC2148) micro-controller is used to do a FFT algorithm. The tricky part about FFT on such microcontrollers is dealing with complex numbers that are also real. Project is set up on ARM prototype board, which is equipped with all necessary peripherals like LCD, MAX232 converter. Program is developed under ARM-GCC compiler. Audio signal is sampled by LPC2148 internal ADC with sampling frequency of 40 kHz .FFT algorithm calculates the chunks of 256 samples and produces the graphs on Graphic LCD. This is a great project to get in to DSP world.
13	Fofani Ankit Umekar Aniket Waghmode Rajkumar	**Road Traffic Prediction Using Hidden Markov Model.**	This Project proposed a stochastic model approach for short-term traffic prediction during peak periods. The variables were selected for HMM hidden traffic state definition by using Principle Component Analysis (PCA). The method of Hidden Markov Model (HMM) is used to predict the traffic conditions. This approach is based on the traffic state transition probabilities. It defines traffic states in a two dimensional space using both first and second order statistics of traffic parameters. In short this method will predict the short term traffic conditions.
14	Bagade Guruprasad Shaikh Saud Shinde Sagar Bansilal	**Explosive Detection with Mobile Telephony**	The basic idea of the project is to create a mechanism for explosive detection in any populated area by the use of a mobile phone. To achieve this, one has to combine the strength of the mobile phones and gas sensors. The system is capable of detecting explosives within a defined territory. Once detected, the mobile phone will alert the user about the presence of explosives in the vicinity by generating an SMS or a call. In this way, it will ensure the safety of the user. The explosive detection system can be further modified to help government trace explosives more quickly and also ensure the isolation of suicide bombers.
15	Shirodkar Manisha Sarfare Sneha Sanghavi Mihir	**Internet controlled spy robot**	A feature of remote control laboratories is that users can interact with real mobile robot motion processes through the Internet. Our method aims at using the web browser for transferring the commands from the remote client operator to the robot's control desk through a server which eliminates the need for costly equipments, complicated software's and also consumes only a low bandwidth with high level of security. This paper deals with the web based remote control of the wheeled mobile robots motion in an unknown environment with obstacles. We would like to highlight is eliminating the need for installing client side software's since the whole process can be done using the web browser accessed from computer or laptop or even gprs activated mobile.

16	Adajania Vispi Agrawal Manisha Dandekar Swapnil	**Embeded Web Server application based Automation & Monitoring System**	The Appliances in case of Home Automation System and processes in case of Process Monitoring System are interfaced to PC based Servers. This requires Servers to be on all time and increases the producing cost. Embedded Web Server is a single-chip implementation of the Ethernet networking standard. By embedding Ethernet onto a device, it has the capability to communicate via Ethernet without using a computer. This project is a development of a low-cost electronic prototype, designed for monitoring and controlling home appliances via web browser. At the same time, users can monitor the security situation at home in real-time, through the smoke and gas sensors installed at home.
17	Sharma Shilpa Garudkar Poonam Meshram Bhavna	**ZIGBEE Based Wireless Weather Monitoring with Earthquake Detector**	The Wireless weather monitoring system is a robust outdoor weather monitoring system coupled with an indoor LED display. The outdoor system consists of a microcontroller, temperature sensor, humidity sensor, vibration sensor and a wind sensor. Once per minute, the system transmits the data it has collected to the indoor microcontroller by ZIGBEE 2.4 GHz module , where the signal is decoded and the information is displayed on LCD.
18	Balwalli Sagar Sanghvi Anish Shah Nishit	**Energy Efficient Routing Protocols For Wireless Networks.**	Energy consumption is a crucial design concern in wireless networks since wireless nodes are typically battery limited. The rational of our motivation is that most of the routing protocols are designed only based on one criterion, e.g. shortest path or residual energy. Therefore, we propose routing schemes EE-AOMDV and OP-AOMDV which considers multiple criterions. These protocols extend the node-disjoint version of Ad hoc on-demand Multipath Distance Vector (AOMDV). In EE-AOMDV protocol, we consider both the hopcount of the route and residual energy of the node and determine energy efficient route with the help of Back Propagation Neural Network. In OP-AOMDV, we consider shortest path, residual energy and the EE-AOMDV scheme based on certain conditions. . We also propose a routing protocol to solve the problem of inefficiency in energy consumption using the technique of Clustering in the DSR protocol.
19	Mejari Manas Naik Anil Thakur Rahul	**Underwater Communication using OFDM acoustic modem.**	An underwater acoustic communications system based on multicarrier modulation technique (OFDM) is proposed. This technique is relatively robust in a strong multipath fading environment and hence can be implemented for underwater communication. The main objective of this project is to propose set of models and guidelines to ascertain that the designed system achieves a desired value for communication parameters like BER, attenuation, distance, ISI etc. for different underwater channels (i.e. shallow, sea and ocean) by comparing and analyzing various channel coding and modulation schemes.
20	Jain Ankush Ankit Purohit Yashvardhan Chamaria	**Simulation of WiMAX using NS2**	We have employed the NDSL WiMAX module which supports the five QoS classes of WiMAX in terms of bandwidth management and priority management. We have proposed to analyze the performance of the simulation model in various scenarios. The throughput of UGS, rtPS and ertPS QoS classes has been computed in free space, line-of-sight and noisy scenarios. This analysis provides us with the functioning of a WiMAX system under various propagation scenarios.

21	Ghabak Prashant Joshi Akshay Kotia Shrey	**Bandwidth Aware Streaming over wireless networks**	Uninterrupted and error free transmission of multimedia over wireless networks is still a difficult task. In our research, we have performed various experiments by streaming various video formats using various streaming protocols to analyse the performance of wireless networks under noisy conditions. The aim of the research is to device a scheme for error-free transmission of multimedia over wireless networks in presence of noise. For analysis of multimedia traffic on wireless networks a mobile application has been developed to measure the various performance metrics in real-time conditions.
22	Mishra Nishant Shah Karna Shami Gauravdeep Singh	**Dynamic Spectrum Allocation for Wireless Networks**	There is a need to explore and exploit spectrum holes. The objective of this work is to develop a holistic Dynamic Spectrum Allocation System which can be used in wireless networks. As such, spectrum prediction becomes an inevitable procedure, to not only predict spectrum vacancies, but also prevent interference with the incumbent users. HMMs are employed to predict such vacancies. Further, the problem of spectrum allocation is shown similar to Load Balancing used in computer networks. The entire system is simulated using the two approaches namely, spectrum prediction and load balancing, together in the process of Dynamic Spectrum Allocation.
23	Mishra Chetan Kosare Nikhil	**Video Steganography**	Internet itself is not a secure medium for any kind of transations or send received important details. In video steganography, our project aims at building a system which uses hides a logo in video.The watermark should be imperceptible to anyone and sensitive to any kind of tampering done on the image or video under consideration .The system should also compare various algorithms for embedding the logo.The algorithm used is based on swapping the pixel values of the watermark logo by using password generated random vectors which has been described in the report..The algorithms should be compared on the basis of Mean Square Error (MSE), Peak Signal to Noise Ratio (PSNR) and Correlation Coefficient (CC) values of the extracted logo.