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Faculty Co-Ordinators

Dr. P. Sreenivasulu
Professor

Mr. S. Brahmaiah
Asst. Professor

Student Co-Ordinators

Baliboyena Snigdha
(15F11A0411)
Navida Vinamrutha
(16F11A0459)

KSR. Gautham
(15F11A0448)
GVSS. Varun
(16F11A0423)

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NARAYANA ENGINEERING COLLEGE :: GUDUR

(Approved by AICTE & Permanently Affiliated to JNTU,
Ananthapuramu, An ISO 9001:2015 Certified Institution)

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.

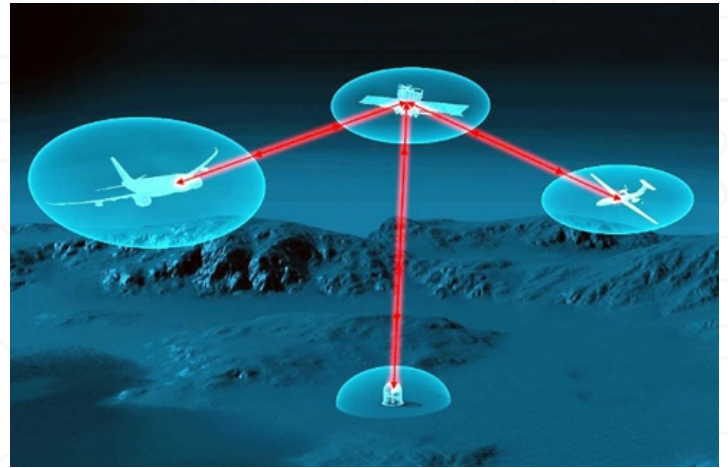


On-behalf of Narayana Engineering College, Gudur welcomes all the stakeholders to the Electronics and communication Engineering . It gives me an immense pleasure to lead the Department of this prestigious institution. We take pride in our faculty; a self-disciplined team with dedication and is a mixture of both academic and industrial experience working towards the growth of the students and organization. We have well equipped laboratories with the state-of-the-art research facilities, to support our academic programs.

The department has well qualified and dedicated faculty. The department strives to Impart knowledge and training of the highest standard. The objective of the department is to prepare students for a successful career in Company, Research and Academics to meet the needs of growing technology. Our efforts are to develop the ability among students to synthesize data and technical concepts for application to product design. We provide an opportunity for students to work as members of a team on multidisciplinary projects.

For the overall development of the student, we formulated a Electronics and communication Engineering Students association. Various activities of these chapters provide student to gain knowledge and interact with students and staff of other colleges/universities as well as Industry Engineers. Students have taken part in various competitions.

OPTICAL SATELLITE COMMUNICATION SPACE TERMINAL TECHNOLOGY AT TNO



Optical communications will complement radio frequency (RF) communications in the coming decades to enhance throughput, power efficiency and link security of satellite communication links. To enable optical communications technology for intersatellite links and (bi-directional) ground to satellite links, TNO develops a suite of technologies in collaboration with industry, which comprises of terminals with different aperture sizes, coarse pointing assemblies and fast steering mirrors. This paper presents the current state of the development of TNO technology for optical space communications.

It mainly focuses on the development of an optical head with an entrance aperture of 70 mm, an optical bench for CubeSats and coarse pointing assemblies (CPAs). By continuing these steps, world wide web based on satellite communications will come closer.

Optical satellite communication already is complementing satellite communications based on radio frequencies (RF). Although high throughput is a very prominent advantage, also the advantage of low-power, low interference and high security for optical wavelengths, e.g. 1064 or 1550 nm. These advantages serve several business opportunities, such large-scale communication via satellites and quantum key distribution (QKD) channels. Since optical communications technology has been proven to be a technical viable solution, the road has been paved for broad applications.

In this perspective, the European data relay system is currently effectively in use, mainly to transport data from scientific missions toward ground-based systems. On the EDRS, TESAT provided high end versatile technology.

This technology is able to establish intersatellite links, e.g. LEO-LEO and LEO-GEO, but also satellite to ground communication. The work that has been done to persistently perform optical communication links, brought the confidence that optical satellite communications could be used for other business cases.

Other attractive business opportunities serve the communication between people, for instance to transfer confidential data, or encryption keys. The inherent security of optical links, due to the limited beam divergence provide the confidence in such business applications. To enable wide usage of optical satellite communication, e.g. to provide massive LEO constellations with optical terminals, still work has to be done to provide commercially attractive laser communication terminals. Furthermore, there is also a clear trend towards smaller and smaller satellites for various earth observation and science tasks.

BANDI SRAVANI
15F11A0413

4G TECHNOLOGY



Today is the day of internet. In most field wireless system is very widely used. Currently a number of technologies like 1G, 2G, 2.5G, 3G etc. A new technology is introduced which is called as 4G technology.

