DEPARTMENT OF COMPUTER SCIENCE

IGDTUW

MTECH DISSERTATION

Compiled by

Zeenat(PhD Scholar), Amrita Srivasatava, Amrita Joshi, Jithu, Manasi Nicy, Kirti (MTech-MPC)

Index: Mtech II year

S.No	Name Of The Project	Student Name	Guide Name	Page No
1	Pilearning: A Fun-Learning Android Experience On Raspberry Pi For Small Children	Jithu Nair	Dr.S.R.N. Reddy	5
2	Air Pollution Prediction In Delhi Using Extreme Learning Machine	Manisha Bisht	Dr. Seeja Kumar	6
3	Energy Efficient Multimedia Transfer Over Wireless Sensor Network Maintaining Image Quality	Aditi Lakra	Mr. Vivekanand Jha	7
4	Recent Instrumental Air Quality Monitoring Techniques & Statistical Data Analysis & Interpretation	Akansha Shukla	Mr Indra Thanaya, Dr. S. K. Tyagi	8
5	Abhaye:An Assistive System For Blind Pedestrian	Amrita Joshi	Dr.S.R.N Reddy	9
6	I-Track : Iot Framework For Smart Food Monitoring System	Amrita Srivastava	Dr.S.R.N Reddy	10
7	Bisection Based Heuristic To Resolve Sink Mobility In Wireless Sensor Networks	Komal Khatri	Mr. Vivekanad Jha	11
8	Building Wireless Home Automation System	Anjum	Ms. Vibha	12
9	Implementation Of Full Text Search Based Metasearch Engine	Anshul Goyal	Dr. Ela Kumar	13
10	I-Safe:Iot Based Food Safety System	Kirti Paliwal	Dr.S.R.N Reddy	14
11	Bisection Based Heuristic To Resolve Sink Mobility In Wireless Sensor Networks	Komal Khatri	Mr. Vivekanand	15

			Jha	
12	Fuzzy Based Handover Optimization In Lte Son	Kretika Goel	Dr.Devendra Tayal	16
13	Design And Development Of Z-Wave Based Mote For Home Automation	Manasi Mishra	Dr.S.R.N Reddy, Dr. D.K Tayal	17
14	Improving Quality Of Service In Wireless Sensor Network	Nidhi Chhabra	Mr. Vivekanadan Jha	18
15	Real Time Sensor Based Security System	Nidhi Sharma	Mr. Indra Thanaya	19
16	Disease Ontology Indexing And Retrieval For Medical Search Engine	Palak Jain	Dr. Ela Kumar	20
17	Development Of Mobile Application Based On Nlp Techniques	Pragya	Mr. D. K. Tayal	21
18	Smart Solar Panel With Implementation Of Dual Axis Solar Tracking System	Preeti Sahu	Mrs. Nazme Zehra Naqvi	22
19	A Novel Energy Efficient Clustering Algorithm For Heterogeneous Wireless Sensor Network	Priyanka Singh	Mr.Vivekanand Jha	23
20	Energy Efficient Scheme For Precision Agriculture Using Wireless Sensor Network	Rupal Shukla	Mrs. Nazme Zehra Naqvi	24

21	Fuzzy Based Personalized Feedback System For Students	Shalini	Dr. D. K. Tayal	25
22	Sentibook : Nlp Based Mobile Application For The Visually Impaired.	Vandana	Dr. D. K. Tayal	26
23	Raksha: A Women Safety Device	Preeti Sharma	Mr. Sumit Kumar Yadav, Dr. Srn Reddy	27
24	Deploying Private Cloud And Providing Services To Igdtuw Faculty & Students	Barkha	Dr.S.R.N Reddy, Ms. Monika Choudhary	28
25	Exploring Open Source Solution For Cloud And Its Services	Monika	Dr.S.R.N Reddy, Ms. Monika Choudhary	29
26	Optipath: A Novel Path Finding Algorithm For Visually Impaired People	Durgesh	Dr. K. R. Seeja	30
27	Traffic Monitoring And Management For Smart Cities	Manali	Ms. Najme Zehra Naqvi	31
28	Elderly Health Monitoring: A Wearable Solution	Nicy	Dr. Srn Reddy	32
29	Automated Irrigation System Using Zigbee-Gsm	Shikha	Ms. Vibha	33

PiLearning: A Fun-learning Android experience on Raspberry Pi for small children

Submitted by Jithu Nair(01102062014)

Under the guidance of

Dr.S.R.N. Reddy

Associate Professor &HoD, CSE Dept

ABSTRACT

Story reading and story narration is instrumental for the overall development of a child in terms of creativity, visualization,and learning. Moral stories help in inculcating moral values in young minds. Learning phonics of letters, words and having a sense of basic colors also play a vital role in the basic education of small kids.Drawing and scribbling are the first steps in using the skills children will need later for writing. Raspberry Pi is one of the most popular and least expensive option for a good learning computing platform and also used in various applications including a device especially for children. Thiswork isthe development of an Android based smart device for small children below 10 years of age which is a fun learning device for providing an easy learning environment to children and at the same time aiding in the enhancement of creative thinking skills in them. Mainly an Android app (PiLearning) running on Raspberry Pi is developed which will consist of many moral stories for small kids in order to inculcate moral values within them, to help in easy learning of words and develop writing skills in them. The app also has options to learn phonics of letters and words, for scribbling, drawing and to learn basic colours.

