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CONTENTS

Vision of the Institute

To be one among the premier institutions of the country for professional Education in producing technocrats with Competent skills, Innovative ideas and Ethics strong to serve the nation.

Mission of the Institute

- To provide an environment most conducive to learning with state of the art infrastructure, well equipped Laboratories and research facilities to impart high quality technical education.

- To emphasize on innovative ideas and creative thinking and prepare them to meet the growing challenges of the industry.

- To inculcate the leadership qualities, multi-disciplinary approach, ethics and lifelong learning in graduates to serve the diverse societal needs of our nation.

Vision of the Department

To produce technically competent Electronics & Communication Engineers with a motive to meet the needs of the industry and evolving society through advanced research, professional ethics and lifelong learning.

Mission of the Department

- To enrich the technical skills of the students through effective teaching-learning practices, continuous assessment methods and eminent faculty.

- To continuously enhance creative thinking, research ability and innovative skills of students through training on core and multidisciplinary technologies and skill enhancement programs.

- To inculcate leadership qualities, ethics, social responsibility and gratitude through outreach programs.

Program Educational Objectives (PEOs)

PEO-1: Attain the global and local opportunities and reach greater heights in their chosen profession by demonstrating technical expertise.

PEO-2: Gain recognition by exhibiting problem solving expertise for addressing significant problems of industry and society.

PEO-3: Become good leaders with ethics and support, contribute and encourage diversity and inclusiveness in their workplace and society.

Program Outcomes (POs)

PO-1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO-2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO-4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO-5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO-6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO-7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO-8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO-9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multi disciplinary settings.

PO-10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO-11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments.

PO-12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO-1: Responsive to ideas: Apply the knowledge on core Electronics and Communication Engineering in order to develop skills to analyze, design and develop innovative solutions for the real world problems.

PSO-2: Domain Expertise: To develop interpersonal skills to demonstrate proficiency using the latest hardware and software solutions by maintaining professional and societal responsibilities.

The department strives to train and empower our students who will make the world a better place by making use of engineering principles, techniques and systems. To that end, considerable initiatives have been taken to establish good laboratories in the areas of Electronics, Communication, Microwave, Digital Signal Processing, Microcomputer, Embedded and VLSI design with required hardware and simulation software's. In addition, an exclusive research laboratory is established in the department in the area of 'Navigation and Communication'.

Here, the students are provided with greater exposure in the core areas of Electronics & Communication Engineering as compared to the students admitted in a similar program at other institutes of the state. The students are also encouraged to participate in the technical activities apart from the regular curriculum.

PREPAID ELECTRICITY BILLING SYSTEM USING GSM MODEM

The present practice of electricity billing is manual method only. With this, the total billing is a time consuming process and it requires more manpower. The collection of billing is late procedure and so many consumers may not pay in time.

Disconnecting of unpaid connections is also manual. Due to all these drawbacks we cannot have proper auditing. Lack of awareness on power consumption and also the present energy meters displays only units, so the user cannot plan his usage of power. To avoid all these problems, we are introducing this system.

The short message system (SMS) of a standard mobile phone can be used for much more than just exchanging cryptic message. The SMS service provides by the service providers are comparatively low cost. Hence the system is highly efficient and low cost. The Short Message Service allows text messages to be sent and received to and from mobile telephones. The text can comprise words or numbers or an alphanumeric combination. Because Simple person – to – person messaging is such an important component of total SMS traffic volumes, anything that simplifies message generation as well as extended utility of the SMS being sent is an important enabler of Short Message Service. Such extended utility of SMS fulfills certain important requirements.

Now a day's no one is using this type of system in India, but in future in order to save the energy and get systems automated we should use this type of intelligent system. Wastage of power is inevitable in large industries. This is because the existing system provides no check on the consumption and therefore there is a tendency to be careless. If there was a system that allotted a fixed ration of power for a period then the workers would be more careful thereby minimizing the electricity loss.

When the user pays money, he gets a recharge code. When he enters the code, the meter verifies the code with substation and on confirmation; it starts counting the no. of units and reduces the card amount relatively. On completion of amount, it disconnects the line automatically with an alarm prior to that. The consumption data, card status and line status are transmitted to substation for auditing. With this system, we can determine the difference between the actual powers consumed and sold power easily. With this we can easily identify the tampered areas and we can avoid power thefting. In this project, the present billing system was eliminated completely and a new system namely prepaid billing system was introduced for embedded applications which overcomes the drawbacks in present billing system. If this system comes in our day to day life it will be useful for both the Government and the public.

