VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"HEART BEAT MONITORING AND DETECTION USING ARDUINO AND GSM"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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GAGANA G D	**4AL14EC031**
KEERTHANA K N	**4AL14EC045**

Under the Guidance of
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2017-2018

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Signature of the Guide	**Signature of the H.O.D**	**Signature of the Principal**
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1

2

ABSTRACT

Health related issues and parameters are of utmost importance to man, and is essential to his existence and influence and thus he has sought for an improved system that would be able to capture and monitor the changes in health parameters irrespective of time and location so as to provide for measures that will forestall abnormalities and cater for emergencies. This work presents a system that is capable of providing real time remote monitoring of the heartbeat with improvements of an alarm and SMS alert. The proposed project aims at the design and implementation of a low cost but efficient and flexible heartbeat monitoring and alert system using GSM technology.

The proposed system proposes a continuous, real time, remote, safe and accurate monitoring of the heartbeat rate and helps in patient's diagnosis and early and preventive treatment of cardiovascular ailments. It is designed in such a way that the heartbeat/pulse rate is sensed and measured by the sensors which sends the signals to the control unit for proper processing and determination of the heartbeat rate which is displayed on an LCD, it then proceeds to alert by an alarm and SMS sent to the mobile phone of the medical expert or health personnel, if and only if the threshold value of the heartbeat rate is maximally exceeded. This project is of less cost, portable and implemented with open source hardware and software to ensure the continuous monitoring of heart beat and provide an alert to the doctor or a care taker.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"DEVELOPMENT OF IOT DEVICE FOR TRAFFIC MANAGEMENT SYSTEM OF AMBULANCE"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

Traffic jams have become the most common problems all over the world. Increase in the number of vehicles on the road has made the life of individuals very difficult. In a day to day basic it becomes a tough task for an individual to get to places on time. As the case is the number of health issues have also increased in recent days and traffic congestion has become a trivial thing for the patients. A lot of patients do not reach the hospitals on time due to which it cases a lot of grievances by reducing the pace at which the treatment could be provided to the patients, and therefore could lead to large number of untimely deaths.

The system proposed here reduces the chances of ambulances be stuck in traffic congestions by altering the traffic lights depending on the movement of ambulance by verifying the RFID present in them, thereby providing a traffic free passage to the vehicle to pass through. A lot of patients do not reach the hospitals on time due to which it cases a lot of grievances by reducing the pace at which the treatment could be provided to the patients, and therefore could lead to large number of untimely deaths.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"AVOIDING ELECTRICAL ISOLATION USING GSM SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

Power outage has been a critical issue in most parts of India especially in rural and forest areas. In this project, the system that is proposed is quick, efficient and a safe way to ensure that the power cuts is short and no one is hurt during a power outage. A new precautionary system which will not only help the regular citizen but also the electric supply boards by making it easier for them to maintain the power transmission systems in the specified areas. Finally, some directions are given to overcome some of the above-mentioned issues.

Implementation of avoiding electrical isolation using GSM system is done to rectify the existing problems by notifying the electrical office about the damage to the power line. These damages to the power lines are detected by the sensors which relay this information to the electrical office through the GSM system. Simultaneously a buzzer system is implemented to notify the nearby inhabitants about the damage to the power line. This, system can be used in rural and forest areas where damage to the power lines is more frequent. In case of disasters such as earthquake, this system can be quite effective to get the power running quickly and avoid any accidents due to the power lines.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"SITE CHARACTERIZATION AT AIET USING MULTIPATH DATA"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Global Positioning System (GPS) signal arrives by more than one path and it is a source of positioning error which cannot be easily neutralized. The multipath environment can be understood by the direction and distance of the objects. MATLAB tool is used to read the Receiver Independent Exchange Format (RINEX) data extracted from the GPS receiver. This technique uses signal-to- noise ratio (SNR) time series and also helps in finding the portion of antenna affected by multipath error with their corresponding frequencies. Skyplot from stations with different multipath environments are plotted. The plot is in terms of elevation angles, azimuth angles and SNR data. The carrier phase multipath is directly related to SNR. Long-delay multipath signals are the signals where the reflected signal is delayed by greater than 0.1 millisecond. Some equations of elevation and azimuth angles computed through MATLAB demonstrate that the frequency content of SNR data is directly related to the multipath environment.

Multipath, to a large extent, dependent on the surrounding environment of the antenna and the satellite geometry. RINEX analysis focuses on the change of the geometry-free combination of pseudo range codes (RP2 – RP1) and carrier phase measurements (φL1 – φL2) over time. This method has been firstly tested at AIET. Various forms of results indicate the existence of multipath effect at AIET. Multipath errors also cause noise in the satellite signals, with pseudo range more affected than carrier phase. It is also worth-noted that satellite at low elevation angle is more susceptible to multipath errors than that at high elevation angle.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"BORDER SECURITY ROBOT USING RASPBERRY PI"

Submitted in partial fulfillment of the requirements for the award of degree

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IN
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ABSTRACT

Border areas pose a great challenge to soldiers. Apart from their duty to defend the enemy, they have to struggle a lot to resist the extreme weather conditions in those regions. Soldiers face fatigue dues to continuous monitoring of border regions. To overcome these problem an intelligent war field robot using raspberry pi is used for capturing the image of intruders across the borders and fire the enemies if they try to cross the border. This project aims at providing an aid to this problem by replacing soldiers with this system.

The system utilizes infrared sensors and raspberry pi camera. Infrared sensors detect the object and the robot moves in the direction of the object. Raspberry pi camera is used for continuous monitoring of the real time scenario and sends the data to raspberry pi. The raspberry pi compares the captured images with the images stored in the database. The images are compared by using haar-cascade technique. If the detected intruder is an enemy then the system fires against the enemy using the gun. This project will not fully remove responsibility of soldiers but shares maximum responsibility and will reduce human causalities on the border.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"AUTONOMOUS SEEDING AND SPRAYING SPIDER ROBOT"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Automation in agriculture is of foremost importance now a days. Labour problems have made the agricultural field less productive, thus hindering the production of food grade and commercial produces.Introduction of robotics in agriculture opens a huge opportunities along with many challenges also. Many countries are employing robots in agriculture for greater reliability and control.As compared to a factory floor which is even (flat), and more or less most factory installations are similar in basic structure like enclosed environment, less natural exposure, limited movements, etc. Whereas, in agriculture, each and every farm poses a different set of challenges like soil type, uneven surface, wet and slippery ground, moisture and dust, non availability of a constant power supply etc.

Module proposes a new simpler framework for an autonomous seeding robot with legs instead of wheels. Wheels are not suited for an uneven, wet and slippery ground, so spider like legs are provided in this design. Also features like drilling the ground and spraying the seeds in to the hole are also provided. Robot currently handles crops which grow by seeds, not as a sprout. Also the setup needs a layer of mud to be spread for drilling and seeding on the floor. The robot for agriculture purpose an agrobot is a concept for the near the performance and cost of the product once optimized, will prove to be work through in the agricultural spraying operations. Successful in constructing robot which can be travelled on rough surfaces.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"ESTIMATION AND VISUALIZATION OF 3D ORBITS OF GPS SATELLITES USING GPS NAVIGATION DATA FILE FROM MANGALORE GNSS RECIVER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

The main aim of the project is to estimate and visualise the 3D orbit of GPS satellite by extracting data from GPS navigation data file which is obtained from Mangalore GNSS receiver. The data extracted are compared with RINEX file and implemented in the formulas to obtain XYZ coordinates of GPS satellite and plotted in 3 Dimension by using MATLAB tool. The GPS navigation data file is extracted from GNSS receiver which contains the data of GPS satellite. These data are segregated by comparing with RINEX file and are substituted in the formulas by using MATLAB. We get XYZ coordinates of GPS satellite from formulas and a 2D plot is obtained. Then the 2D plot is interpolated by increasing the number of samples. Another 2D plot is obtained by extracting data from SP3 file which is an error free GPS data file. Both the 2D plots are compared and the variance is found which indicates the amount of error present in data of GPS navigation data file. The 2D plot which is interpolated is then converted in 3D plot with ECEF coordinates.