Keywords:Raspberry Pi, Android , PiLearning, Eclipse , Android package (apk).

AIR POLLUTION PREDICTION IN DELHI USING EXTREME LEARNING MACHINE

SUBMITTED BY: MANISHA BISHT (03502062014)

Under the guidance of

Dr.SEEJA K.R.

Associate Professor

ABSTRACT

Outdoor air pollution has emerged as a serious threat to public health across the globe. India is one of the most polluted countries in the world, with its capital, Delhi being ranked as the most polluted city in WHO's 2014 report 'Ambient air pollution in cities'. This status emphasises the need for combating air pollution in Delhi on an urgent basis. Air quality monitoring and forecasting is required to provide the policy makers a scientific basis for formulating a robust policy on abatement of air pollution. Moreover, if air pollution forecasts are issued to the public, they can take preventive measures to minimize their exposure to unsafe levels of air pollutants. In this work, an intelligent air pollution prediction system has been proposed to predict the air quality index for five pollutants (PM_{10}, $PM_{2.5}$, CO, NO_2, O_3) for the next day. Extreme Learning Machine (ELM) has been used for prediction of these air quality indexes in the proposed system. It is found that the prediction of ELM based proposed system is better than the existing air pollution prediction system SAFAR.

Keywords: *air pollution; extreme learning machine; regression; artificial neural networks; prediction*

ENERGY EFFICIENT MULTIMEDIA TRANSFER OVER WIRELESS SENSOR NETWORK MAINTAINING IMAGE QUALITY

SUBMITTED BY: ADITI LAKRA (04102062014)

Under the guidance of

Mr Vivekanand Jha

Assistant Professor

ABSTRACT

Wireless Multimedia Sensor Network involves transmission of multimedia eg -image over the wireless network. Various types of compression algorithms exists eg –JPEG,EZW.Implementing Set Partitioning In Hierarchical Trees(SPIHT) in power constrained WMSN is good choice as it achieves a higher compression ratio, lower power consumption and less complexity and it also achieves compact output bit .SPIHT uses three linked list and uses lot of memory space, hence reducing memory requirements is a problem area where improvements can be made, to develop a novel image compression algorithm

Proposed algorithm(Modified SPIHT) uses the set structure andpartitioning rules similar to that of SPIHT .There is no need for three lists ,there functions are performed by two fixed size markers requiring memory lesser memory.M marker used to store information regarding each pixel and T marker stores information regarding trees.SPIHT algorithm requires dynamic memory, whose size increases with the bit rate (or quality), whereas our above proposed algorithms uses fixed size static memory.Memory required in this proposed algorithm is reduced

Keywords: SPIHT, linked list, compression ratio,memory,WMSN.

Recent Instrumental Air Quality Monitoring Techniques & Statistical Data Analysis & Interpretation

Student Name: Akanksha Shukla(02902062014)

Under the guidance of

Mr Indra Thanaya (Assistant Professor, IGDTUW**)**

Dr. S. K. Tyagi (Scientist "E" at *CPCB* Delhi**)**

Abstract: Air pollution is one of the major factors that badly affecting human health. Air pollution has been an important problem since developmental of industries grew at very high rate. Hence, air quality management plan needs to be developed which takes not only the middle ranges of pollution levels but also the extreme values of pollutant at urban areas. Prediction of air quality analysis using Statistical models is therefore an important component of any air quality management plan and also the concentrations of air pollutants are essentially random in nature and can be well described by statistical distribution models. When the statistical distribution model is correctly Chosen, it can be used to analyze the probability which exceeds the ambient air quality standard (AAQS) and estimate the required emission source reduction of air pollutants to meet the AAQS.

Here we take pollutant levels from CPCB Delhi and the case study of **Delhi** city at three **different monitoring** stations in past few years(2011 to 2016) and compare it to 2016.Based on all these Facts we have proposed some statistical Models(SD) for Analyzing the Air pollution Data by using **SPSS software.** These are Percentage of Missing pollutant values and techniques to find it out ,Correlation and Regression between pollutants, Violation of pollutants at Delhi city Comparison between pollution levels at different years based on Hourly, daily, monthly and seasonal and yearly analysis. Based on all these fact find out a probability density function (pdf) to measure the probability of growing pollution.