A SIREESHA
16F11A0403

ARDUINO BASED BABY INCUBATOR USING GSM TECHNOLOGY
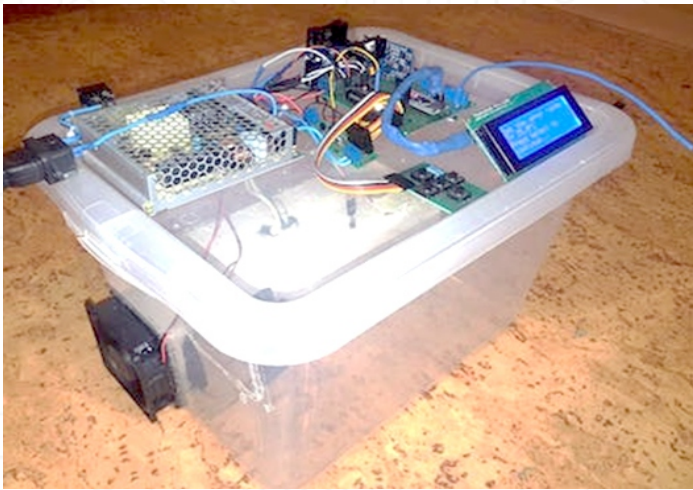
The preterm infant care is one of the most important, delegate and sensitive area in Bio-medical field. Some new-born are at a higher risk of mortality and are called high-risk infants, because the gestational age and their birth weight put them at a higher risk of disease and death. Preterm baby requires surrounding exactly similar as in the womb to cope with the external environment. Some extent, the incubator can serve as this environment. An infant incubator provide stable level of temperature, relative humidity and light condition to an extent in which the preterm have some condition as in the womb. Air temperature, relative humidity and light condition has to be maintained as it requires to preterm baby. Measurements of this parameter can be done and under risk situation conveyed to the parents with alarm system and GSM technology. The main purpose of this project is to design and implement a closed loop control system to regulate the temperature, relative humidity light intensity by using LED's to avoid jaundice condition to inside neonatal incubator. Arduino and PWM used for implementing the hardware.

The newborn baby needs time to adjust their condition with the outside world. This is sensitive time to new baby born especially premature babies. Premature babies need special attention to make babies still alive. One of procedures to make premature babies still alive is put them into the incubator, the period premature babies in the incubator according to soundness, durability and system of organs of them. The incubator is one of tools to help premature babies to adjust with the outside world, because condition in the womb is very different with outside world, especially condition of temperature.

Temperature in the womb is approximately 36 - 37 0 C but in outside world is approximately 27.0 C – 28. 0 C. Temperature in the incubator is maintained according to age and weight of premature baby, for example; age of baby is days and weight of baby is less than 1500 gram, the temperature in the incubator is maintained of 35 o C and relative humidity is maintained of 50% RH - 75% RH. Using the incubator the premature babies hope will be adjusting their condition with outside world and the babies can survive. In this study, we design an incubator system prototype can send a warning message via SMS. The incubator system consists of LCD, SHT11 sensor, light bulb, fan, GSM modem, and microcontroller ATmega328 based Adriano Uno open source board. The purpose of this study is to design a system that can send a warning SMS from incubator to mobile phone when the temperature in the incubator is below/ above 35 o C and relative humidity are below 50% RH and above 75% RH. This system can improve the security of the system to errors on baby infant incubator, so as to avoid the occurrence of death in infants due to temperature and humidity are not appropriate in an incubator, so as to create a sense of security and comfort for babies, parents of infants and hospital personnel on when the baby is put into an incubator.

DESIREDDY SUSRITHA REDDY
17F11A0416

# PROJECT ON HIGHWAY ALERT SIGNAL LAMP

The lighting system of a motor vehicle consists of lighting and signalling devices mounted or integrated to the front, sides, rear, and in some cases the top of the vehicle. The purpose of this system is to provide illumination for the driver to operate the vehicle safely after dark, to increase the conspicuity of the vehicle, and to display information about the vehicle's presence, position, size, direction of travel, and driver's intentions regarding direction and speed of travel. Driving lamp" is a term deriving from the early days of night time driving,

when it was relatively rare to encounter an opposing vehicle.Only on those occasions when opposing drivers passed each other would the dipped or "passing" beam be used. The full beam was therefore known as the driving beam**.** Turn signals are required to blink on and off, or "flash", at a steady rate of between 60 and 120 blinks per minute (Although some operate slower than this). International regulations require that all turn signals activated at the same time (i.e., all right signals or all left signals) flash in simultaneous phase with one another; North American regulations also require simultaneous operation, but permit side markers wired for side turn signal functionality to flash in opposite-phase. Worldwide regulations stipulate an audiovisual telltale when the turn signals are activated; this usually takes the form of one combined or separate left and right green indicator lights on the vehicle's instrument cluster, and a cyclical "tick-tock" noise generated electromechanically or electronically. It is also required that audio and/or visual warning be provided to the vehicle operator in the event of a turn signal's failure to light. This warning is usually provided by a much faster- or slower-than-normal flash rate, visible on the dashboard indicator, and audible via the faster tick-tock sound.

Turn signals are in almost every case activated by means of a horizontal lever (or "stalk") protruding from the side of the steering column, though some vehicles have the lever mounted instead to the dashboard. The outboard end of the stalk is pushed clockwise to activate the right turn signals, or anticlockwise for the left turn signals. This operation is intuitive; for any given steering manoeuvre, the stalk is pivoted in the same direction as the ateering wheel must be turned.