The path of GPS satellite in space, orbiting around the earth is estimated with earth as centre. The plot is obtained with respect to poles as well as equator. In future this work can be extended by converting 3D plot from earth centred and earth fixed coordinates to receiver centred coordinates. The GPS navigational data file is received from the GNSS receiver. The data is extracted and segregated from the navigational data file by comparing it with RINEX file. The extracted data is substituted in the formulas using the MATLAB code to obtain the XYZ coordinates. These XYZ coordinates are plotted in 2D and interpolated. The GPS data file extracted from SP3 file are also plotted in 2D and interpolated. These two interpolated signals are compared, and variance is found which indicates error present in satellite path. The interpolated signal obtained from SP3 data file is converted into 3D plot with Earth Centered Earth Fixed coordinates.

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PROJECT REPORT

ON

"SPEED CONTROL OF VEHICLE IN ACCIDENT ZONE"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Every year the density of vehicles are increasing rapidly, which results in more traffic related problems, leading to accidents. The causes for the accidents are over speeding and negligent driving and ignoring the road rules etc. These problems can be solved by using a system which alarms the accident zone or speed limit area, in response to these alarms the speed of the vehicle can be controlled in order to, avoid the accidents. The system can be implemented by using two methods such as Radio Frequency (RF) communication and Geo-fencing. The proposed system is an attempt to control the speed of the vehicles, which is designed with software and hardware to enable the driver to get the speed of the area in which the vehicle is currently moving. The main focus of this project is to provide safety and precaution to the driver as well as to the passengers and to avoid the accidents which can save many lives.

The framework makes utilization of two methods which are mentioned earlier. In RF communication method RF transmitter placed at accident zones (such as school zones, hospital areas and speed limit areas etc.) and RF receiver placed in the vehicle will communicate using electromagnetic waves. The microcontroller that is the brain of the project activates the particular action corresponding to the received signal. The prototype is implemented using geo-fencing technology to overcome from drawbacks which are encountered in RF technology. Geo-fencing is a feature in software /program that uses the global positioning system to define the geographical area with different radius. In geo-fencing method, the software application provides an alert or notification to the controlling part of the system when the vehicle enters an established geo-fenced area. The microcontroller in the controlling part will perform the necessary action based on the notifications. In the Geo-fence system there are not much complicated issues of power supply, system installation to vehicles. The location of the vehicle should be uploaded for each and every second. Therefore geo-fencing provides more accurate and efficient results compared to RF technology.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"ULTRA LOW POWER DESIGN AND HIGH SPEED DESIGN OF DOMINO LOGIC CIRCUIT USING CADENCE VIRTUOSO PLATFORM"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
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Submitted By

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25/05/18 25/5/18

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ABSTRACT

In VLSI it is important to introduce low-power design techniques, which reduces the power dissipation of the circuit during normal mode of operation. More power consumption also reduces the battery life of the devices. Therefore, reducing power dissipation during normal operation has become a critical objective in today's VLSI circuit designs. Designers have different options to reduce the power dissipation in the various design stages. Power dissipation in CMOS circuits can be dynamic or static. Dynamic power dissipation takes place due to switching activities and Static power consumption is due to leakage.

The domino circuits are used in various circuits especially in memory, multiplexor, comparator and arithmetic circuit and also used in full adders that are most important part of a CPU. Additionally, domino circuits are important components in other applications such as Digital Signal Processing architectures and microprocessors, which rely on the efficient implementation of generic arithmetic logic and floating point units to execute dedicated algorithms. Various design approaches had been investigated for realizing domino CMOS. The Extensive use of high speed domino circuits attracts many researchers in this field. There are various issues related to domino circuits, such as power consumption, speed and noise immunity.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DESIGN OF FEEDER–WEEDER ROBOT FOR AUTONOMOUS FARMING"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Agriculture is known as backbone of Indian economy. A large number of rural households depend upon agriculture as their primary source of livelihood. Recent advances in technology have made it possible to increase output as well as reduce dependence on manual labor. Fertilizers are chemical components which are not advisable to be touched in bare hands. When nitrogen based fertilizers are manually applied to roots, some will fall to bare land which leads to growth of weeds on those areas. The fertilizers which are essential for growth of plants are also causing the growth of weeds. These weeds are traditionally removed by manually plucking them. The solution derived from this project is to use grid system for sowing plants. This way it is easier to differentiate between plants and weeds. The robot can fertilize only the required area around root cavity, this avoids human error of spilling. In the grid system the positions of plants is known before so that any other plants can be considered as weeds and they can be removed.

Feeder-weeder for autonomous farming, considered a scenario where all of the work done on farms is automated by a group of autonomous robots working together in sync with each other. The concepts such as microcontroller programming, communication, path planning, sensor interfacing can be used. Agricultural field with many crops growing in it is considered in this project, some of these crops need to be fed red fertilizer and others need to be fed blue fertilizer. There are some weeds growing in the field which need to uprooted and disposed outside the field. Two fertilizing robots and a weed removing robot are deployed in the field. In order to make this system work more efficiently, the robots communicate between each other to share information and coordinate with each other.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"AUTOMATIC POWER FACTOR CORRECTION"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Power factor correction using capacitor banks reduces reactive power consumption which will lead to minimization of losses and at the same time increases the electrical system's efficiency. Power saving issues and reactive power management has brought to the creation of single phase capacitor banks for domestic applications. The development of this project is to enhance and upgrade the operation of single phase capacitor banks by developing a micro-processor based control system. The control unit will be able to control capacitor bank operating steps based on the varying load current. Current transformer is used to measure the load current for sampling purposes.

The project work applies the Peripheral Interface Controller (PIC) microcontroller to produce switching commands in order to control the capacitor bank steps. Intelligent control using this micro-processor control unit ensures even utilization of capacitor steps, minimizes number of switching operations and optimizes power factor correction. Fluorescent lamp will be used as loads in this single phase capacitor bank developments. That fluorescent lamp shall be divided into different load value to enable capacitor bank model is controlled systematically. This project aims to present an indigenous technique and method which could be used for static power factor correction. It is demonstrated in this work that phase difference between voltage and current can be determined using zero crossing detectors. Voltage and current transformers have been used for transforming load voltage and current respectively to bring them in desired working range of microcontroller. The Power Factor of varying load can be measured and compensated using static methods. After measurements, the reactive power is compensated by switching capacitors using solid state relays by taking advantage of its long life and fully static Power Factor correction. Based on this calculation, capacitors are automatically brought online or offline by switching solid state relay to achieve unity power factor after displaying the essential data on Liquid Crystal Display (LCD).This project provided one of the techniques used to overcome power losses due to low power factor associated with common household and small industrial units. In this project work AC load voltage and current was measured by sampling rectified sine wave. All information (i.e. RMS voltage and & current, active power, reactive power, apparent power, power factor, capacitance) works using different formulas. Moreover, based on this analysis, a corrective algorithm is to achieve power factor close to unity.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"SMART HYDRAULIC SYSTEM FOR TRACTORS"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Tractors are a revolutionary agricultural equipment or tool that have improvised and facilitated the farm and field activities in the agricultural sector. Tractors are of various types depending on the load they are designed to work with, soil terrain, crops, and many other criteria. Tractors above 45hp are robust enough for heavy work, but the ones with lower hp are not capable. These Tractors when encountering sticky soil, hard rocky ground, dry leaves and logs in the paddy fields and plantations easily tend to get stuck thus making the farmer who is driving the tractor to toil more hard and increase his manual labor, and also leading to more stress on the tractor engine along with increased fuel consumption and damage to the peripherals that get stuck in the hard rocky earth and increase the repair costs to the farmer.