Fourth generation wireless system is a packet switched wireless system with wide area coverage and high throughput. It is designed to be cost effective and to provide high spectral efficiency. Data rate of 20mbps is employed. Mobile speed will be up to 200km/hr. The high performance is achieved by the use of long-term channel in both time term channel in both time and frequency,

scheduling among users and smart antennas combined with adaptive modulation and power control. Frequency band is 2-8 GHz. it gives the ability for worldwide roaming to access cell anywhere. It uses OFDM (orthogonal frequency divisional multiplexing) and Ultra-Wide Radio Band (UWB), and Millimetre wireless and smart antenna. 4G uses a multi network functional device software which is very helpful for multiple user.

Since past some decades cell phone world has experienced a considerable amount of transition. This transition initiated from the First generation (1G) mobile phones carried forward by the 2G and 2.5G mobile phones. Nowadays, people are habituated of using the 3G technology. But the technologies and inventions are ever-restless and therefore the cell phone industry is again hopping with a great speed towards the Fourth generation (4G) technology. 4G mobile phone technology is a complete replacement of wireless communication in 3G technology. Like the transition of 2G technology to 3G technology had increased data-transmission speeds, the transition from 3G technology to 4G technology promises even higher data rates than existed in previous generations and thus considered to be a successor to 2G and 3G standards. “4G promises voice, data and high-quality multimedia in real-time (“streamed”) form all the time and anywhere” (Fendelman, n.d, Para 03).

A natural extension of the current 3G technology is the Long-Term Evolution (LTE) which is also referred as the pre-4G technology. Transmission of all data including voice takes place as LTE is architectural design that can send all types of IP packets and data. “For a 20 MHz channel the downlink transmission bit rate of LTE up to 100 Mbps and 50 Mbps in the uplink and the bit rate capacity increases for a Multiple-input multiple-output (MIMO)” (4G and Beyond 3G Technology. Para 05). According to German (2010, March 15) some of the well-known mobile carriers in United States like VERIZON and AT&T and several across the globe would convert their network to LTE and world's first publicly available LTE-service was opened in the two Scandinavian capitals Stockholm and Oslo on the 14 December 2009. “VERIZON said that LTE testing in Seattle and Boston has gone well and that it will bring the technology to 25 to 30 markets this year” (German, 2010 March 15, Para 06). “According to the

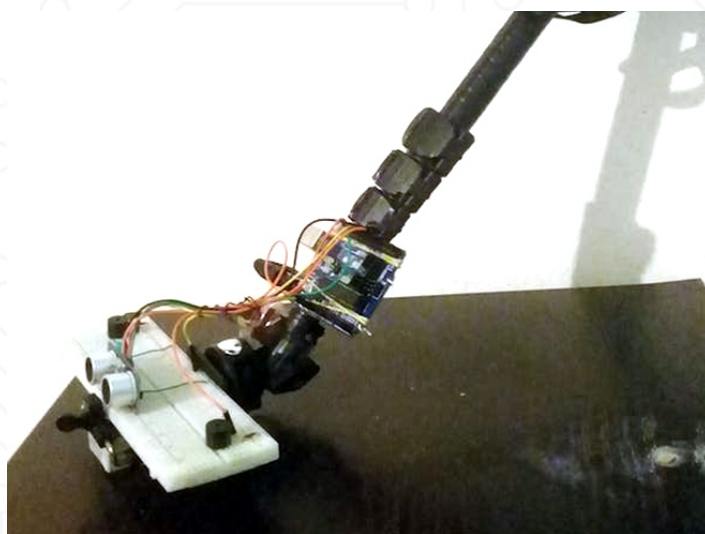
communication connections due to their potential multi-gigabit / second capability. Such frequencies are distinguished by highly dynamic channel conditions, which contribute to large variations in the signal quality obtained. Furthermore, using mm Wave in 5G wireless communication solves the spectrum shortage in current 4G cellular communication systems operating at frequencies below 6 GHz. Nonetheless, the number of new technologies such as virtual / augmented reality (VR / AR), autonomous driving, Internet of Things (IoT), and wireless backhaul (as a substitute for labour-intensive optical fiber installation), as well as new applications not yet planned, will need even higher data rates and less latency than what 5G networks will deliver (Rappaport *et al.*, 2019). Both (Polese, Jana and Zorzi, 2017) and (Panhwar *et al.*, 2017) agreed that by 2020, connectivity and mobile networks will face significant obstacles compared to today.