ABBU VENKATA SUMANTH
18F11A0401

MULTI-DIMENSIONAL DATA VISUALIZATION
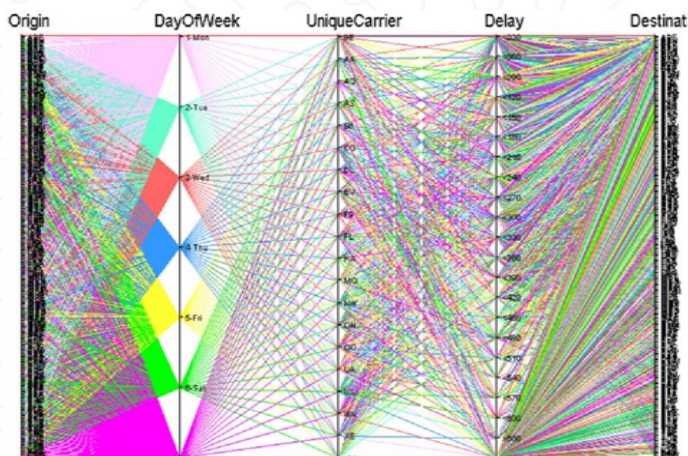
Historically, data visualization has been limited primarily to 2 dimensions (e.g., histograms, scatter plots). Available software packages (e.g., Data Desk® 6.1, MatLab® 6.1, SAS© -JMPTM 4.04, SPSS© 10.0) are capable of producing 3-D scatter plots with (varying degrees of) user interactivity. We constructed our own data visualization application with The Visualization Toolkit (Schroeder, Martin, & Lorensen, 1998) and Tcl/Tk to display multivariate data through the application of glyphs (Ware, 2000). A glyph is a visual object onto which many data parameters may be mapped, each with a different visual attribute (e.g., size, color). We used our Multi-Dimensional Data Viewer to explore data from several psycholinguistic experiments. The graphical interface provides flexibility when users dynamically explore the multi-dimensional image rendered from raw experimental data. We highlight advantages of multidimensional data visualization and consider some potential limitations.

Data visualization has become an increasingly popular method to display and explore complex (multivariate) scientific data (see Schroeder, Martin, & Lorensen, 1998 for an overview). Simply stated, raw experimental, theoretical, or demographic data are transformed into an image or a series of images. The exploration of the resultant data image(s) is the essence of data visualization. A variety of techniques exist to extract patterns from data (Marchak, 1994). Each technique has the potential to elucidate aspects of the data that are typically obscured or simply not captured by measures of central tendency or dispersion. One method, 'data spinning,' may be particularly well suited for the exploratory analysis of multivariate data (Marchak, 1994). 'Data spinning' consists of the rotation of data points in 3- dimensional (3-D) space. Rotation can be interactive (user-controlled) or passive (animated). Several computer software applications exist that allow users to display and rotate data in 3-D space. Some programs, however, have limited user-interactivity (e.g., SPSS© 10.0), while others are costly (e.g., Data Desk® 6.1, MatLab® 6.1, SAS© -JMPTM 4.04), or difficult to obtain (e.g., MacSpin). Consequently, we constructed our own data visualization application with The Visualization Toolkit (Schroeder et al., 1998) and Tcl/Tk to facilitate the rapid display of multivariate data. We used our Multi-Dimensional Data Viewer (MDDV) to explore data from several psycholinguistic experiments (Feldman & Pastizzo, 2001; Pastizzo & Feldman, 2002).

Graphical representations of data in a spatial array can facilitate the comprehension and analysis of many types of data. Perhaps the greatest benefit of data visualization is the ability to explore aspects of data that are not revealed by standard statistical measures (for a related argument, see Loftus, 1993). The inclusion of exploratory data analysis (EDA) and graphical data analysis (GDA) in statistics handbooks lends further support to the notion that researchers in the behavioral sciences are coming to appreciate and to use graphical methods of data analysis (Smith & Prentice, 1993 and Wainer & Thissen, 1993, respectively). The core principle of EDA is, not surprisingly, to explore the data; to this end, Smith and Prentice (1993) advocated the use of graphical depictions (e.g., stem-and-leaf plots, box plots, scatter plots). Historically, data visualization has been limited primarily to 2 dimensions (e.g., histograms, scatter plots). Advances in computer technology, however, have promoted more sophisticated graphical displays. In the framework of scientific visualization, Castellan (1991) proposed, "[Powerful graphics] should enable scientists to better understand complex phenomena – particularly dynamic systems" (p. 108). That is, developments in computer hardware and software have led to the appearance of enhanced graphics that have the potential to help scientists visualize physical, and more recently, psychological phenomena of a complex, interactive nature. nternet of things, and many more.

DEVALLA MADHUBABU
16F11A0416

IOT BASED BIOMETRICS IMPLEMENTATION ON RASPBERRY PI
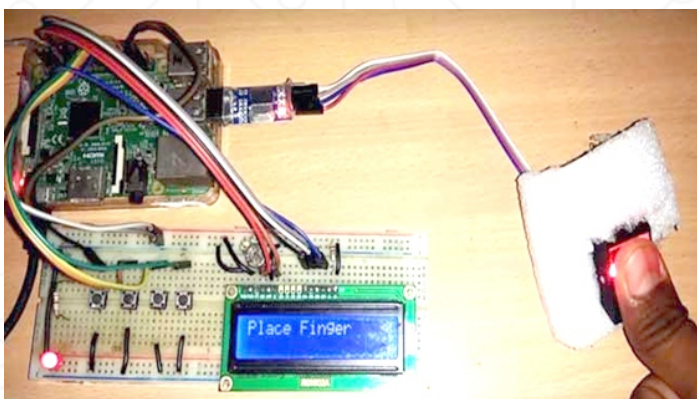
Developments in the field of Information Technology also make Information Security a devoted part of it. In order to deal with security, Authentication plays an imperative role. In this paper, Biometrics is used for authentication. This paper also describes how biometrics can leverage cloud's