The proposed prototype is designed to detect the obstructions encountered by the peripherals and actuate a series of automated operations which include the lifting up and lifting down of the cultivator, tiller or any other peripherals whenever it gets stuck and the engine is about come to the off condition. These set of operations which usually are manually done in the Tractors with hp below 45hp where the farmer has an extra load of focusing in the front and rare directions which increases his fatigue, is reduced significantly when this simple, automated, sensor based unit is fixed to the tractor. This ensures more productive work in the stipulated time, lesser damage to engine, reduction in damage of brake plates and depreciation of clutch plates and other peripherals linked to hydraulic hub thus ensuring an increased efficiency and improvised results in the farm and the field work.

.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"A PROTECTING SYSTEM DESIGN FOR COAL MINERS"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

In recent years, research is going on ZigBee based wireless sensor networks due to their remote environment monitoring capabilities. Such a network can easily collect sensor data and transmit them by radio. A cost effective ZigBee based wireless mine supervising system is presented. Design a smart new helmet is designed which enable the helmet as a mobile node of ZigBee wireless sensor networks, gathering parameters from underground timely and quickly.

The helmet act as a mobile sensor node and will collect the temperature, humidity and carbon monoxide level of nearby environment and will alert the central management unit in case of abnormal condition. In this project, voice transmission system is designed to reduce potential safety problems in coal production, one of telecommunication value-added services. So with environmental monitoring, the miners can communicate with control centers or with other miners through wireless speech communication.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"Brain-Computer Interface with Image Display"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

BCI is a leading technology in today's world. In simple words, it creates an interface between the brain and the machine, allowing the machine to send commands to the machine directly from the CNS and especially the brain. Great popularity of the Arduino microcontroller board helps to integrate BCI comprising neurosky mindwave mobile with Arduino microcontroller board. The main use of this technology is in the field of medical science. Works are being done in the field of military and skill improvement domains as well. This technology is growing day by day and is proving to be one of the most important technologies in the current scenario. This project shows how BCI works and how it can be used in certain applications. EEG was used to read brain waves and then those waves were analyzed to fetch fruitful results which are used in certain applications.

BCIs can use noninvasive or invasive methods for recording the brain signals that convey the user's commands. Whereas noninvasive BCIs are already in use for simple applications, it has been widely assumed that only invasive BCIs, which use electrodes implanted in the brain, can provide multidimensional movement control of a robotic arm or a neuroprosthesis. The adaptive algorithm used in this noninvasive BCI identifies and focuses on the electroencephalographic features that the person is best able to control and encourages further improvement in that control. The results suggest that people with severe motor disabilities could use brain signals to operate a robotic arm or a neuroprosthesis without needing to have electrodes implanted in their brains.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"ADVANCED MEMS CONTROLLED DUMB AND DEAF ASSIST UNIT WITH EMERGENCY ANNOUNCEMENT"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
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ABSTRACT

The physically challenged, deaf and dumb people there is no such device is available to pass their needs and emergency intimations in hospitals, homes and many public places. Sometimes they have to depend only on sign language which may be difficult for common peoples. The method shown here is used to generate a voice from deaf unit to a wireless location and also generates a message to mobile unit in case of needs and emergencies using MEMS sensor, it is possible to generate the required signal to send the signal depends on the movement of the head tilt or hand movements the signal generated from a MEMS unit which is interfaced to transmitter and microcontroller unit.

The deaf and dumb people uses sign language for the communication which is difficult and cannot be understand by common peoples so there must be some unit required which helps the deaf and dumb people to operate easily and can be possible to understand by a common people also. MEMS generate the signal in axis which is x co-ordinate y co-ordinate and z co-ordinate as per the movement of chip the 3 axis accelerometer used here is MMA7260Q. The analog data available from this sensor in processed and send through transmitter the whole unit can be either with control through handicap person or even from a distance operation from attender.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT

ON

"ACOUSTIC EVENT RECOGNITION FOR THE APPLLICATION OF SURVELLIANCE SYSTEM"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Recent years have witnessed growing interest in the automatic detection of serious situations like road accidents, to ensure quick intervention of the emergency teams. However, in few scenarios visual data is not sufficiently reliable. In this proposed system audio event recognition (AER) technique is implemented through the analysis of audio streams which can improve the overall efficiency of the existing surveillance system.

Acoustic Event Recognition deals with detection, classification and recognition of unstructured environment which may contain overlapping sound events and non-stationary noises in the background. The events are classified by comparing the features extracted from the input sample with the trained samples. This work proposes a recognition scheme based on a hierarchical structure, using features obtained from Mel-Frequency Cepstral Coefficient (MFCC) and Perceptual Linear Prediction (PLP) methods. These features are used to train Support Vector Machine (SVM) for event classification. The effectiveness of the proposed method is demonstrated via experimental results using Matlab simulation tool.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"MINIATURIZED CNC PLOTTER FOR PCB DESIGN USING ARDUINO"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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Under the Guidance of
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2017-2018

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ABSTRACT

Computer numerical control plotter machine is a 3D controlled 2D plotting machines which uses a pen to draw text or image on any given solid surface. It can be used for the purposes such as PCB Design, logo design, etc. This project is based on computer numerical control plotter machine. The increasing demand for the use of computer numerical control plotters in universities and laboratories, a cheap and less complex design is an absolute need. The parts used for the plotter in our project are easily available at a very low price and spare parts are also used. The construction is very simple and robust.

The advancement of technology, demand for computer numerical control plotter machines in educational institutions and laboratories is rapidly rising. Low cost manufacture of printed circuit board has become a basic need in electronics laboratories, for electronics engineering students and for electronics hobbyists. This project represents an affordable model of a computer numerical control plotter machine which is able to draw a circuit layout on PCB or any other solid surface using simple algorithm and available components. At first the user needs to convert any image file or text file into G code using Inkspace software and then feed it to the machine using Processing software. asrduino uno with an ATmega328P microcontroller which is used as the control device for this project. The microcontroller converts G code into a set of machine language instruction to be sent to the motor driver of the computer numerical control plotter.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"AN EFFICIENT SMART HOME ENERGY MANAGEMENT SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The overall design of an efficient smart Home energy management system with low cost and wireless system is presented in this project. This system is designed to assist and provide support for elderly and disabled in home. Also the smart home concept in the system improves the standard living at home. The main control system implements wireless technology to provide remote access from smart phone. The system intended to control electrical appliances and devices in house and analyses the power consumption of different appliances with relatively low cost design, user-friendly interface and ease of installation.

The purpose of the design is to implement wireless remote control system for automation of home appliances and energy management using smart phone. Gas sensors and temperature sensors are interfaced to Arduino microcontroller. In the system the appliances are controlled through Bluetooth module which is interfaced with the Arduino microcontroller. The project work describes the controlling of house hold appliances and analysis of power consumption with cost of money charged using an Arduino microcontroller. The system will detect the smoke and Liquid Petroleum Gas (LPG) leakage and notifies the user through a buzzer. The temperature in home will be displayed in Fahrenheit on the Liquid Crystal Display (LCD) screen. The system will record the time interval between on-off of a home appliance with power consumption details and also the cost of money for each appliances used and also sending those details to the user through E-mail. The user can access the power analysis details in the E-mail provided. The E-mail contains the list of appliances available, the time interval, the power consumed and the cost of money that will be charged by the respective electricity board.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DESIGN OF LOW POWER HIGH SPEED AREA EFFICIENT WALLACE TREE MULTIPLIER USING REDUCTION LOGIC"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

Multiplier is a vital block in high speed digital signal processing applications. The more stress in modern very large scale integrated circuits design under which main constraints are power, silicon area and delay, in all the high-speed application in very large scale integrated circuits fields. Wallace tree multiplier is a three-stage operation, which again leads to lesser number of stages and subsequently less number of transistors which resolves the hardware complexity and ultimately reduces the delay, area.