5G TECHNOLOGY



The fifth-generation (5G) technology will be the first in the new digital age where the various networks form a unified system. The 5G networks would greatly improve efficiency over the existing fourth-generation (4G) platforms with support for higher bandwidth and low torque and communication services, as well as offering seamless connectivity to multiple phones, compatible with different technologies, knowledge, and mobility (Selinis *et al.*, 2018). According to the alliance of the mobile network (NGMN, in the Next Generation), the 5G networks will provide the following: a cell border user bit rate at least 50 megabits per second (Mbit /s) in the lowest conditions with gigabit per second (Gbit /s) peaks; ultra-low end to end latency (possible below 10 ms) (Polese, Jana and Zorzi, 2017). In contrast, future 5G networks will probably include mm Wave

SMART BLIND STICK USING ARDUINO UNO



This Article presents the smart walking stick based on ultrasonic sensors and Arduino for visually impaired people. There are approximately 37 million people across the globe who are blind according to the World Health Organization. People with visual disabilities are often dependent on external assistance which can be provided by humans, trained dogs, or special electronic devices as support systems for decision making. Thus, this article motivated to develop a smart white cane to overcome these limitations. So that accomplished this goal by adding ultrasonic sensors at specific positions to the cane that provided information about the environment to the user by activating the buzzer sound.

People proposed low cost and light weight system designed with microcontroller that processes signal and alerts the visually impaired person over any obstacle through beeping sounds. The system consists of obstacle detection sensor for receiving, processing and sending signals to the alarm system which finally alerts the user for prompt action. The system was designed, programmed using C language and tested for accuracy and checked by the visually impaired person. Our device can detect obstacles within the distance of about 2m from the user.

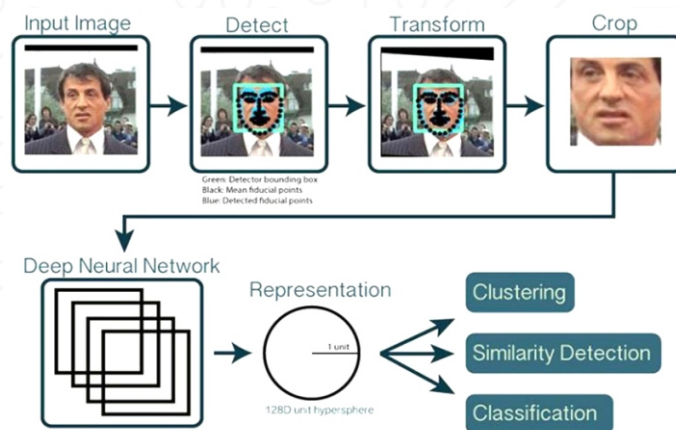
Visually impaired people are the people who finds it difficult to recognize the smallest detail with healthy eyes. Those who have the visual acuteness of 6/60 or the horizontal range of the visual field with both eyes open have less than or equal to 20 degrees. These people are regarded as blind. A survey by WHO (World Health Organization) carried out in 2011 estimates that in the world, about 1% of the human population is visually impaired (about 70 million people) and amongst them, about 10% are fully blind (about 7 million people) and 90% (about 63 million people) with low vision according to. The main problem with blind people is how to navigate their way to wherever they want to go. Such people need assistance from others with good eyesight. As described by WHO, 10% of the visually impaired have no functional eyesight at all to help them move around without assistance and safely. The figure 1 below is a chart showing the percent of blind people across the globe. This study proposes a new technique for designing a smart stick to help visually impaired people that will provide them navigation.

The conventional and archaic navigation aids for persons with visual impairments are the walking cane (also called white cane or stick) and guide dogs which are characterized by a many imperfections. The most critical shortcomings of these aids include: essential skills and training phase, range of motion, and very insignificant information communicated been communicated. Our approach modified this cane with some electronics components and sensors, the electronic aiding devices are designed to solve such issues. The ultrasonic sensors, water sensor, buzzer, and RF transmitter/Receiver are used to record information about the presence of obstacles on the road.

Ultrasonic sensor have the capacity to detect any obstacle within the distance range of 2cm-450cm. Therefore whenever there is an obstacle in this range it will alert the user. Water sensor is used to detect if there is water in path of the user. Most blind guidance systems use ultrasound because of its immunity to the environmental noise. With the rapid advances of modern technology both in hardware and software it has become easier to provide intelligent navigation system to the visually impaired.