boundless computational resources and striking properties of flexibility, scalability, and cost reduction in order to reduce the cost of the biometrics system requirements of different computational resources (i.e. processing power or data storage) and to enhance the performance of biometrics systems' processes (i.e. biometric matching). Here, Raspberry Pi is used to build a low-cost biometric system. Raspberry Pi (RPi) is a credit-sized mini-computer with great capabilities similar to a PC. In this study it is used as a remote enrollment node. The application of Raspberry Pi and cloud computing has given a new direction of research into the field of Internet-of-Things (IoT). Using the biometric technology, a new system of IoT based biometrics is proposed. To maintain the security of biometric traits over the Internet channel from RPi client to the cloud, cryptographic algorithms are applied like RSA and enhanced AES-256. The encrypted biometric information is stored on the cloud and the authentication can be done by Biometric service hosted on Azure cloud. Thus, this papers covers the following topics: attracting power of biometrics into the authentication services, biometrics leveraging the power of cloud, Raspberry Pi-a low-cost IoT device, enhanced AES-256 with Round structure and dynamic S-box generation and the new emerging trend of Internet-of-Thingsings, and many more.

The biometric databases of the Federal Bureau of Investigation, the US State Department, Department of Defense, or the Department of Homeland Security are expected to develop significantly over the next few yours to accommodate several hundred millions (or even billions) of identities. Such expectations make it necessary to formulate highly scalable biometric technology, capable of operating on enormous amounts of data, which, in turn, induces the need for sufficient storage capacity and significant processing power. The first solution that comes to mind with respect to the defined issues is moving the existing biometric technology to a cloud platform that confirms appropriate scalability of the technology, sufficient amounts of storage, parallel processing capabilities and cost reduction. Further cost of the biometric can be reduced by the use of a low-cost IoT device, Raspberry Pi. The allure of the Raspberry Pi comes from a combination of the computer's small size and affordable price. Raspberry Pi, a credit-card sized low-cost Linux computer can be used to develop a biometric architecture

as it has provision of connecting with cameras, fingerprint scanners etc. via USB ports. It has an Ethernet port for Internet connectivity or can be connected to a Wi-Fi hotspot via USB Wi-Fi adapters. In this paper, Raspberry Pi is used as a low-cost, wireless, remote enrolment node and the biometric authentication can be hosted on the cloud as a Software-as-aService.

GANTA PRAJITHA
17F11A0423

# RECOGNITION TECHNIQUE FOR ATM BASED ON IRIS TECHNOLOGY
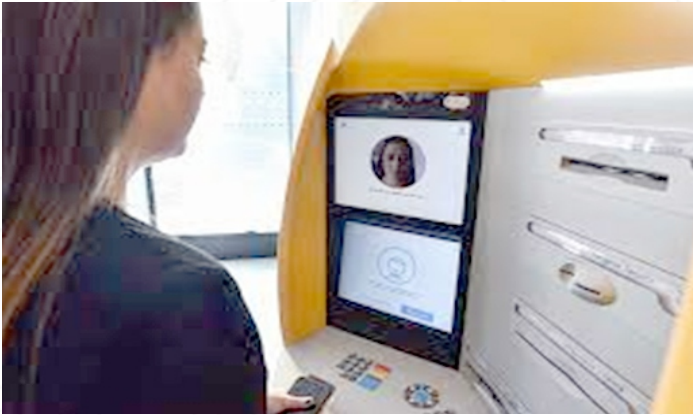
Iris recognition system has proven its capability in implementing reliable biometric security protocols in various high risk sectors like aviation, border patrol and defence. The banking and financial sector has to adoptthis system because of its robustness and the advantages it provides in cutting costs and making processes more streamlined. The technology started out as a novelty however due exigencies in the banking sector characterized by decreasing profits it became a necessity. The use of Biometric ATM's based on iris recognition technology has gone a long way in improving customer service by providing a safe and paperless banking environment. A biometric system provides automatic recognition of an individual based on some sort of unique feature or characteristic possessed by the individual. Biometrics gained lot of attention over recent years as a way to identify individuals. As technology and services have developed in the modern world, human activities and transactions have proliferated in which rapid and reliable personal identification is required. The developments in science and technology have made it possible to use biometrics in applications where it is required to establish or confirm the identity of individuals. The use of biometric indicia for identification purposes requires that a particular biometric factor be unique for each individual that it can be readily measured, and that it is invariant over time.

Human iris on the other hand as an internal organ of the eye and as well protected from the external environment, yet it is easily visible from within one meter of distance makes it a perfect biometric for an identification system with the ease of speed, reliability and automation. The iris is a thin circular diaphragm, which lies between the cornea and the lens of the human eye. The iris is perforated close to its centre by a circular aperture known as the pupil. The function of the iris is to control the amount of light entering through the pupil, and this is done by the sphincter and the dilator muscles, which adjust the size of the pupil. The iris recognition systems have recently shown very high accuracies in verifying an individual's identity. A complete iris recognition system can be split into four stages: Image acquisition, segmentation, encoding and matching. The results of this system are very efficient for ATM transactions.