The disadvantage in the standard wallace tree multiplier is that if there are two bits in a particular column of group of three rows half adders are used in every stage, so area and complexity of circuit increases and consumes more power. The proposed wallace tree multiplier design incorporates reduction logic and low power full adder. It is similar to that of standard wallace tree multiplier, difference is that it uses half adders when necessary. The reduction logic method helps in reducing the complexity greatly denying the half adders with 65-75% reduction, which in turn makes the wallace tree multiplier low power, high speed and area efficient.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590 010

PROJECT REPORT ON

"DESIGN AND SIMULATION OF A SURFACE ACOUSTIC WAVE (SAW) BIOSENSOR FOR CANCER DETECTION"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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CERTIFICATE

Certified that the project work entitled **"DESIGN AND SIMULATION OF A SURFACE ACOUSTIC WAVE (SAW) BIOSENSOR FOR CANCER DETECTION"** *is a bona fide work carried out by*

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ABSTRACT

Cancer is deadly disease which is caused due to uncontrolled growth of the cells and forms from the extra mass tissue known as tumour. Smoking, drinking more than one alcoholic drink a day (for women of all ages and men older than age 65) or two drinks a day (for men age 65 and younger), excessive exposure to the sun or frequent blistering sunburns, being obese, and having unsafe sex can contribute to cancer. The earlier cancer can be detected, the better the chance of a cure. In terms of cancer, the analyte being detected by the biosensor is a tumour biomarker. Thus, by measuring levels of certain proteins expressed and/or secreted by tumour cells, biosensors can detect whether a tumour is present, whether it is benign or cancerous, and whether treatment has been effective in reducing or eliminating cancerous cells. The biosensors can be designed to detect emerging cancer biomarkers and to determine drug effectiveness at various target sites. The designed biosensor has the potential to provide fast and accurate detection, reliable imaging of cancer cells, and monitoring of angiogenesis and cancer metastasis, and the ability to determine the effectiveness of anticancer chemotherapy agents.

The biosensor is designed using SAW devices which have the inter-digitated transducers excitation electrodes fabricated on the one side of the piezoelectric film. The sensor can transform an input electrical signal into a mechanical wave which can be easily influenced by physical phenomena. Then, the changed mechanical wave is transduced back into an electrical signal. The presence of the desired phenomenon can be detected through the difference between the input and output electrical signal (amplitude, phase, frequency, or time delay). As a result, the SAW devices have the acoustic waves propagating along the surface of the piezoelectric substrate. For SAW resonators the IDTs are fabricated in a central position and reflectors are added on both sides of the input and output IDTs to trap the acoustic energy within a cavity. The surface between the IDTs is coated with antibodies sensitive to the analyte to be detected. The analyte molecules binding to the immobilized antibodies on the sensor surface influence the velocity of the SAW and hence the output signal generated by the driving electronics. For biosensors it is necessary to take care of toxicity, reliability of the device, so in this work biodegradable and non-toxic polymer, PVDF is used.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"WIRELESS POWER TRANSFER USING CIRCULAR LOOP ANTENNA"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Wireless power or remote transmission of electrical vitality from a power source to an electrical load without man made conduits. It is helpful in situations where interconnecting wires are badly arranged, dangerous or incomprehensible. It is completed utilizing direct acceptance took after thunderous attractive enlistment, electromagnetic radiation as microwaves or lasers and electric conduction through media. This framework now daily is exceptionally prevalent everywhere throughout the world.

It is useful in cases where interconnecting wires are inconvenient, hazardous or impossible. It is carried out using direct induction followed by resonant magnetic induction, electromagnetic radiation in the form of microwaves or lasers and electric conduction through media. This system now a day is very popular all over the world. Radio waves are the energy and people use them to send and receive cell phone, TV, radio, Wi-Fi signals day to day. This technology now a day has a wide foot-hold all over the world. This technology today has matured enough to allow us a new means to power our mobile and gadgets.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT

ON

"DESIGN OF ROBOTIC ARM FOR TRASH COLLECTION AND SEPERATION"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

The rising population of India poses serious threats with regard to the availability of living space, utilization of natural resources and raw materials, education and employment. But another serious peril that follows is the escalating amount of waste generated each minute by an individual. An astounding 0.1 million tons of waste is generated each day in India. Sadly, only 5% of this colossal amount of waste is recycled. One possible solution for this problem could be segregating the waste at the disposal level itself. In India, the collection, transportation and disposal of municipal solid waste (MSW) are unscientific and chaotic. Uncontrolled dumping of waste on outskirts of towns and cities has created overflowing landfills which are not only impossible to reclaim because of the haphazard manner of dumping but also has serious environmental implication in terms of ground water pollution and contribution to global warming. This has found to reduce the average life span of the manual segregators. Developing a mechanized system to help save the lives of many and making the world a cleaner and a greener place is the noble objective of our project.

This proposed system is going to collect some database of garbage images where it need to train those images and need to get some features of all the images and then by using the pi-camera it is going to capture a real time image then has need to detect the features of that particular image whether it is a garbage image r not if yes then it will checks for the segregation either dry or wet waste by using k-NN algorithm. Then if there is no garbage on the road then raspberry pi will inform the robot to move forward. If there is any waste present on the road then according to the segregated it will pick and place the garbage in specific direction.

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PROJECT REPORT ON

"SUPER MARKET SELF CHECKOUT BASED ON LI-FI"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Vast markets have an incredible assortment of merchandise furthermore; unique grocery stores may have distinctive dispersion of product. A large portion of the clients think that it's hard to remain in long line for charging the obtained items and they need to look through the item in the huge shopping centre. This is more time consuming, the shopping centres utilize different advances for electronic business to spare the time and increment the solace. Simple and effectiveness required for charging in regular day to day existence.

The tag is remarkably created character which is connected on the item that distinguishes the items exceptionally. These labels are recognized by the user. The reader is an electronic gadget that distinguishes the label which is known to it. The principle goal of proposed framework is to give innovation oriented, low cost, effectively scalable and tough framework for helping shopping face to staffs need to monitor the items they pitch to ensure what they are offering is in the feed.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"Estimation of Horizontal and Vertical Position of GNSS antenna"

Submitted in partial fulfillment of the requirements for the award of degree

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2.....	.....

ABSTRACT

In this project, some of the ideas of positioning using GPS are explored, GPS is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S department of defense. It provides the use of a handheld GPS receiver in the areas of precise positioning, mapping locations, navigating across the mapped locations.

This project is to estimate the horizontal and vertical position of GNSS receiver antenna using observation file and navigation file which are extracted from the receiver system. The GNSS is a satellite route framework for deciding position, speed and time with high exactness by the procedure of trilateration. The receiver independent exchange format file is utilized to extract the parameters from GPS route information document. These parameters are implemented in the formulas using MATLAB software, the cartesian coordinates of GPS receiver are obtained and they are plotted individually in 2 dimension.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"HUMAN DETECTION USING QUADCOPTER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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ABSTRACT

Quadcopters are the unmanned air vehicles and these are playing an important role in different areas like surveillance, military operations, fire sensing and some important areas having many complexities. The similarities between the quadcopter and helicopter model is the vertical take-off and landing. The control of quadcopter is easier than the helicopter model of vehicles but it is entirely different whereas the lift force is produced by the four motors. This project mainly helpful for detecting human beings. Detection of moving objects is the first step of detection process. The main aim is for rescue purpose to determine the moving objects such as human beings since quadcopter can be moved freely in the air. Human detection in a smart surveillance system aims at making distinctions among moving objects in a video surveillance.