GALI PAVAN KUMAR REDDY
15F11A0435

DESIGNING IoT FACE RECOGNITION ROBOT



The detection of human facial emotions is a major goal in the current world of technology. Robotic applications are used in almost all domains. In order for us to communicate effectively with robots, face recognition is essential. The project aims to develop and implement a new face recognition system based on CV (Computer Vision) and IoT (Internet of Things). The program is revealed in many facial images of people from different backgrounds and backgrounds. This creates a training database that helps in facial recognition. Then, when the robot detects a human face, it initiates a face recognition algorithm that uses the Local Binary Pattern (LBP) method. Face recognition is a way of image processing to find a person's face that requires a camera to take a picture of a person's face. Image processing will search for an important aspect of a person's face in a photo, so something else will be considered. Image processing detects human faces using various algorithms and methods, for example: AdaBoost, Viola-Jones method, Roberts Cross method, and more. To distinguish seeing a person's face can be used; Local Binary Pattern (LBP), Hidden Markov Model (HMM), Bayesian, Support Vector Machine (SVM), and more. In this article, the image is captured by a camera module and face recognition and face recognition algorithms are used using the Raspberry Pi.

The digital image of the obtained face is separated by pixels used for continuous processing. The features of this image are compared to a pixel with a pixel with face features in the database. The Arduino computer hardware unit controls functions such as temperature recording, LED blinking and also controls robot traffic with a servo motor. Article will be described a development of Social Robots which can recognize and track human faces. The real-time face detection and recognizing human face.

In , the Face Recognition System (FRS) process can be divided into two main components. The first part is processing the image and the second part is the recognition techniques. The image processing component contains facial image detection by scanning, image enhancement, image cutting, filtering, edge detection and feature removal. The second part contains artificial intelligence formed by genetic algorithms and has many face detection methods. The facial recognition algorithm was broadly divided by researchers into (M. Singh et al.) two alternatives, namely, discriminatory and productive methods. Discrimination methods use basic information such as age, weight, bone structure, and body size given to be analysed and the production method describes how to apply the data to the model. Many face recognition methods are divided (Ming-Hsuan Yang et al.) into four main categories, namely, Information-based approach, Invariant feature method, image compression, and visual-based methods. It touches the face to find related facial features, to detect fixed features while changing shape, change in brightness or other changes in the face The pattern matching method defines all facial features to match between the inclusion pattern and the calculated reference to obtain face detection.

JAGGA YAMINI
16F11A0428

PERFORMANCE OF MULTI SENSOR FIRE ALARAM



The Performance of Multi Sensor Fire Alarams in fire and false alarm tests: The early detection of fire is necessary to give building occupants time to escape and to limit the damage to property. Achieving reliable early detection with minimal false alarms over a broad range of applications is a challenge. The detection of smoke-like phenomena commonly found in the service environment, such as steam, aerosols and airborne dust, contribute to the numbers of unwanted alarms. Since 2013 BRE has been involved in two studies investigating how false alarms from fire detection systems can be reduced. They showed that the greater use of multi-sensor detectors could help to reduce false alarms from common causes such as steam, dust, cooking and aerosol sprays.

Multi-sensor detectors use a combination of more than one type of sensor – smoke, heat or carbon monoxide – to detect the presence of a fire. A research group, comprising the Fire Industry Association, BRE and fire detector manufacturers, has now investigated the immunity of multi-sensor detectors containing optical smoke and heat sensors to common causes of false alarms. The multi-sensor detectors used were categorised by their design and the performance of these detectors in more challenging test fires was also investigated.

In a series of five false alarm tests as well as six standard and four new test fires the performance of thirty-five optical heat multi-sensor detectors, representing the full range of those currently available in the marketplace, were compared against two reference optical smoke detectors. The response of the detectors to cigarette smoke, insects, condensation and synthetic fog was explored, but it proved difficult to develop consistently repeatable test methods. Targeting the more common causes of false alarms five tests were developed and used during this research. These were water mist, dust and aerosol tests performed at the University of Duisburg-Essen together with toast and cooking tests conducted in the BRE Fire Test room. For all false alarm tests the multi-sensors on average operated after the optical smoke detectors. Nine of the multi-sensors did not respond to the aerosol spray, indicating excellent immunity to this cause of false alarms. The four new test fires that were developed included flaming or smouldering fires

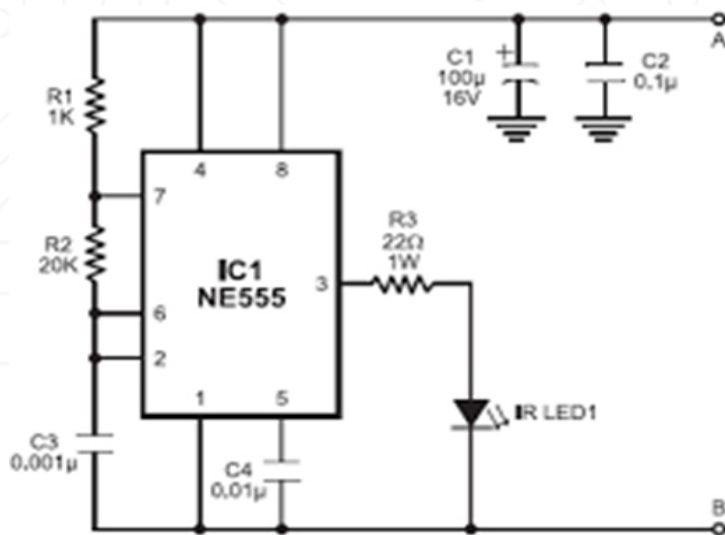
using ABS, MDF and flame-retardant polyurethane foam. The new test fires examined optical heat multi-sensor performance at their limits of detection, by producing levels of heat or smoke particulates that challenged the technology. Whilst failures of these detectors were observed to some of the new test fires the majority passed.