Keywords: statistical distribution models (SDM), SPSS software, CPCB Delhi, PDF

ABHAYE:AN ASSISTIVE SYSTEM FOR BLIND PEDESTRIAN

SUBMITTED BY: AMRITA JOSHI(05202062014)

Under the guidance of

Dr.S.R.N Reddy

Associate Professor & HoD

ABSTRACT

Mobility of visually impaired individuals is confined by their inadequacy to perceive their environment. As per the World Health Organization (WHO) in 2012, out of 7 billion worldwide population there are more than 285 million outwardly weakened individuals and 39 million are absolutely visually impaired out of which 19 million are youngsters. In this project, we proposed an assistive system using atmega 16 microcontroller, raspberry pi board. the system is divided into three module i.e. obstacle detection, tracking and fall detection modules. the whole circuitry is mounted on a wearable belt which would be worn by the blind person near the waist. The system not only provide obstacle information near to the blind person using ultrasonic sensors ,but also involve a fall detection monitoring and tracking part which detects fall or accident happen to the blind user while navigating outdoor/indoor environment and sends a message along with the location of the blind person to his/her remote relative autonomously and also keep tracks of the user present location in real time .by using third party application a user remote relative could be able to get users location updates anytime anywhere. A prototype has been built based on this framework. The main focus of the project is to provide a best cost effective Navigation System for blind pedestrian.

Keyword:Atmega16, Raspberry pi, Ultrasonic sensor

i-TRACK : IOT FRAMEWORK FOR SMART FOOD MONITORING SYSTEM

SUBMITTED BY: AMRITA SRIVASTAVA (02102062014)

Under the guidance of

Dr. S.R.N Reddy

Associate Professor & HoD

ABSTRACT

In the era of technology advancement, where monitoring and controlling need is almost everywhere so we are integrating the IoT with food monitoring where the necessity to protect the food, so that it would not get contaminated due to surrounding conditions. Today not just us but everybody in this world is getting effected by the foods, vegetables, product we consume in our daily life as all of them do not offer quality. Till now, the work done in terms of the sensed values that have been recorded but detailed analysis has not been performed with web server and a software app that will manage the database for different sensors along with their threshold values still need to be designed. Basically, iTRACK analyze temperature, moisture, light as these parameters affect their nutritional values. iTRACK is being proposed for doing analysis for managing and storing of food materials and alert the monitoring unit when it crosses the standard values at every stage.

In this project iTRACK sensing the condition of food with the help of heterogeneous sensors for various domains. The data values then be traced via Bluetooth and data visualization with plotting of figures and graphs has been done at remote location so that this data can easily be used for further analysis and notify the changing parameters needed.

Keywords: Heterogeneous Sensors, Data logging, generic platform, GUI

BUILDING WIRELESS HOME AUTOMATION SYSTEM

SUBMITTED BY: Anjum (04402062014)

Under the guidance of

Ms. Vibha

Assistant Professor

Abstract

Wireless home automation system has been drawn considerable attention of the researchers today. The major technologies can be used in these system is Wi-Fi, ZigBee, Bluetooth. From these technologies the ZigBee based system has become very popular because of its low power consumption and low cost. As Bluetooth is suitable for high data rate transmission but for automation system we need 24 hour monitoring which takes high power consumption so for this reason ZigBee is more suitable for home automation system than any other technology. In this paper ZigBee based wireless home automation system has been focus. There is brief description of ZigBee technology and also wireless remote intelligent system. The aim of this paper is apply these technologies on smart devices having android app, which allow controlling of devices using interactive GUI which can be easily used by any average user. It changes the living style of the human.

Keywords: WSN, ZigBee, PAN, WI-FI

Implementation of Full Text Search Based Metasearch Engine

SUBMITTED BY: ANSHUL GOYAL (04202062014)

Under the guidance of

Prof. Ela Kumar

Professor

ABSTRACT

A metasearch engine is a system that provides unified access to multiple existing search engine mechanisms. First of all, a query is submitted on a metasearch engine, the query is passed to its component search engines by the system, the individual results are collected and merged into a single ranked list. Metasearch engines increase the search coverage of the Web, help solve the extendibility issues in searching the internet and improve the retrieval effectiveness and consequently the relevance of results.

The purpose of this research is to build a flexible, general purpose metasearch framework in "GO". The framework comprises of two processes: front end and back end. The back end process uses bleve to index and store documents. The front end process provides user interface to submit query. A prototype metasearch engine has been built based on this framework to utilize the advantages of relatively new language.