In the proposed system the input video is converted into multiple frames in order to ease the process. The key frames are selected and converted into grayscale images where pre-processing is done in order to detect all the boundaries in the image. To detect human beings in an image, objects need to undergo some operation such as background subtraction, contour detection. Then the human beings are classified using texture based method.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"COORDINATE TRANSFORMATION OF SATELLITE ORBITS FOR IONOSPHERIC PIERCE POINTS: COMPUTATION AND VISUALIZATION"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The ionosphere is the ionized part of earth's upper atmosphere, from about 60 km (37 mi) to 1,000 km (620 mi) altitude, a region that includes the thermosphere and parts of the mesosphere and exosphere. The ionosphere is ionized by solar radiation, plays an important role in atmospheric electricity. GNSS are subjected to errors induced by the ionosphere. The ionospheric delay affects the speed of microwave signals differently depending on their frequency a characteristic known as dispersion, delays measured on two or more frequency bands can be used to measure dispersion, and this measurement can then be used to estimate the delay at each frequency. The principal source of the dispersion comes from the TEC in the ionosphere, along the line of sight from the Satellite to the receiver. The measurement of the TEC along the line of sight, instead a prediction can be made using a simplified model of the ionosphere is difficult. The signal transmitted from the Satellite to the receiver crosses the ionospheric shell in the so-called IPP. The height is taken as 350km above the earth atmosphere to calculate IPP.

The ionospheric layer will cause slant and vertical delay, due to electron content. Ionosphere delay will affect the speed of microwave signal which causes dispersion in ionosphere. Hence, the electron content in the ionosphere is calculated to find the delay. Therefore, the calculation of IPP is required to find electron content in the ionosphere. The IPP's plays an important role in calculating electron content. To overcome the problems of delay and dispersion IPP calculation is required. The data of 32 Satellites from SP3 file are taken to calculate the azimuth and elevation of the Satellites. To calculate the longitude and latitude of IPP, azimuth and elevation of Satellites are required. Hence, by Plotting longitude versus latitude of IPP, the Plot of IPP can be obtained. Therefore using IPP, the TEC in the ionosphere can be calculated.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"OPTIMIZATION BOW-TIE ANTENNA FOR ITS PARAMETERS"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The present paper deals with a brief review on different shapes of bowtie antenna used to improve its Performance including, better return loss, flatter input impedance, and more stable radiation pattern. Bow-tie microstrip antennas has become one of the most used in the present day communication scenario due to their compact in nature compared to rectangular patches. The ever increasing demand for compact wireless communication equipment explicitly necessitates research in compact antenna options. Design of bow-tie antenna is based on design of triangular microstrip antenna.The bow-tie patch actually is the combination of imaginary image of two triangular patches which are fabricated in a single substrate. The Bow-tie microstrip antennas have been designed for wireless LAN communication,where the operating frequency is at 2.45GHz.

This project was divided into a few parts.Firstly designing the antenna using microwave office software where it involves matching network with the microsrtip transmisson line feeding. Then simulations need to be done to observe the return loss and radiation pattern of the antenna.Lastly this project will proceed with hardware development by fabricate the antenna and compare the simulation and measurement result. Wireless technology is one of the main areas of research in the world of communication systems today and a study of communication systems is incomplete without an understanding of the operation and fabrication of antennas. This was the main reason for our selecting a project focusing on this field. The first group focused on the fabrication and testing of a slotted waveguide Omni directional antenna and a biquad directional antenna. The second group focused on the design and simulation of patch antennas (which are widely used in cell phones today) with an emphasis on optimization of a 2.45 GHz rectangular probe fed Bow-tie antenna.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"IoT BASED WATER UTILITY MONITORING SYSTEM"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Water quality is observed only at the municipal water tanks which are located zone wise and hence water quality is not been checked at end points where chances of water contamination is present due to rust in the pipeline, hole in the pipeline and some other reasons. Even if water flow is checked at end points, it is time consuming, labor intensive and all end points are not going to cover. Hence, there is need of smart water distribution system with continuous water quality flow check.

Water is an important resource for all the livings on the earth, for life and its existence. Ensure the safe supply of drinking water it should be monitored in real time IoT (Internet of Things) based water utility monitoring has been proposed. The primary concept of real-time IoT based water resources information system is to provide comprehensive and accurate information. The need of water requirement, its distribution and quality check, a water flow is monitored through web interface based on water flow sensor value to ensure equal and adequate water distribution to each connection (end point). Improve water management systems, especially by exploiting the emerging technologies this approach will be more helpful to the utilities operators. The Internet of Things could prove to be one of the most important methods for developing more utility-proper systems and for making the consumption of water resources more efficient.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"HEART BEAT MONITORING AND DETECTION USING ARDUINO AND GSM"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
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ABSTRACT

Health related issues and parameters are of utmost importance to man, and is essential to his existence and influence and thus he has sought for an improved system that would be able to capture and monitor the changes in health parameters irrespective of time and location so as to provide for measures that will forestall abnormalities and cater for emergencies. This work presents a system that is capable of providing real time remote monitoring of the heartbeat with improvements of an alarm and SMS alert. The proposed project aims at the design and implementation of a low cost but efficient and flexible heartbeat monitoring and alert system using GSM technology.

The proposed system proposes a continuous, real time, remote, safe and accurate monitoring of the heartbeat rate and helps in patient's diagnosis and early and preventive treatment of cardiovascular ailments. It is designed in such a way that the heartbeat/pulse rate is sensed and measured by the sensors which sends the signals to the control unit for proper processing and determination of the heartbeat rate which is displayed on an LCD, it then proceeds to alert by an alarm and SMS sent to the mobile phone of the medical expert or health personnel, if and only if the threshold value of the heartbeat rate is maximally exceeded. This project is of less cost, portable and implemented with open source hardware and software to ensure the continuous monitoring of heart beat and provide an alert to the doctor or a care taker.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DEVELOPMENT OF IOT DEVICE FOR TRAFFIC MANAGEMENT SYSTEM OF AMBULANCE"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Traffic jams have become the most common problems all over the world. Increase in the number of vehicles on the road has made the life of individuals very difficult. In a day to day basic it becomes a tough task for an individual to get to places on time. As the case is the number of health issues have also increased in recent days and traffic congestion has become a trivial thing for the patients. A lot of patients do not reach the hospitals on time due to which it cases a lot of grievances by reducing the pace at which the treatment could be provided to the patients, and therefore could lead to large number of untimely deaths.

The system proposed here reduces the chances of ambulances be stuck in traffic congestions by altering the traffic lights depending on the movement of ambulance by verifying the RFID present in them, thereby providing a traffic free passage to the vehicle to pass through. A lot of patients do not reach the hospitals on time due to which it cases a lot of grievances by reducing the pace at which the treatment could be provided to the patients, and therefore could lead to large number of untimely deaths.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"AVOIDING ELECTRICAL ISOLATION USING GSM SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Power outage has been a critical issue in most parts of India especially in rural and forest areas. In this project, the system that is proposed is quick, efficient and a safe way to ensure that the power cuts is short and no one is hurt during a power outage. A new precautionary system which will not only help the regular citizen but also the electric supply boards by making it easier for them to maintain the power transmission systems in the specified areas. Finally, some directions are given to overcome some of the above-mentioned issues.

Implementation of avoiding electrical isolation using GSM system is done to rectify the existing problems by notifying the electrical office about the damage to the power line. These damages to the power lines are detected by the sensors which relay this information to the electrical office through the GSM system. Simultaneously a buzzer system is implemented to notify the nearby inhabitants about the damage to the power line. This, system can be used in rural and forest areas where damage to the power lines is more frequent. In case of disasters such as earthquake, this system can be quite effective to get the power running quickly and avoid any accidents due to the power lines.

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PROJECT REPORT ON

"SITE CHARACTERIZATION AT AIET USING MULTIPATH DATA"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Global Positioning System (GPS) signal arrives by more than one path and it is a source of positioning error which cannot be easily neutralized. The multipath environment can be understood by the direction and distance of the objects. MATLAB tool is used to read the Receiver Independent Exchange Format (RINEX) data extracted from the GPS receiver. This technique uses signal-to- noise ratio (SNR) time series and also helps in finding the portion of antenna affected by multipath error with their corresponding frequencies. Skyplot from stations with different multipath environments are plotted. The plot is in terms of elevation angles, azimuth angles and SNR data. The carrier phase multipath is directly related to SNR. Long-delay multipath signals are the signals where the reflected signal is delayed by greater than 0.1 millisecond. Some equations of elevation and azimuth angles computed through MATLAB demonstrate that the frequency content of SNR data is directly related to the multipath environment.