The multi-sensor detectors and the optical smoke detectors achieved similar pass rates in all the test fires, but critically, during all five false alarm tests, the optical heat multi-sensors on average operated after the reference smoke detectors.

In general, it was found that the more sophisticated the optical heat multi-sensors were, the less prone they were to common causes of false alarms, whilst their ability to detect real fires was not compromised.

GOTTIPALLI HARSHAVI
17F11A0424

ELECTRONIC WATCH DOG



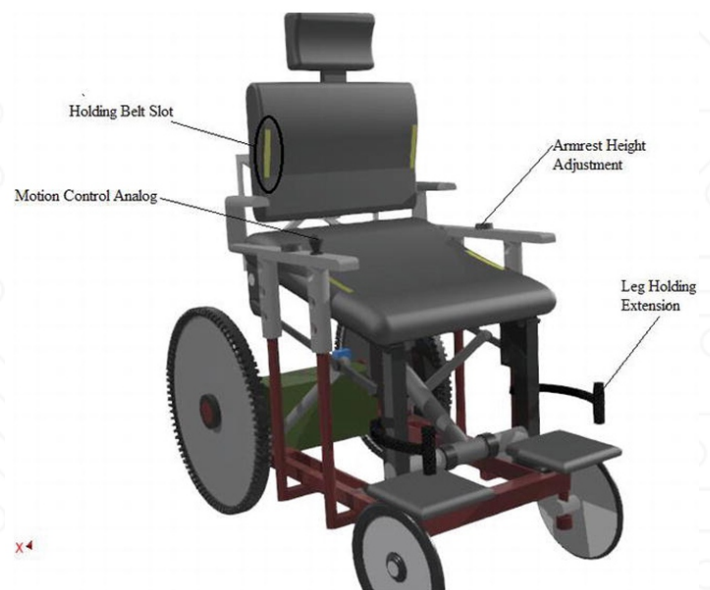
A watchdog timer (sometimes called a computer operating properly or COP timer, or simply a watchdog) is an electronic or software timer that is used to detect and recover from computer malfunctions. Traditionally and even now many people have pet dogs stationed at their entrance. The purpose of the dogs is that they bark whenever a person enters through the door. This is what names this project as Electronic Watch Dog Project as it performs the same task of detecting the presence of a person at the entrance of a premises. A pair of IR sensor transmitter and receiver are placed at the entrance of the premises that needs to be secured. This is what does the trick in our case in this project. When a person or an intruder who doesn't know about the security

device installed at the entrance enters through the door, the IR rays get cut. This cutting of IR rays triggers a series of events in the circuit eventually ringing a burglar alarm. Hearing the alarm the owner of the premises can come to know that someone has entered through the door. Similarly, this device can be installed wherever perimeter is needed to be secure from intruders.

The IR rays from transmitter reach the IR receiver making it signal to the 555 IC that currently there is no presence in between the sensors. But as soon as an intruder cuts the IR rays, the receiver output changes resulting the 555 IC to trigger. This eventually leads to triggering the UM66 IC. Due to these series of events the speaker connected at the output of the circuit board starts ringing thus notifying about the intruder at the secured parameter.

KONDA SAJAL KUMAR
17F11A0442

DEVELOPMENT OF SMART CHAIR



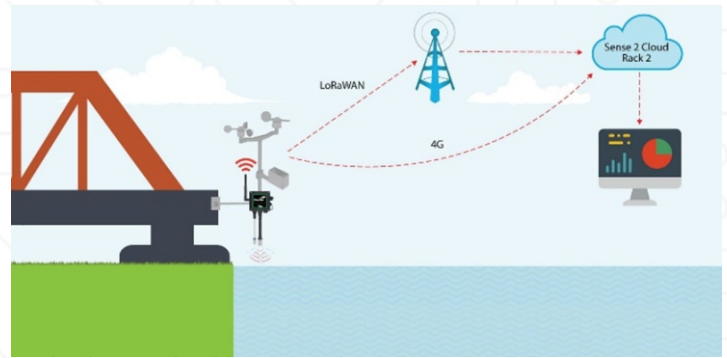
Smart Wheel Chair is a mechanically controlled device designed to have self-mobility with the help of the user command. This reduces the user's human effort and force to drive the wheels for a wheelchair. Furthermore, it also provides an opportunity for visually or physically impaired persons to move from one place to another. The wheelchair is also provided with an obstacle detection system which reduces the chance of collision while on the journey. Smart wheelchairs have gained a lot of interest in recent times. These devices are useful especially in transportation from one place to another. The machines can also be used in old age homes where