Keywords: Full Text Search, Metasearch engine, Bleve, GO.

i-SAFE:IOT BASED FOOD SAFETY SYSTEM

SUBMITTED BY: KIRTI PALIWAL (04302062014)

Under the guidance of

Dr.S.R.N Reddy

Associate Professor & HoD

ABSTRACT

Now-a-days, internet of things playing a major role in every area and when it comes to our food it is the necessity that its quality and safety issues has to be considered. Health of the citizens of a nation is the important key factor to judge the state of that nation**.** Food products companies gives assurance of their quality and nutrient values but it is not whole true, with the processing till the flow of packed foods, many changes has been take place due to surrounding conditions which degrades the quality. In this project designing of i-SAFE is proposed which is taking care of liquefiable(water, milk) in which we are testing for acidic and mast or pus cells that should not be present in milk and water which is consumed by every family and also eatable goods like raw meat, fish, fruits and vegetables to which carbon monoxide,co2,ethane levels,sulphur have been measured which is added as preservatives to maintain freshness, color for several days but harmful for health. These measurements are processed by raspberry pi with biochemical sensors and values are send wirelessly over the server and its values can be accessed over the network.Data visualization and analysis with graphs and plots is carried out via python(x, y) with various tools including matplotlib, scipy. An informative website is also designed for users to justify the range of safe products.

Keywords: IoT, Biochemical sensor, food safety, python(x, y), informative.

Bisection based heuristic to resolve sink mobility in Wireless sensor networks

SUBMITTED BY: KOMAL KHATRI (02702062014)

Under the guidance of

Mr. Vivekanand Jha

Assistant Professor

ABSTRACT

Wireless Sensor Networks are comprised of densely deployed sensor nodes within an area to collect and process data that can be forwarded to one or more sink nodes via multi hop communication. In case of static sink, nodes closer to the sink deplete their energy quicker as they have to process and forward data from the farther nodes resulting in creation of energy holes near the sink. Energy efficiency, communication overhead and scalability are critical issues in performance degradation of Wireless Sensor Networks. To overcome this energy hole problem the usage of mobile sinks is proposed. Mobile sinks help achieving uniform energy-consumption and implicitly provide load-balancing across the network. In this project, we propose a bisection based approach to form a ring shaped trajectory for the cluster heads through which the mobile sink can transceive data in order to reduce path length and overall communication overhead in order to improve network lifetime.

Keywords: bisection, ring topology, mobile sink, energy hole, wireless sensor network

FUZZY BASED HANDOVER OPTIMIZATION IN LTE SON

SUBMITTED BY: KRETIKA GOEL (03902062014)

Under the guidance of

Dr.DEVENDRA TAYAL

Associate Professor & Ex-HoD

ABSTRACT

LTE (Long Term Evolution) is a fourth generation cellular network technology that provides improved performance related to data rate, coverage and capacity compared to legacy cellular systems. In this context, one of the main goals of LTE is to provide fast and seamless handover from one cell to another to meet a strict delay requirement while simultaneously keeping network management simple. Hence, the design of an efficient and successful handover requires a careful selection of HO(Handoff) parameters and the optimal setting of these which are RSSI, Distance from enode, User served, Velocity of the user, Bandwidth etc.The research focuses on different combinations of the above mentioned parameters and to incorporate the effect of fading in network signal .For this a new parameter of path loss is introduced. A Fuzzy MIMO (multiple input multiple output) system is designed which provides the handover decision value simultaneously along with network selection .Through this inference system, quality of service in terms of packet loss is improved significantly.

Keywords: LTE , SON, Fuzzy MIMO, RSSI, Fading.

ENERGY EFFICIENT MULTIMEDIA TRANSFER OVER WIRELESS SENSOR NETWORK MAINTAINING IMAGE QUALITY

SUBMITTED BY: ADITI LAKRA (04102062014)

Under the guidance of

Mr Vivekanand Jha

Assistant Professor

ABSTRACT

Wireless Multimedia Sensor Network involves transmission of multimedia eg -image over the wireless network. Various types of compression algorithms exists eg –JPEG,EZW.Implementing Set Partitioning In Hierarchical Trees(SPIHT) in power constrained WMSN is good choice as it achieves a higher compression ratio, lower power consumption and less complexity and it also achieves compact output bit .SPIHT uses three linked list and uses lot of memory space, hence reducing memory requirements is a problem area where improvements can be made, to develop a novel image compression algorithm

Proposed algorithm(Modified SPIHT) uses the set structure andpartitioning rules similar to that of SPIHT .There is no need for three lists ,there functions are performed by two fixed size markers requiring memory lesser memory.M marker used to store information regarding each pixel and T marker stores information regarding trees.SPIHT algorithm requires dynamic memory, whose size increases with the bit rate (or quality), whereas our above proposed algorithms uses fixed size static memory.Memory required in this proposed algorithm is reduced

Keywords: SPIHT, linked list, compression ratio,memory,WMSN.

DESIGN AND DEVELOPMENT OF Z-WAVE BASED MOTE FOR HOME AUTOMATION

SUBMITTED BY: Manasi Mishra (05402062014)

Under the guidance of

Dr.S.R.N Reddy

Associate Professor & HoD,CSE

Dr. D.K Tayal

Associate Professor,CSE

Wireless home automation networks (WHANs) enable monitoring and controlling applications for efficient home management and making the life of users comfortable. A WHAN typically comprises several types of severely constrained embedded devices forming a network. This work basically identifies several key challenges that were experienced in various WSNs. Some key challenges are complexity, lack of flexibility & reusability, outdated platform level designs, high power consumption & hardware expenses. This work addresses the challenges by designing a wireless home automation network with heterogeneous nodes based on different communication protocols. The work begins with the design and development of a customized sensor node based on ARM cortex M0+ processor and Z-wave communication protocol on the PCB using modular approach. The node is designed using Altium Designer software in such a way that it offers flexibility, reusability, low power consumption, high performance, interoperability and small size. The future work also includes the design of several application specific add-on boards and porting of TinyOS on the microcontroller for achieving best performance.