Multipath, to a large extent, dependent on the surrounding environment of the antenna and the satellite geometry. RINEX analysis focuses on the change of the geometry-free combination of pseudo range codes (RP2 – RP1) and carrier phase measurements (φL1 – φL2) over time. This method has been firstly tested at AIET. Various forms of results indicate the existence of multipath effect at AIET. Multipath errors also cause noise in the satellite signals, with pseudo range more affected than carrier phase. It is also worth-noted that satellite at low elevation angle is more susceptible to multipath errors than that at high elevation angle.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"BORDER SECURITY ROBOT USING RASPBERRY PI"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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Under the Guidance of
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Shetty 24/05/2018

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ABSTRACT

Border areas pose a great challenge to soldiers. Apart from their duty to defend the enemy, they have to struggle a lot to resist the extreme weather conditions in those regions. Soldiers face fatigue dues to continuous monitoring of border regions. To overcome these problem an intelligent war field robot using raspberry pi is used for capturing the image of intruders across the borders and fire the enemies if they try to cross the border. This project aims at providing an aid to this problem by replacing soldiers with this system.

The system utilizes infrared sensors and raspberry pi camera. Infrared sensors detect the object and the robot moves in the direction of the object. Raspberry pi camera is used for continuous monitoring of the real time scenario and sends the data to raspberry pi. The raspberry pi compares the captured images with the images stored in the database. The images are compared by using haar-cascade technique. If the detected intruder is an enemy then the system fires against the enemy using the gun. This project will not fully remove responsibility of soldiers but shares maximum responsibility and will reduce human causalities on the border.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"AUTONOMOUS SEEDING AND SPRAYING SPIDER ROBOT"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

Automation in agriculture is of foremost importance now a days. Labour problems have made the agricultural field less productive, thus hindering the production of food grade and commercial produces.Introduction of robotics in agriculture opens a huge opportunities along with many challenges also. Many countries are employing robots in agriculture for greater reliability and control.As compared to a factory floor which is even (flat), and more or less most factory installations are similar in basic structure like enclosed environment, less natural exposure, limited movements, etc. Whereas, in agriculture, each and every farm poses a different set of challenges like soil type, uneven surface, wet and slippery ground, moisture and dust, non availability of a constant power supply etc.

Module proposes a new simpler framework for an autonomous seeding robot with legs instead of wheels. Wheels are not suited for an uneven, wet and slippery ground, so spider like legs are provided in this design. Also features like drilling the ground and spraying the seeds in to the hole are also provided. Robot currently handles crops which grow by seeds, not as a sprout. Also the setup needs a layer of mud to be spread for drilling and seeding on the floor. The robot for agriculture purpose an agrobot is a concept for the near the performance and cost of the product once optimized, will prove to be work through in the agricultural spraying operations. Successful in constructing robot which can be travelled on rough surfaces.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"ESTIMATION AND VISUALIZATION OF 3D ORBITS OF GPS SATELLITES USING GPS NAVIGATION DATA FILE FROM MANGALORE GNSS RECIVER"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

The main aim of the project is to estimate and visualise the 3D orbit of GPS satellite by extracting data from GPS navigation data file which is obtained from Mangalore GNSS receiver. The data extracted are compared with RINEX file and implemented in the formulas to obtain XYZ coordinates of GPS satellite and plotted in 3 Dimension by using MATLAB tool. The GPS navigation data file is extracted from GNSS receiver which contains the data of GPS satellite. These data are segregated by comparing with RINEX file and are substituted in the formulas by using MATLAB. We get XYZ coordinates of GPS satellite from formulas and a 2D plot is obtained. Then the 2D plot is interpolated by increasing the number of samples. Another 2D plot is obtained by extracting data from SP3 file which is an error free GPS data file. Both the 2D plots are compared and the variance is found which indicates the amount of error present in data of GPS navigation data file. The 2D plot which is interpolated is then converted in 3D plot with ECEF coordinates.

The path of GPS satellite in space, orbiting around the earth is estimated with earth as centre. The plot is obtained with respect to poles as well as equator. In future this work can be extended by converting 3D plot from earth centred and earth fixed coordinates to receiver centred coordinates. The GPS navigational data file is received from the GNSS receiver. The data is extracted and segregated from the navigational data file by comparing it with RINEX file. The extracted data is substituted in the formulas using the MATLAB code to obtain the XYZ coordinates. These XYZ coordinates are plotted in 2D and interpolated. The GPS data file extracted from SP3 file are also plotted in 2D and interpolated. These two interpolated signals are compared, and variance is found which indicates error present in satellite path. The interpolated signal obtained from SP3 data file is converted into 3D plot with Earth Centered Earth Fixed coordinates.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT

ON

"SPEED CONTROL OF VEHICLE IN ACCIDENT ZONE"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Every year the density of vehicles are increasing rapidly, which results in more traffic related problems, leading to accidents. The causes for the accidents are over speeding and negligent driving and ignoring the road rules etc. These problems can be solved by using a system which alarms the accident zone or speed limit area, in response to these alarms the speed of the vehicle can be controlled in order to, avoid the accidents. The system can be implemented by using two methods such as Radio Frequency (RF) communication and Geo-fencing. The proposed system is an attempt to control the speed of the vehicles, which is designed with software and hardware to enable the driver to get the speed of the area in which the vehicle is currently moving. The main focus of this project is to provide safety and precaution to the driver as well as to the passengers and to avoid the accidents which can save many lives.

The framework makes utilization of two methods which are mentioned earlier. In RF communication method RF transmitter placed at accident zones (such as school zones, hospital areas and speed limit areas etc.) and RF receiver placed in the vehicle will communicate using electromagnetic waves. The microcontroller that is the brain of the project activates the particular action corresponding to the received signal. The prototype is implemented using geo-fencing technology to overcome from drawbacks which are encountered in RF technology. Geo-fencing is a feature in software /program that uses the global positioning system to define the geographical area with different radius. In geo-fencing method, the software application provides an alert or notification to the controlling part of the system when the vehicle enters an established geo-fenced area. The microcontroller in the controlling part will perform the necessary action based on the notifications. In the Geo-fence system there are not much complicated issues of power supply, system installation to vehicles. The location of the vehicle should be uploaded for each and every second. Therefore geo-fencing provides more accurate and efficient results compared to RF technology.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"ULTRA LOW POWER DESIGN AND HIGH SPEED DESIGN OF DOMINO LOGIC CIRCUIT USING CADENCE VIRTUOSO PLATFORM"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

In VLSI it is important to introduce low-power design techniques, which reduces the power dissipation of the circuit during normal mode of operation. More power consumption also reduces the battery life of the devices. Therefore, reducing power dissipation during normal operation has become a critical objective in today's VLSI circuit designs. Designers have different options to reduce the power dissipation in the various design stages. Power dissipation in CMOS circuits can be dynamic or static. Dynamic power dissipation takes place due to switching activities and Static power consumption is due to leakage.