the old age persons have difficulty in their movements. The devices serve as a boon for those who have lost their mobility. Different types of smart wheelchair have been developed in the past but the new generations of wheelchairs are being developed and used which features the use of artificial intelligence and hence leaves a little to tinker about to the user who uses the wheel chair. The project also aims to build a similar wheel chair which would have a sort of intelligence and hence helps the user on his/her movement.

Though the recent developments of science and technology has drastically changed the way a normal person lives his life, there are certain groups of people who have not been able to be benefit from this development. On particular handicapped people with have limited mobility are still living a miserable life. A smart wheel chair aims to provide aid to those handicapped and physically challenged persons by providing them with some sort of mobility which would greatly help them. Smart wheel chair consists of a major controller unit which allows the user to provide the input in the form of joystick or accelerometer or a voice command. The controller unit then synthesizes the command and takes required action so as to move the wheelchair to the particular position. Programming models, and architectures.

Smart wheelchairs have been researched since the early 1980s and have been developed on four continents. Some smart wheelchairs operate similarly to autonomous robots: the user specifies a final destination and supervises as the smart wheelchair plans and executes a path to the target location. To reach the destination, the systems typically require either a complete map of the area through which they navigate or modifications to their environment (e.g., tape tracks placed on the floor or markers placed on the walls). They are usually unable to compensate for unplanned obstacles or travel in unknown areas. Smart wheelchairs in this group are most appropriate for users who (1) lack the ability to plan and/or execute a path to a destination and (2) spend most of their time within the same controlled environment. Another group of smart wheelchairs assists only with collision avoidance, and the user has all the duties of planning and navigating.

FLOOD DETECTION AND WATER MONITORING SYSTEM USING IOT



Since all are now currently present in an era of Computing Technology, it is essential for everyone and everything to be connected to the internet. IOT is a technology that brings us more and more close to this goal. Our project comprises of smart water monitoring system which is a small prototype for flood detection and avoidance system. This paper explains the working and the workflow of all the components present inside our project. The sensors sense the environment and sends real-time data to the cloud (firebase cloud) and users can view and access this data via their mobile platform. The model gives a warning after the water level rises to a particular height. Since it is a small scaled prototype for flood detection and avoidance system, the working of this model is good. The data are uploaded and changed in the cloud in precision to the sensor and real-time changes in the mobile application is achieved. This model can be used to greatly reduce the casualties in a devastating event of flood.

The current industrial age has revolutionized our lives and provides us with plenty of comforts and conveniences. However, this industrial progress has come at a hefty cost of global warming and other environmental disasters such as flood, earthquake, etc. Furthermore, the loss caused by such disasters to life and property is immense. The increasing carbon footprints and greenhouse gases have severely led to an imbalance and disturbances in the natural cycle of rains and floods. Hence, we are facing the dangers of unwarned and inevitable floods more than ever before. In order to detect and avoid floods in a timely manner, technology plays a very important role. With the help of the current technology privileges, we can detect and prepare ourselves for an upcoming disaster. Studies show that such an initiative can really come in handy.

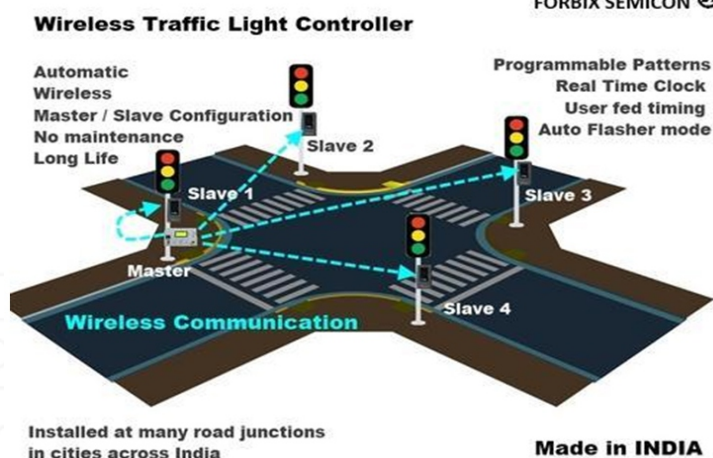
In a very recent US flooding due to storms in the Midwest, loss of life and property damage were minimized due to the emergency systems available there. On the other hand, North Korea struggled to deal with the displacement of over 300,000 people, approximately 221 deaths and a cost of \$6 million-most to feed the homeless survivors, and this all resulted in part from the lack of development of warning systems and information at the community level of the impending flooding. The same was seen in the floods that happened in the Indian states of Kerala and Tamil Nadu.