Keywords: WHAN, ARM cortex M0+, Z-wave, PCB, TinyOS

IMPROVING QUALITY OF SERVICE IN WIRELESS SENSOR NETWORK

SUBMITTED BY: Nidhi Chhabra (05002062014)

Under the guidance of

Mr. Vivekanadan Jha

Assistant Professor

Abstract

Wireless Sensor Networks (WSNs) are commonly characterized by environmental changes, topology changes, mobility, and various other such factors which influence the Quality of Service (QoS). QoS ensures the trust of users of the network and is described in terms of network quality metrics which are probably antithetic. Delay and Reliability are two such parameters, balance between these requirements is highly recommended as ignoring them may produce impractical solutions especially when elements of the associated network involve uncertainty, the necessity of such requirements becomes extremely important for ensuring solution robustness. A chance constrained programming model in which, minimum delay and maximum reliability has been formulated as optimization objectives. Balanced constrained stochastic bottleneck spanning tree and further fuzzy logic based optimization approaches are used to achieve the ultimate goal of delay and reliability oriented spanning tree as an end to end path from source to destination with the satisfied QoS. Antithetic goals are considered together to form a better optimization of QoS objectives while balancing the constraints.

KEYWORDS: Chance constrained, bottleneck spanning tree, delay, fuzzy logic, reliability, QoS, WSN

REAL TIME SENSOR BASED SECURITY SYSTEM

SUBMITTED BY: NIDHI SHARMA (03602062014)

Under the guidance of

Mr. INDRA THANAYA

Assistant Professor

ABSTRACT

Security is the main concern of today. Wireless home security system are the high technology and convenient systems which connect wireless and ensure real time detection and signaling of the threat to the house. The idea of comfortable living in home has since change the past decade as digital, vision and wireless technologies are integrated into it. The various limitations of pervious existing technologies are range and cost .In this project we develop a real time sensor based security system which will detect unauthorized intruder entry ,fire ,LPG gas leakage, and water level in basement during rainy season in the home/apartment. An IOT environment is there such that if any of these unfavorable condition are detected the current status of the sensor will be updated on the website. Therefore continuous monitoring of the home /apartment is there from a distance place and the website can be accessed by anyone and from anywhere.

KEYWORDS: *Arduino uno board, sensors, IOT*

DISEASE ONTOLOGY INDEXING AND RETRIEVAL FOR MEDICAL SEARCH ENGINE

SUBMITTED BY: PALAK JAIN (04902062014)

Under the guidance of

Dr. ELA KUMAR

ABSTRACT

Traditionally, most of the information retrieval methods were mainly based on keyword matching, which cannot fully take advantage of the information context and potential knowledge. Although in the later researches, variousontology based information retrieval system has been developed to provide semantically relevant information to the users, these researches rarely considered the concept of ontology indexing and retrieval.The researches focused on the engineering problems such as query formulation, document indexing and retrieval primarily from the perspective of improving the precision and recall of information retrieval system which can be further enhanced by indexing ontologies efficiently and accurately. In this thesis, an architectural framework has been proposed for indexing disease ontology containing approximately 9000 classes for retrieving information regarding diseases which can befurther used by medical search engines. Firstly, we analyze the shortcoming of indexing and information retrieval technique currently applied on the disease ontology. Secondly, analysis of disease ontology is done to identify resources and propertiesthat needs to be added in the index. Thirdly, an indexing algorithm has been proposed which generates indexes containing necessary information about each of the disease in disease ontology. Lastly, proposed retrieval algorithm is implemented against user queries to verify if the final results are relevant or not.

Keywords: Ontology based information retrieval, disease ontology, concept based indexing algorithm

DEVELOPMENT OF MOBILE APPLICATION BASED ON NLP TECHNIQUES

SUBMITTED BY: PRAGYA (05102062014)

Under the guidance of

Dr. D.K. TAYAL

Associate Professor &Ex HoD

ABSTRACT

With the rapid development of e-commerce, huge collections of consumer reviews containing opinions are now available on the Web. These reviews have become an important resource for both consumers and firms. These Online reviews often contain rich and valuable information about different products and services. Electing relevant information from reviews is challenging, due to diversity of review written by different people referring to different aspect.Unstructured text review analysis using cluster, helps generate a more understandable representation of reviews. There are different algorithm for clustering ex. K means, hierarchical, fuzzy C means algorithms. In this project, wewill evaluate the text clustering approaches and according to their unique features, we will reveal very interesting connections between the hotels based on their aspects.