Iris scan biometrics employs the unique characteristics and features of the human iris in order to verify the identity of an individual. The iris is the area of the eye where the pigmented or colored circle, usually brown or blue, rings the dark pupil of the eye.The iris-scan process begins with a photograph. A specialized camera, typically very close to the subject, no more than three feet, uses an infrared imager to illuminate the eye and capture a very high-resolution photograph. This process takes only one to two seconds and provides the details of the iris that are mapped, recorded and stored for future matching/verification.Eyeglasses and contact lenses present no problems to the quality of the image and the iris-scan systems test for a live eye by checking for the normal continuous fluctuation in pupil size.The inner edge of the iris is located by an iris-scan algorithm which maps the iris' distinct patterns and characteristics. An algorithm is a series of directives that tell a biometric system how to interpret a specific problem. Algorithms have a number of steps and are used by the biometric system to determine if a biometric sample and record is a match. Iris' are composed before birth and, except in the event of an injury to the eyeball, remain unchanged throughout an individual's lifetime. Iris patterns are extremely complex, carry an astonishing amount of information and have over 200 unique spots. The fact that an individual's right and left eyes are different and that patterns are easy to capture, establishes iris-scan technology as one of the biometrics that is very resistant to false matching and fraud.

BORRA PRATHYUSHA
18F11A0412

# VEHICLE TO VEHICLE COMMUNICATION FOR COLLISION
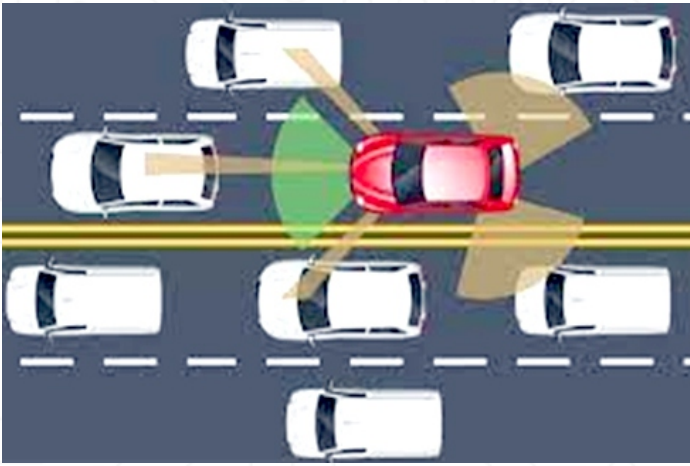
This article gives a protocol among vehicle for creating a collision warning. There is a lot of change in the modern world vehicles, and many new technologies are introduced into vehicles such as vehicle-to-vehicle (V2V) and Vehicle-to roa dside (V2R) communications such as DSRC. These are proving the road accidents can be reduced by alerting the drivers through warnings. VANET or Vehicular Ad-hoc Network is used to obtain the mentioned application. Keywords: VANET, WSN, Road safety.

Road Safety is one trouble that needs specific interest as there is one death pronounced every four minutes on the streets of India. India holds the maximum number of deaths due to road injuries. About 5 lakh street accidents have been accounted for in 2013 wherein more than 5 lakh individuals were dead. In the last couple of years' communication between vehicles has attracted many researchers. The European Union a few research projects check out the capability of lowering road fatalities under the eSafety initiative (e.g.GST, PreVent). The identical is authentic in different countries just like the U.S.A or Japan. Car to car communication, frequently referred to as Vehicular Ad-hoc networks (VANETs), allows many new services for cars and creates several opportunities for safety improvements. Conversation between vehicles can e.g. be used to comprehend driver guide and active safety offerings like collision warning, up to date traffic and weather records or active navigation systems. But, except allowing new offering VANETs pose many challenges on generation, protocols, and security which urges the need of research in this area. VANETs have comparable characteristics as mobile ad hoc networks, regularly in the form of multi-hop networks.

Due to the excessive mobility of nodes community topology changes occur often. All nodes share the equal channel main to congestion in very dense networks. The decentralized nature of VANETs leads to the want for new system concepts and facts dissemination protocols. Further, new tactics for records and conversation safety ought to be designed to healthy the precise community wishes and to guarantee reliable and honest offerings. Technologically, some of extra wellknown questions need to be replied. Those encompass selection at the Wi-Fi communique preferred for use and message dissemination schemes able to changing messages in lots of extraordinary network eventualities. Not independent from this, issues like quality of service (QoS) and excessive pace actual-time communique will have to be tackled to enable on the-fly collision caution or autonomously driving vehicles. The second one vital area of interest is the offerings and programs enabled via C2C communique. As may be shown later, the layout and provisioning of appealing automobile to surroundings or automobile-to-infrastructure offerings is vital for a hit market introduction of C2CC systems.

MOCHE VINEETH
16F11A0452

A DECENTRALIZED SMARTPHONE BASED TRAFFIC INFORMATION SYSTEM
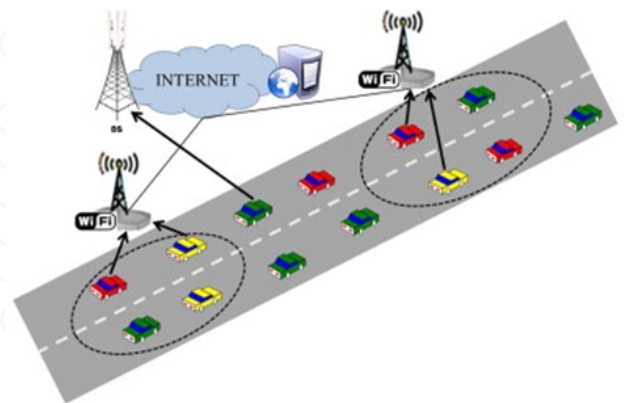
Location-Based Services (LBSs) are information or entertainment services where the request, the response and served contents depend on the physical position of the requesting device. LBS are frequently used to implement Traffic Information Systems (TIS), which are increasingly based on user-contributed information. In this paper we present the first prototype of our solution for a decentralized, smartphone based TIS, called D4V, that allows each participant vehicle to efficiently discover data or services located near any chosen geographic position. The experimental evaluation has shown that D4V could be effectively