This is where the Internet of Things (IoT) proves to be a very efficient approach. Internet of Things or IoT basically refers to the wireless network between objects embedded with some electronics, software and sensors with the internet, enabling them to collect and exchange data, and can be remotely monitored and controlled. An IoT early flood detection and alert system using the Arduino is thus, a proposed solution to this problem. The system consists of various sensors which are temperature, humidity, water level, flow and ultrasonic sensors and also includes an Arduino controller, a Wi-Fi module, an LCD, an IoT remote server-based platform and an android application with constructed user-friendly GUI relaying all the vital information involved in the picture in a visual format.

SHAIK CHANDINI
16F11A0480

ARDUINO BASED TRAFFIC LIGHT SYSTEM WITH INTEGRATED LED ADVERTISING DISPLAY

FORBIX SEMICON



Rapid advancement in scientific knowledge and growth in worldwide economic activities has led to a steep rise in the volume of vehicular activity for human and product mobility hence leading to more road constructions.

Vehicular Movement controls in addition to controllers are, therefore, a critical necessity of the modern – day society. Toward this end, this paper is aimed toward the design of microcontroller-based traffic control device taking as a case study the complex layout and linkage among the service roads of the Senate building and College of Science and Technology, Covenant University, Nigeria.

The Arduino platform is the microcontroller preference for this idea. Also, to make this idea more effective and productive, a Light Emitting Diode (LED) advertising displays has been incorporated into its implementation to take advantage of the red light wait time to disseminate useful information or facts.

In the emerging modern society, electronics, robots and artificial intelligence are replacing humans in many fields of endeavor one of which is traffic controlling. They are very reliable and error free. To persons who journey or adventurers, congestion means lost time, missed opportunities, and dissatisfaction. To an employer, congestion means lost workers efficiency, delivery delays and ncreased costs. To resume at work and to disseminate useful information to various offices within a given area during peak hours, becoming more difficult for workers and other member of the community. Due to congestion problems, traffic of four road lanes is controlled using microcontroller for 24 hrs. and this lessens waiting time for the road users. As an added productive and incentive feature, wait times at the turning on of the red light can be effectively utilized for information dissemination since it is the time the driver and passengers are stationary and focused on the light to turn green. The information disseminated could be adverts, public information, and weather forecast and so on. The adverts can serve as a source of income generation

creating a very lucrative Return on Investment (ROI). Full colour or monochrome LED displays are normally employed for outdoor information dissemination. These apart from disseminating information, will add colourful aesthetic hues to the nearby surroundings beautifying the whole place.

The case study of this paper is the interlocking junction between the senate building and the college

of science and technology Covenant University Nigeria. This junction is a staggered link between the two main entrance and exit roads. Due to its staggered nature, manoeuvring into any of the two roads can be very daunting and dangerous.

PETA LEHA SREE
17F11A0476

MULTI-STORY CAR PARKING SYSTEM



Automatic multistoried car parking system helps to minimize the parking area. In the modern world where parking space has become a very big problem, it has become very important to avoid the wastage of space in modern big companies and apartments etc. in places where more than 100 cars need to be parked, this system proves to be useful in reducing wastage of space. This automatic car parking system enables the parking of vehicles, floor after floor and thus reducing the space used. Here any number of cars can be parked according to the requirement. These makes the system modernized and thus space-saving one. This idea is developed using 8051 microcontroller.

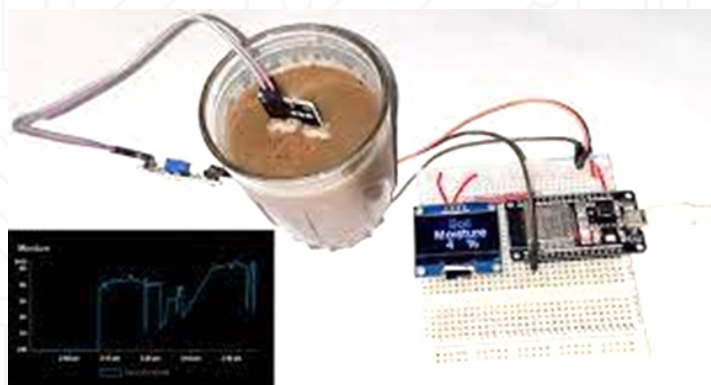
A display is provided at the ground floor which is basically a counter which will count the number of cars in each floor and according to that message will be displayed on it. A gate is also provided at the ground floor which is controlled by the stepper motor. Before the gate an IR pair is provided to sense that the car has reached towards the gate. For e.g. suppose a car reaches between the 2 IR pairs, then the LCD will display the particular floor on which car can be parked. As soon as the car crosses the 2nd IR pair, the gate will open automatically. An indicator with green and red led is kept on each floor to indicate whether the car can be parked on that particular floor or not. If green led of any particular floor glows, then it will indicate that the particular floor is empty and you can park your car on that floor. But in case if red led of that particular floor

glows, then it will indicate that there is no vacancy on that floor, in such case you can park your car on the next floor according to the indication. If there is no parking place, then all the red indicators of the floors will glow and the LCD will display “NO SPACE FOR PARKING” and the gate will remain closed.