KEYWORDS: hotels,reviews, text mining, clustering.

SMART SOLAR PANEL WITH IMPLEMENTATION OF DUAL AXIS SOLAR TRACKING SYSTEM

SUBMITTED BY: PREETI SAHU (03002062014)

Under the guidance of

Ms. Najme Zehra Naqvi

Assistant Professor

ABSTRACT

Solar energy is produced by the sun. It is ultimate source of energy for producing electricity. It is a renewable energy. To convert solar energy into electrical energy, solar panels are used but the solar panel used is fixed at a place while the sun keeps changing its position relative to earth. To accurately determine the position of the sun, solar tracker is used. The main objective for this project is implementation of dual axis smart solar tracker which is to trace the maximum sunlight source to power the solar panel. The dual axis solar tracking system can proved to be the most effective way to enhance efficiency of solar panel by completely tracking the sun. The proposed system are comprises of ARM processor Raspberry Pi which has Linux OS, Light dependent Resistors (LDRs) , DC motors. In this project, a comparison is being done for efficiency on the basis of single axis solar tracker and dual axis solar tracker. Also the values has been recorded in the text file and plotted with the help of third party application. GUI has been created based on python Tkinter for making our device more attractive.

Keywords: ARM processor Raspberry Pi, Solar Panel, DC Motor, Light Dependent Resistors (LDRs).

A NOVEL ENERGY EFFICIENT CLUSTERING ALGORITHM FOR HETEROGENEOUS WIRELESS SENSOR NETWORK

Submitted By: Priyanka Singh (00302062014)

Under the guidance of

Mr.Vivekanand Jha

Assistant Professor

ABSTRACT

Wireless Sensor Networks (WSNs) have been widely used in many fields like military, surveillance, habitat monitoring and Smart home. In such applications, a large number of sensor nodes are densely deployed, which are often unattended and work autonomously. Therefore, energy is a challenging issue in WSN networks. One way of achieving energy efficiency is to use clustering technique. In clustering, clusters of sensor nodes are formed and every cluster has one cluster head. Most of the existing clustering schemes are geared towards homogeneous WSN but some nodes may be heterogeneous in terms of their available resources. Despite the success of various clustering strategies for WSN, an optimal network structures is still an open challenge. The Proposed work presents a novel energy efficient clustering algorithm for heterogeneous wireless sensor networks. In the proposed method, network clusters are dynamically formed. With the goal of optimizing the lifespan of the entire network, a novel algorithm is employed to search for the most suitable sensor nodes as the cluster heads to relay the messages to the base station.

Keywords: ***Wireless sensor network, Heterogeneous, Clustering, Energy efficient***

ENERGY EFFICIENT SCHEME FOR PRECISION AGRICULTURE USING WIRELESS SENSOR NETWORK

SUBMITTED BY: Rupal Shukla(01602062014)

Under the guidance of

Mrs. Nazme Zehra Naqvi

ABSTRACT: The popularity of Wireless Sensor Networks have increased tremendously due to the vast potential of the sensor networks to connect the physical world with the virtual world. Since these devices rely on battery power and placed in hostile environments replacing them becomes a tedious task. Thus, improving the energy of these networks becomes important.

This project provides methods for clustering and cluster head selection to WSN to improve energy efficiency. It presents a comparison between the different methods on the basis of the network lifetime. In this project, we develop and analyze energy efficient algorithm for both homogeneous WSNs and heterogeneous WSNs that combines the ideas of energy-efficient cluster-based routing and media access together with data aggregation to achieve good performance in terms of system lifetime, latency, and application-perceived quality. Further, we compare modify MODLEACH protocol(one of the most prominent wireless sensor networks routing protocol as modified LEACH (MODLEACH))by introducing efficient cluster head replacement scheme and dual transmitting power levels. Our proposed algorithm, in comparison with MODLEACH out performs it using metrics of cluster head formation, throughput and network life. Finally a brief performance analysis of MODLEACH and our proposed algorithm is undertaken considering metrics of throughput, network lifetime residual energy and cluster head replacements.

Keywords : Wireless Sensor Networks, LEACH, MODLEACH

FUZZY BASED PERSONALIZED FEEDBACK SYSTEM FOR STUDENTS

SUBMITTED BY: SHALINI (02002062014)

Under the guidance of

Dr. Devendra Tayal

Associate Professor

ABSTRACT

Monitoring students' activity and their view on different subject courses is vital to enable educators to provide effective learning and teaching in order to better engage students with their subjects and improve understanding of the material being taught. For this purpose a fuzzy model for assessing student knowledge and skills is developed. In this model the students' characteristics under assessment (knowledge of the subject matter, problem solving skills and logical reasoning abilities) are represented as fuzzy subsets of a set of linguistic labels characterizing their performance of student profiles are calculated. In this way, a detailed qualitative study of the student's performance is obtained. Techniques of assessing the individual students' abilities are also studied and examples are presented to illustrate the use of our results in practice.