used on the road to reduce the number of drivers involved in traffic jams, as well as to disseminate alert messages about potentially dangerous road stretches, thus allowing drivers to reduce risks and nuisances along their paths. Recent years have seen the relentless market explosion of mobile devices (PDAs, smart-phones, MIDs, PMPs, netbooks, etc.), whose ever increasing capabilities make them attractive to an endless number of connected applications and services in business, infotainment and intelligent vehicle domains [20], which can be fully experienced in mobility. One of the most important research field that have developed along mobile devices evolution and diffusion is related to the challenges of applications based on the geographic location of users and information. Location-Based Services (LBSs) are information or entertainment services where the request, the response and served contents depend on the physical position of the requesting device. LBS are frequently used to implement Traffic Information Systems (TIS) [19]. The vast majority of proposed architectures for real-time LBSs are based on a pure centralized or in some cases on a hierarchical infrastructure where one or more central servers have the responsibility to manage all position updates and queries from involved users, related for example to a specific point-of-interest, neighbourhood discovery or path planning. As proposed by several researchers (see section II), a partially or fully decentralized approach is able to increase the accuracy of information and the rate at which it can be retrieved by users. Moreover, it may allow to update and publish information directly, with low cost and high scalability. Last but not least, it may simplify the process of joining the virtual community and publish new services. On other hand, one of the main reasons not to rely on a centralized system for managing location-based information (such as traffic information) could be non-technical. It simply does not seem to be desirable to hand the control of this data over one single organization, potentially limiting the access to data collected conjointly by all participants. In this paper we present the first prototype of our solution for the implementation of a Traffic Information System (TIS), called D4V, that allows each participant vehicle to efficiently retrieve node and resource information (data or services) located near any chosen geographic position. D4V runs on a peer-to-peer overlay scheme called Distributed Geographic Table (DGT), based on the geographic location of involved users and information.

The DGT algorithm allows to obtain a system where overlay neighbours are at the same the real geographic neighbours of a peer without the need to route additional messages. In D4V, users can participate using their smartphone to send and receive real time information about traffic conditions or potentially dangerous situations. We have implemented the DGT as a software library in Java (J2SE and Android). Then we have developed the D4V prototype, based on such library, and tested it both on Planet Lab, using several autonomous nodes, and on the field, with D4v nodes running on smartphones managed by real users driving their vehicles. The paper is organized as follows. In section II we discuss related work on the hot topic of sensor data dissemination and aggregation within vehicular networks. In section III we summarize the main features of the DGT overlay scheme. In section IV we illustrate the results of the experimental evaluation of the D4V application on Planet Lab. Finally, in section V we propose a concluding discussion and an outline for future work.

PIDUGU GAYATHRI
17F11A0478

INCREASING SAFETY OF BOMB DISPOSAL MISSIONS: A BODY SENSOR NETWORK APPROACH
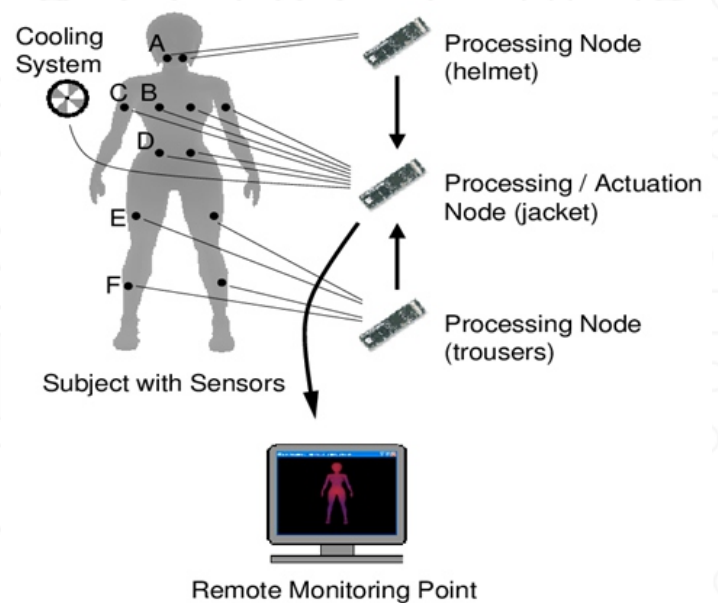
During manned bomb disposal missions, the combination of the protective suit's weight (37kg), physical activity, high ambient temperatures, and restricted airflow can cause the operative's temperature to rise to dangerous levels during missions, impairing their physical and mental ability. This work proposes to use Body Sensor Networks (BSNs) to increase the safety of operatives in such missions through detailed

physiological monitoring, fusion of health information, and remote alerts. Previous trials conducted by the authors have shown no correlation between the suit wearer's temperature at any single skin site and their core temperature, nor between single point temperature variations and subjective thermal sensation. This paper reports on the development of a wearable, wireless, networked sensing system suitable for integration within the suit and deployment in manned missions. A sensor fusion and modelling approach is proposed that estimates the overall thermal sensation of the suit wearer, in real-time, based on the multipoint temperature data. Zhang's thermal sensation model was used in this work. Modelling is performed locally to enable cooling system actuation, provide local feedback, and accommodate application specific constraints. Experimentation with the prototype confirms the importance of: multi-site skin measurement; timely cooling actuation; and monitoring the operative's thermal state. Evaluation of Zhang's model highlights the need for a bespoke model to account for suit and mission specific factors. The deployed BSN has been evaluated through experimental trials using a number of subjects in mission-like conditions and has been shown to be appropriate for the target application.