The domino circuits are used in various circuits especially in memory, multiplexor, comparator and arithmetic circuit and also used in full adders that are most important part of a CPU. Additionally, domino circuits are important components in other applications such as Digital Signal Processing architectures and microprocessors, which rely on the efficient implementation of generic arithmetic logic and floating point units to execute dedicated algorithms. Various design approaches had been investigated for realizing domino CMOS. The Extensive use of high speed domino circuits attracts many researchers in this field. There are various issues related to domino circuits, such as power consumption, speed and noise immunity.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DESIGN OF FEEDER–WEEDER ROBOT FOR AUTONOMOUS FARMING"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Agriculture is known as backbone of Indian economy. A large number of rural households depend upon agriculture as their primary source of livelihood. Recent advances in technology have made it possible to increase output as well as reduce dependence on manual labor. Fertilizers are chemical components which are not advisable to be touched in bare hands. When nitrogen based fertilizers are manually applied to roots, some will fall to bare land which leads to growth of weeds on those areas. The fertilizers which are essential for growth of plants are also causing the growth of weeds. These weeds are traditionally removed by manually plucking them. The solution derived from this project is to use grid system for sowing plants. This way it is easier to differentiate between plants and weeds. The robot can fertilize only the required area around root cavity, this avoids human error of spilling. In the grid system the positions of plants is known before so that any other plants can be considered as weeds and they can be removed.

Feeder-weeder for autonomous farming, considered a scenario where all of the work done on farms is automated by a group of autonomous robots working together in sync with each other. The concepts such as microcontroller programming, communication, path planning, sensor interfacing can be used. Agricultural field with many crops growing in it is considered in this project, some of these crops need to be fed red fertilizer and others need to be fed blue fertilizer. There are some weeds growing in the field which need to uprooted and disposed outside the field. Two fertilizing robots and a weed removing robot are deployed in the field. In order to make this system work more efficiently, the robots communicate between each other to share information and coordinate with each other.

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PROJECT REPORT ON

"AUTOMATIC POWER FACTOR CORRECTION"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
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ABSTRACT

Power factor correction using capacitor banks reduces reactive power consumption which will lead to minimization of losses and at the same time increases the electrical system's efficiency. Power saving issues and reactive power management has brought to the creation of single phase capacitor banks for domestic applications. The development of this project is to enhance and upgrade the operation of single phase capacitor banks by developing a micro-processor based control system. The control unit will be able to control capacitor bank operating steps based on the varying load current. Current transformer is used to measure the load current for sampling purposes.

The project work applies the Peripheral Interface Controller (PIC) microcontroller to produce switching commands in order to control the capacitor bank steps. Intelligent control using this micro-processor control unit ensures even utilization of capacitor steps, minimizes number of switching operations and optimizes power factor correction. Fluorescent lamp will be used as loads in this single phase capacitor bank developments. That fluorescent lamp shall be divided into different load value to enable capacitor bank model is controlled systematically. This project aims to present an indigenous technique and method which could be used for static power factor correction. It is demonstrated in this work that phase difference between voltage and current can be determined using zero crossing detectors. Voltage and current transformers have been used for transforming load voltage and current respectively to bring them in desired working range of microcontroller. The Power Factor of varying load can be measured and compensated using static methods. After measurements, the reactive power is compensated by switching capacitors using solid state relays by taking advantage of its long life and fully static Power Factor correction. Based on this calculation, capacitors are automatically brought online or offline by switching solid state relay to achieve unity power factor after displaying the essential data on Liquid Crystal Display (LCD).This project provided one of the techniques used to overcome power losses due to low power factor associated with common household and small industrial units. In this project work AC load voltage and current was measured by sampling rectified sine wave. All information (i.e. RMS voltage and & current, active power, reactive power, apparent power, power factor, capacitance) works using different formulas. Moreover, based on this analysis, a corrective algorithm is to achieve power factor close to unity.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"SMART HYDRAULIC SYSTEM FOR TRACTORS"

Submitted in partial fulfillment of the requirements for the award of degree

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in partial fulfillment for the award of BACHELOR of ENGINEERING in **ELECTRONICS & COMMUNICATION ENGINEERING** of the **VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI** during the year 2017–2018. It is certified that all corrections/suggestions indicated for internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the Bachelor of Engineering degree.

25/5/18	D.V.M 25/05/18	
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ABSTRACT

Tractors are a revolutionary agricultural equipment or tool that have improvised and facilitated the farm and field activities in the agricultural sector. Tractors are of various types depending on the load they are designed to work with, soil terrain, crops, and many other criteria. Tractors above 45hp are robust enough for heavy work, but the ones with lower hp are not capable. These Tractors when encountering sticky soil, hard rocky ground, dry leaves and logs in the paddy fields and plantations easily tend to get stuck thus making the farmer who is driving the tractor to toil more hard and increase his manual labor, and also leading to more stress on the tractor engine along with increased fuel consumption and damage to the peripherals that get stuck in the hard rocky earth and increase the repair costs to the farmer.

The proposed prototype is designed to detect the obstructions encountered by the peripherals and actuate a series of automated operations which include the lifting up and lifting down of the cultivator, tiller or any other peripherals whenever it gets stuck and the engine is about come to the off condition. These set of operations which usually are manually done in the Tractors with hp below 45hp where the farmer has an extra load of focusing in the front and rare directions which increases his fatigue, is reduced significantly when this simple, automated, sensor based unit is fixed to the tractor. This ensures more productive work in the stipulated time, lesser damage to engine, reduction in damage of brake plates and depreciation of clutch plates and other peripherals linked to hydraulic hub thus ensuring an increased efficiency and improvised results in the farm and the field work.

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VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590 010

PROJECT REPORT ON

"A PROTECTING SYSTEM DESIGN FOR COAL MINERS"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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ABSTRACT

In recent years, research is going on ZigBee based wireless sensor networks due to their remote environment monitoring capabilities. Such a network can easily collect sensor data and transmit them by radio. A cost effective ZigBee based wireless mine supervising system is presented. Design a smart new helmet is designed which enable the helmet as a mobile node of ZigBee wireless sensor networks, gathering parameters from underground timely and quickly.

The helmet act as a mobile sensor node and will collect the temperature, humidity and carbon monoxide level of nearby environment and will alert the central management unit in case of abnormal condition. In this project, voice transmission system is designed to reduce potential safety problems in coal production, one of telecommunication value-added services. So with environmental monitoring, the miners can communicate with control centers or with other miners through wireless speech communication.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"Brain-Computer Interface with Image Display"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

BCI is a leading technology in today's world. In simple words, it creates an interface between the brain and the machine, allowing the machine to send commands to the machine directly from the CNS and especially the brain. Great popularity of the Arduino microcontroller board helps to integrate BCI comprising neurosky mindwave mobile with Arduino microcontroller board. The main use of this technology is in the field of medical science. Works are being done in the field of military and skill improvement domains as well. This technology is growing day by day and is proving to be one of the most important technologies in the current scenario. This project shows how BCI works and how it can be used in certain applications. EEG was used to read brain waves and then those waves were analyzed to fetch fruitful results which are used in certain applications.

BCIs can use noninvasive or invasive methods for recording the brain signals that convey the user's commands. Whereas noninvasive BCIs are already in use for simple applications, it has been widely assumed that only invasive BCIs, which use electrodes implanted in the brain, can provide multidimensional movement control of a robotic arm or a neuroprosthesis. The adaptive algorithm used in this noninvasive BCI identifies and focuses on the electroencephalographic features that the person is best able to control and encourages further improvement in that control. The results suggest that people with severe motor disabilities could use brain signals to operate a robotic arm or a neuroprosthesis without needing to have electrodes implanted in their brains.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590 010

PROJECT REPORT ON

"ADVANCED MEMS CONTROLLED DUMB AND DEAF ASSIST UNIT WITH EMERGENCY ANNOUNCEMENT"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
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ABSTRACT

The physically challenged, deaf and dumb people there is no such device is available to pass their needs and emergency intimations in hospitals, homes and many public places. Sometimes they have to depend only on sign language which may be difficult for common peoples. The method shown here is used to generate a voice from deaf unit to a wireless location and also generates a message to mobile unit in case of needs and emergencies using MEMS sensor, it is possible to generate the required signal to send the signal depends on the movement of the head tilt or hand movements the signal generated from a MEMS unit which is interfaced to transmitter and microcontroller unit.