Any like Newyork, Delhi, London has over five million cars and two-wheelers on its roads, but not enough parking spaces. The demand for parking space has, on an average in the main markets of Delhi, outstripped demand by 43 per cent. It is not just a problem of Delhi or Mumbai; all the big cities in India are facing the space crunch. Parking space is fast becoming a major issue in other cities like Kolkata, Bangalore, Hyderabad, Ahmedabad, Chandigarh, Pune and other urban and semi-urban cities. Multi-storey car parks provide lower building cost per parking slot, as they typically require less building volume and less ground area than a conventional facility with the same capacity.

POSINA BHARGAVI
17F15A0413

DESIGN AND DEVELOPMENT OF SOIL MOISTURE SENSOR AND RESPONSE MONITORING SYSTEM



The efficient irrigation management practices based on the monitoring of the moisture in the soil provide a great benefit for the appropriate amount of water applied in the fields. This paper presents design and development of a soil moisture sensor and a response monitoring system. The probes used in this sensor are made of nickel which is an anti-corrosive and robust material for use in agricultural related applications. The response monitoring system measures the moisture of the soil, compares it with the desired values given by the user and generates an alert if soil moisture goes below the desired value. It helps in problems related to growing of crops in which

irrigation is required at irregular interval. It is also helpful in monitoring of soil moisture in golf fields.

India is a developing nation with a very large population. Due to increasing population, the basic need such as food and water is increasing day by day. Thus there is a need of saving these resources and utilize them in an efficient manner. Since water is one of the most important elements in our daily life, thus we must use efficient ways to utilize water and save it for future generations. One of method is efficient irrigation management practices for fields. Irrigation water management practices could greatly benefit by the knowledge of moisture in the soil. To determine the soil moisture we have designed and developed a nickel probes based soil moisture sensor and a response monitoring system. By knowing the moisture value, we can estimate when to water and how much to water the fields so that there is no over- watering or wilting of crops. These practices will increase crop yield, improve quality of crops, conserve water resources, save energy, and decrease fertilizer supplies.

A soil moisture sensor as the name indicates is used to determine the moisture present in the soil. The moisture of the soil depends upon various factors such as type of soil whether its sandy, clay, loam, sandy loam and salts present in soil such as iron, manganese, calcium, phosphorus, nitrogen, sulphur etc. it also depends upon temperature. Based on the reading of moisture sensor, irrigation is done. Soil moisture sensors can be classified into following types based on the mass (g/g) or volume (cm³ / cm³). It gives output in percent content.

Soil Water Tension based soil moisture sensors: These sensors measure energy of water in the soil. Water tension is measured in energy/mass of the soil. Units are Joules/kg (J/kg) or kilopascal (kPa). It tells how much difficult or easy it will be for the plant to extract water from the soil. Soil Volumetric Water Content based soil moisture sensors: These sensors are used to determine the amount of water present in the soil.

KANDUKURU MOUNIKA
16F15A0401

BRAIN TWISTER

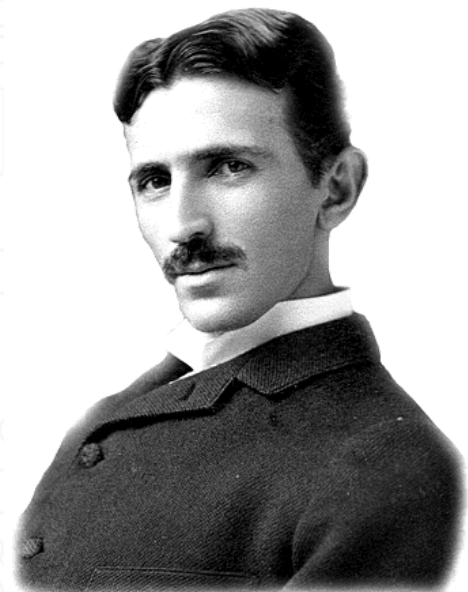
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ESTD: 2001

NARAYANA
ENGINEERING COLLEGE
GUDUR, AP

<http://www.necg.ac.in>



*If your hate could be turned into electricity.
It would light up the whole world.*

Nikola Tesla