CHILLAKURU SRIHITHA
18F11A0421

AUTOMATIC ELEVATOR SYSTEM FOR MAINTENANCE SERVICES

This work presents an electrically assisted automatic elevator system for maintenance of street lights. The system was installed in a public illumination maintenance truck. It consists of a telescopic column, a base structure, and a platform. The whole operation is monitored and controlled by a PLC.

The system aims at reducing efforts in maintenance tasks as well as improving the work conditions for the electricians. The power distribution network presents a large variety of components aggregated under various systems. Hence, it is necessary a great diversity of procedures for its maintenance. Such procedures are sometimes dangerous, as they involve proximity of crews and heavy equipment manoeuvring to energized

power lines in locations where access is difficult (due to traffic, improper terrain, etc). Usually, electric power companies develop great effort toward standardizing power line structures, fact that is interesting from a maintenance point of view. Maintenance is still an expensive and dangerous activity that demands the use of a large physical area for its execution, large and heavy equipment's, and specialized working teams. In addition, the tools used in these tasks are still conventional, and require extensive working periods with a potential high risk for accidents. Another important aspect to be considered is the increasingly rigorous regulations imposed by governmental agencies in this field activity. This scenario shows how improvements in the safety are necessary besides more dynamic processes. On the other hand, advances in the mechatronics and robotics technology opens a range of new possibilities for processing automation and the development of new tools in the field of power line maintenance, allowing gains in terms of productivity and safety. This work describes the development of an automatic elevator system to be used by electricians in the maintenance of urban distribution lines. The system was conceived to have small size, low weight, low cost, and presents a simple and secure operation, by means of the use of a PLC that control actuators based on the readings of a variety of sensors. A prototype of the maintenance support system equipped with an automated control for its structure positioning, and operator's commands to climb to the the desired work height, was developed and mounted on a light truck. Currently, the system is under field tests at CPFL. The project is being conducted by the CPFL - Paulist Power and Light Company (Campinas city, Brazil) that owns 3,250,000 consumers and USP – University of Sao Paulo (Brazil). This project is a part of a Brazilian national project, coordinated and sponsored by Brazilian Federal Government, which targets the improvement of technological level of electric companies.

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KONDURU KEERTHI
17F15A0410

FLOOD MONITORING AND ALERTING SYSTEM

Flood is one of the natural disasters which cannot be avoided totally. Every year, death rate due to flood increases because of absence of early warning.
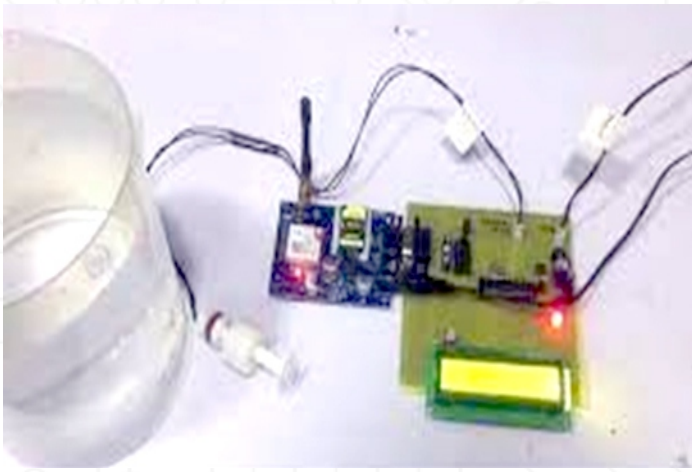
To solve this problem, this paper demonstrates the idea and implementation of a Flood Monitoring and Alerting system using Internet of Things (IOT) technology. This system comprises of three parts. The first part measures the height of the water using ultrasonic distance measuring sensor. The second part is sending the height information to web page using the Ethernet shield. The third part is making call to residences to alert them about flood through voice message. The call is made through the most popular mobile standard Global System for Mobile Communication (GSM) and ARP33A3 is used to play the recorded voice message.

The Internet of Things builds on three major technology layers: Hardware (including chips and sensors), Communication (including mostly some form of wireless network), and Software (including data storage, analytics, and front-end applications). IoT describes a system where items in the physical world, and sensors within or attached to these items, are connected to the Internet via wireless and wired Internet connections. The physical objects that are being connected will possess one or more sensors. Each sensor will monitor a specific condition such as location, vibration, motion and temperature. In IoT, these sensors will connect to each other and to systems that can understand or present information from the sensor's data feeds. These sensors will provide new information to a company's systems and to people.

Flood monitoring and alerting system alerts the user nearby the river area through voice call. An Arduino Uno microcontroller is used to control the whole system. It is interfaced with GSM modem, ultrasonic sensor, Ethernet shield . The distance between the ultrasonic sensor and water is measured and the height level of the water is calculated. The calculated height value is updated in the web page.