KEYWORDS: fuzzy sets; fuzzy logic; defuzzification; students' assessment

SentiBook : NLP based mobile application for the visually impaired.

SUBMITTED BY: VANDANA (03302062014)

Under the guidance of

Dr. D.K Tayal

Associate professor

ABSTRACT

Visually impaired people faces many types of challeges in performing every day routine works. The barrier of no vision not let them to become part of this society and social activities. They also feel demotivated many times while performing these tasks when they are unsuccessful in performing or completing them. Reading is one of the task for a visually impared person which he cannot do on his own. They are incapable to select a book from the collection without any prior information about the book and to read it on their own. For this purpose, they need help from others. So to overcome this problem, we are providing a book-selection assistance through a Natural Language Processing (sentiment analysis) based assistive technology which intelligently makes decisions based on sentiment neutrality or polarity of the natural linguistic expressions in the “reviews”-section. With the help of this technology, a visually impaired person will be able to select a book after determining the sentiment polarity on the basis of reviews posted online. After selecting the book, a text to speech conversion of the book takes place.

KEYWORDS: Natural language processing, sentiment analysis, sentiment neutrality, linguistic, text-to-speech.

Raksha: A Women Safety Device

SUBMITTED BY: PREETI SHARMA (05302062014)

Under the Guidance of

Mr. Sumit Kumar Yadav
Assistant Professor

Dr. SRN Reddy
Associate Professor & HoD

ABSTRACT

Nowadays, women security is of prime concern. Women feel insecure while travelling late at night. Their families, near one are very worried about their security. So women safety has become a major issue as it's difficult for them to step out of their house without any fear at any given time due to the fear of violence. The fear of violence restricts the women for participating in different social activities. So instead of becoming a victim of violent crime such as domestic violence, robbery or rape, women should call on resources to help her out of that situation. In this paper, we proposed a women security system that helps her in unsafe situation by sending an alert having geographical location of the victim to the police and her family members so that the incident could be prevented. The system is initiated by pressing a button which automatically sends the location of the victim to the family members through GSM Module attached to it. The location is sending in Latitude and Longitude format continuously, so the victim can be tracked. The system also starts the buzzer so that people nearby may listen to it and reach there to help her. So this system would help in reducing the crimes held against women

Keywords: Women Security, Women Safety, Violence, Arduino, GSM, Latitude & Longitude.

DEPLOYING PRIVATE CLOUD AND PROVIDING SERVICES TO IGDTUW FACULTY & STUDENTS

Submitted by

Barkha Pundir (04802062014)

Under the guidance of

Dr. S.R.N. Reddy — Associate Professor& HOD

Monika Choudhary — Assistant Professor

ABSTRACT

Storage, compute and network provisioning are the most necessary resources for computational purposes in academics. Further, availing resources easily and at a low cost is desired especially for students who need to do some data storage, research and analysis. There is a need to build suitable systems to meet demand for student and staff services. A cloud solution is proposed for accessing resources anytime, and across devices and networks. An open source platform to deploy private cloud at the university thus leads to a low cost solution. Thus, the major objectives of this thesis are: Selection of tools for creating state-of-the-art low cost and open source cloud solution and to configure the cloud to provide scalable and on-demand resources for storage and computation thus providing SaaS, PaaS and IaaS. In this work a private cloud has been deployed on premise at IGDTUW using OpenStack cloud 3-node architecture. Users can provision storage, network, and compute resources after successful authentication. Both web interface and command line clients can be used to interact with the cloud.

Keywords: Cloud computing, Open-source, OpenStack, private cloud.

EXPLORING OPEN SOURCE SOLUTION FOR CLOUD AND ITS SERVICES

SUBMITTED BY: MONIKA (04602062014)

Under the guidance of

Dr.S.R.N Reddy (Associate Professor & HOD, CSE)

Ms. Monika Choudhary (Assistant Professor, CSE)

ABSTRACT

Cloud computing is the currently trending technology after use of parallel computing, distributed computing and grid computing. At present, many corporations have involved in the cloud computing related techniques and many cloud computing platforms have been put forward. It is a favorable time to explore the cloud and its services. This work is motivated to deploy some of the services of the cloud in a private campus environment of IGDTUW using the open source technology. It involves a study of differences that lies between traditional servers and cloud servers, a study of already existing open source and closed source solutions for cloud and their comparison, surveying the different cloud platforms available to come up with a single cloud platform that can be the best player for academic cloud and deploy academic applications on the prototype. The IGDTUW private cloud is capable of providing the infrastructure as a service. Infrastructure includes the storage and server management, virtualization, image service, compute and network services. Further platform & software as a service could be added to include the operating system and application features. The current implementation is done using OpenStack and Ubuntu.