The water level calculated would then be compared with the set threshold and if the current level is more than the set threshold value, the microcontroller would enable voice call to be sent to residence to alert them via the GSM module. We are using ARP33A3 device to record voice and it is interfaced with the GSM modem so that the recorded voice is played when the call is attended.

ACHI SAIRAM
18F15A0401

SLEEP SENSING AND ALERTING SYSTEM FOR DRIVERS
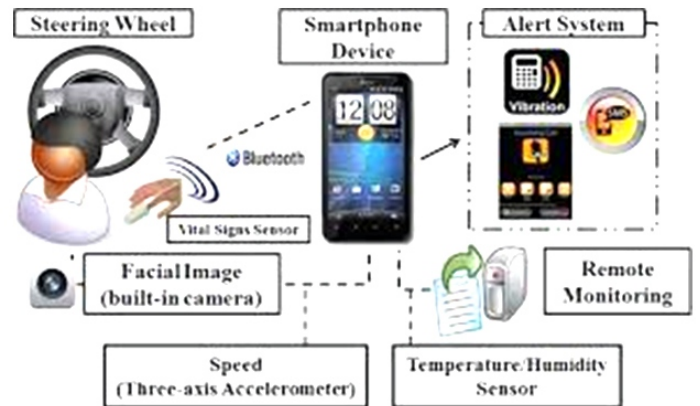
Nowadays There has been a very large increase in road accident due to drowsiness of driver while driving which leads to enormous fatal accidents. The driver loses his control when he falls sleep which leads to accident. This is because when the driver is not able to control his vehicle at very high speed on the road. Driver in-alertness is an important cause for most accident related to the vehicle's crashes. Driver fatigue resulting from sleep deprivation or sleep disorders is an important factor in the increasing number of the accidents on today's roads. Drowsy driver warning system can form the basis of the system to possibly reduce the accidents related to driver's drowsiness. This project can generate a model which can prevent such accidents. To prevent this, we outlined a very simple and economical system which deals with this issue. In this project, when a driver falling asleep, an alarm is raised to warn the driver attached to the rear of the vehicle. The alarm continues for a minimum of 10 seconds so that the driver wakes and get ready to steady the vehicle he drives. Thus, we can control the major accidents. The primary purpose of the Drowsy Driver Detector is to develop a system that can reduce the number of accidents from sleep driving of vehicle. With our two monitoring steps, we can provide a more accurate detection. For the detecting stage, the eye blink sensor always monitor the eye blink moment. It continuously monitor eye blink.

If the monitoring is over, the collected data will be transmitted to a microcontroller, and the microcontroller digitizes the analog data. If the warning feedback system is triggered, the microcontroller makes a decision which alert needs to be activated. The second application of this paper is to detect the alcohol content or any leakage of gas from the vehicle, once it deduct such sensation the LED light glows indicating emergency and this project also deals with temperature sensors, in case of any fire inside the vehicle the sensor senses and stops the engine. For the alert systems, we have a beeper device. The project code is developed in C language and then converted to hex code which is readable to the microcontroller.

The sensor was processed by a microcontroller and transfer to sensor based system. The IR-Led sensor module is focused on the eye with the help of an eyeglass fixed with respect to the eye. It provides the two different level of signal from the sensor which we use to differentiate between a closed eye and open eye. The micro controller considers that the last 60 readings and if 10 of those readings indicate a closed eye then the micro controller decides that the drivers is getting drowsy an alarm is raised to warn the driver attached to the rear of the vehicle. The alarm continues for a minimum of 10 seconds and longer even until the microcontroller.

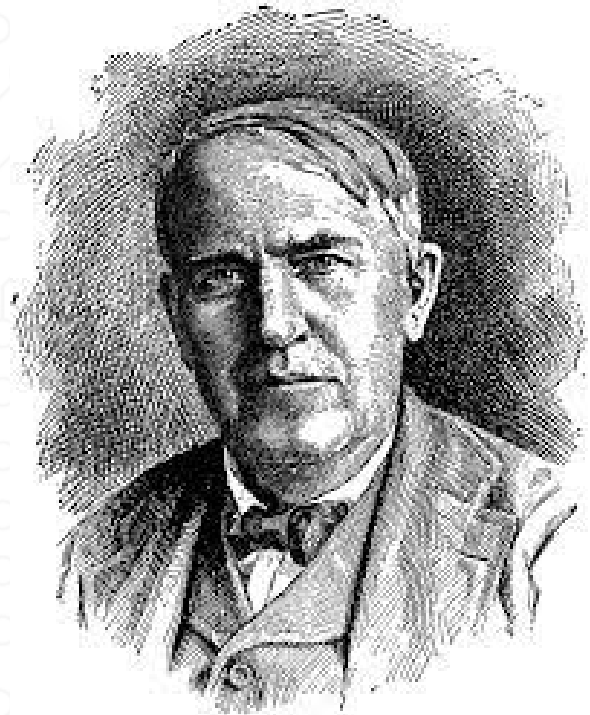*V ANATHA BABU*
19F15A0409

BRAIN TWISTER

1			7	8	4			
8	2					9	3	
	6				2			
			3	2				7
		5		9			8	2
6	1							
					8	5	9	
9		6		5				
7						8	2	3

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I Have not failed. I've just found 10,000 ways that won't work

- Thomas Alva Edison