Keywords: cloud, openstack, Ubuntu, IaaS, open source

OPTIPATH: A Novel Path Finding Algorithm for Visually Impaired People

SUBMITTED BY: Durgesh Nandini **(03402062014)**

Under the guidance of

Dr K.R Seeja

Associate Professor

ABSTRACT

Visually impaired people require a constant assistance for navigating from one location to another. Achieving autonomous shopping experience in a supermarket is a real challenge for them. This research work presents a navigational algorithm for routing a visually impaired person through an obstacle free optimal path through the corridors of the supermarket. Optimal path referred in this work is the path with minimum distance and minimum number of turns as visually impaired people prefers to move through straight paths without any turns. The proposed navigational algorithm can be incorporated into any existing shopping assistance systems with obstacle detection facility available in the market for Visually Impaired People. The algorithm also reroute the user in case of an obstacle detected in the path. The performance of the proposed algorithm is compared with that of Dijkstra's shortest path algorithm and found that the proposed algorithm minimizes the number of turns in the optimal path without compromising much in the minimum distance criteria.

Keywords: Visually impaired people, Design of algorithm, shortest path, obstacle free path, optimal path

TRAFFIC MONITORING AND MANAGEMENT FOR SMART CITIES

SUBMITTED BY: MANALI SAINI (02602062014)

Under the guidance of

Ms. Najme Zehra Naqvi

Assistant Professor

ABSTRACT

This project presents a smart traffic monitoring and control system to pass vehicles smoothly, including priority for emergency vehicles and provides information about road condition (accident on road, etc.). Each individual vehicle is equipped with a passive RFID tag. To read the tags, we use RFID reader NSK-EDK-125-TTL and AVR Atmega16 microcontroller board (self designed). It counts the number of vehicles that passes on the road for a specific duration and based on that, congestion is detected. Accordingly, the traffic lights are made adaptive to the situation. Also, if any emergency vehicle is detected (ambulance, school buses), green light is turned on immediately to pass that vehicle smoothly. In addition to this, an accident detection unit is also installed inside every vehicle which includes accelerometer ADXL345 and GSM SIM900A module, both interfaced to AVR microcontroller board. As soon as accident is detected, the message is sent through GSM to a control unit to take necessary action to vacate that vehicle immediately. The prototype is tested in laboratory (using different combinations of input) and the results were found as expected.

ELDERLY HEALTH MONITORING: A WEARABLE SOLUTION

SUBMITTED BY: NICY KAUR TANEJA

Under the guidance of

Dr.S.R.N Reddy

Associate Professor & HoD

ABSTRACT

In the present scenario, the elderly age group is considered to be at high risk in terms of health and socio-economic status. Most of the elders are suffering from either one of the health problems. Many solutions are present in the market but most of them focuses on measuring either only heart beat or ECG monitoring. The remote monitoring of such patients is carried out by saving their personal and health data on the web server installed at the healthcare center. This solution adds an additional investment in large-scale storage and processing capacity.

Therefore, an enhanced health monitoring system is required that measures some health data as well as physical parameters of the patient and also allows to analyze and store those parameters. The aim of the project is to monitor the breathing rate, body temperature and position of the patient suffering from COPD. The system will be composed of four sensors: respiratory rate sensor, temperature sensor, heartbeat sensor and accelerometer. The device is designed to be wearable by the patient which will help to monitor him continuously. The respiratory module will measure the breath of the patient, temperature sensor will monitor the body temperature, heart beat sensor will monitor the heartbeat rate by placing the finger for about one minute and accelerometer will tell about the position of the patient. The data will be displayed on LCD and can also be monitored on an android device using wireless Bluetooth communication. Moreover, a touch sensor is also interfaced to raise an alarm (buzzer) if the patient detaches the health kit. The health kit is connected to the cloud analytics site by connecting the development board through Ethernet which helps to collect and analyze the sensor data from anywhere by logging into IoT Analytics website.

Keywords: Intel Galileo Gen2, Internet of Things (IoT), health sensors

Automated Irrigation System using ZigBee-GSM

SUBMITTED BY: SHIKHA (04502062014)

Under the guidance of
Ms. VIBHA
Assistant Professor, CSE Department, IGDTUW

ABSTRACT

In recent years, Distributed Wireless sensor technology becomes very popular and extensively used in the scientific world. The WSN helps in the advancement of the current developing and rapidly changing technology. Power management, cost-saving and labor-saving is always a major issue in the research field of wireless sensor networks. This project focuses on generic automated irrigation system based on WSN with GSM-ZigBee for remote monitoring and controlling devices. The objective is to make use of wireless sensor network and communication technology such as ZigBee and GSM in industrial field to make low-cost automated irrigation system to monitor the condition of the soil and to lower the energy consumption. The system helps the farmer to monitor and control the parameters of the soil such as air temperature, humidity, soil moisture. At any abnormal condition, the farmer is informed and he can perform the action remotely via message. Data is also automatically updated on the server. Due to its lower energy consumption and low cost, the system has the potential to be useful in semiarid or arid areas.

Keywords: WSN, ZigBee, GSM