The deaf and dumb people uses sign language for the communication which is difficult and cannot be understand by common peoples so there must be some unit required which helps the deaf and dumb people to operate easily and can be possible to understand by a common people also. MEMS generate the signal in axis which is x co-ordinate y co-ordinate and z co-ordinate as per the movement of chip the 3 axis accelerometer used here is MMA7260Q. The analog data available from this sensor in processed and send through transmitter the whole unit can be either with control through handicap person or even from a distance operation from attender.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"JnanaSangama" Belagavi – 590 010

PROJECT REPORT

ON

"ACOUSTIC EVENT RECOGNITION FOR THE APPLLICATION OF SURVELLIANCE SYSTEM"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

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ABSTRACT

Recent years have witnessed growing interest in the automatic detection of serious situations like road accidents, to ensure quick intervention of the emergency teams. However, in few scenarios visual data is not sufficiently reliable. In this proposed system audio event recognition (AER) technique is implemented through the analysis of audio streams which can improve the overall efficiency of the existing surveillance system.

Acoustic Event Recognition deals with detection, classification and recognition of unstructured environment which may contain overlapping sound events and non-stationary noises in the background. The events are classified by comparing the features extracted from the input sample with the trained samples. This work proposes a recognition scheme based on a hierarchical structure, using features obtained from Mel-Frequency Cepstral Coefficient (MFCC) and Perceptual Linear Prediction (PLP) methods. These features are used to train Support Vector Machine (SVM) for event classification. The effectiveness of the proposed method is demonstrated via experimental results using Matlab simulation tool.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"MINIATURIZED CNC PLOTTER FOR PCB DESIGN USING ARDUINO"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Computer numerical control plotter machine is a 3D controlled 2D plotting machines which uses a pen to draw text or image on any given solid surface. It can be used for the purposes such as PCB Design, logo design, etc. This project is based on computer numerical control plotter machine. The increasing demand for the use of computer numerical control plotters in universities and laboratories, a cheap and less complex design is an absolute need. The parts used for the plotter in our project are easily available at a very low price and spare parts are also used. The construction is very simple and robust.

The advancement of technology, demand for computer numerical control plotter machines in educational institutions and laboratories is rapidly rising. Low cost manufacture of printed circuit board has become a basic need in electronics laboratories, for electronics engineering students and for electronics hobbyists. This project represents an affordable model of a computer numerical control plotter machine which is able to draw a circuit layout on PCB or any other solid surface using simple algorithm and available components. At first the user needs to convert any image file or text file into G code using Inkspace software and then feed it to the machine using Processing software. asrduino uno with an ATmega328P microcontroller which is used as the control device for this project. The microcontroller converts G code into a set of machine language instruction to be sent to the motor driver of the computer numerical control plotter.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"AN EFFICIENT SMART HOME ENERGY MANAGEMENT SYSTEM"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The overall design of an efficient smart Home energy management system with low cost and wireless system is presented in this project. This system is designed to assist and provide support for elderly and disabled in home. Also the smart home concept in the system improves the standard living at home. The main control system implements wireless technology to provide remote access from smart phone. The system intended to control electrical appliances and devices in house and analyses the power consumption of different appliances with relatively low cost design, user-friendly interface and ease of installation.

The purpose of the design is to implement wireless remote control system for automation of home appliances and energy management using smart phone. Gas sensors and temperature sensors are interfaced to Arduino microcontroller. In the system the appliances are controlled through Bluetooth module which is interfaced with the Arduino microcontroller. The project work describes the controlling of house hold appliances and analysis of power consumption with cost of money charged using an Arduino microcontroller. The system will detect the smoke and Liquid Petroleum Gas (LPG) leakage and notifies the user through a buzzer. The temperature in home will be displayed in Fahrenheit on the Liquid Crystal Display (LCD) screen. The system will record the time interval between on-off of a home appliance with power consumption details and also the cost of money for each appliances used and also sending those details to the user through E-mail. The user can access the power analysis details in the E-mail provided. The E-mail contains the list of appliances available, the time interval, the power consumed and the cost of money that will be charged by the respective electricity board.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590010

PROJECT REPORT ON

"DESIGN OF LOW POWER HIGH SPEED AREA EFFICIENT WALLACE TREE MULTIPLIER USING REDUCTION LOGIC"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Multiplier is a vital block in high speed digital signal processing applications. The more stress in modern very large scale integrated circuits design under which main constraints are power, silicon area and delay, in all the high-speed application in very large scale integrated circuits fields. Wallace tree multiplier is a three-stage operation, which again leads to lesser number of stages and subsequently less number of transistors which resolves the hardware complexity and ultimately reduces the delay, area.

The disadvantage in the standard wallace tree multiplier is that if there are two bits in a particular column of group of three rows half adders are used in every stage, so area and complexity of circuit increases and consumes more power. The proposed wallace tree multiplier design incorporates reduction logic and low power full adder. It is similar to that of standard wallace tree multiplier, difference is that it uses half adders when necessary. The reduction logic method helps in reducing the complexity greatly denying the half adders with 65-75% reduction, which in turn makes the wallace tree multiplier low power, high speed and area efficient.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"DESIGN AND SIMULATION OF A SURFACE ACOUSTIC WAVE (SAW) BIOSENSOR FOR CANCER DETECTION"

Submitted in partial fulfillment of the requirements for the award of the degree

BACHELOR OF ENGINEERING
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ABSTRACT

Cancer is deadly disease which is caused due to uncontrolled growth of the cells and forms from the extra mass tissue known as tumour. Smoking, drinking more than one alcoholic drink a day (for women of all ages and men older than age 65) or two drinks a day (for men age 65 and younger), excessive exposure to the sun or frequent blistering sunburns, being obese, and having unsafe sex can contribute to cancer. The earlier cancer can be detected, the better the chance of a cure. In terms of cancer, the analyte being detected by the biosensor is a tumour biomarker. Thus, by measuring levels of certain proteins expressed and/or secreted by tumour cells, biosensors can detect whether a tumour is present, whether it is benign or cancerous, and whether treatment has been effective in reducing or eliminating cancerous cells. The biosensors can be designed to detect emerging cancer biomarkers and to determine drug effectiveness at various target sites. The designed biosensor has the potential to provide fast and accurate detection, reliable imaging of cancer cells, and monitoring of angiogenesis and cancer metastasis, and the ability to determine the effectiveness of anticancer chemotherapy agents.

The biosensor is designed using SAW devices which have the inter-digitated transducers excitation electrodes fabricated on the one side of the piezoelectric film. The sensor can transform an input electrical signal into a mechanical wave which can be easily influenced by physical phenomena. Then, the changed mechanical wave is transduced back into an electrical signal. The presence of the desired phenomenon can be detected through the difference between the input and output electrical signal (amplitude, phase, frequency, or time delay). As a result, the SAW devices have the acoustic waves propagating along the surface of the piezoelectric substrate. For SAW resonators the IDTs are fabricated in a central position and reflectors are added on both sides of the input and output IDTs to trap the acoustic energy within a cavity. The surface between the IDTs is coated with antibodies sensitive to the analyte to be detected. The analyte molecules binding to the immobilized antibodies on the sensor surface influence the velocity of the SAW and hence the output signal generated by the driving electronics. For biosensors it is necessary to take care of toxicity, reliability of the device, so in this work biodegradable and non-toxic polymer, PVDF is used.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

"Jnana Sangama" Belagavi – 590 010

PROJECT REPORT ON

"WIRELESS POWER TRANSFER USING CIRCULAR LOOP ANTENNA"

Submitted in partial fulfillment of the requirements for the award of degree

BACHELOR OF ENGINEERING
IN
ELECTRONICS & COMMUNICATION ENGINEERING

Submitted By

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ABSTRACT

Wireless power or remote transmission of electrical vitality from a power source to an electrical load without man made conduits. It is helpful in situations where interconnecting wires are badly arranged, dangerous or incomprehensible. It is completed utilizing direct acceptance took after thunderous attractive enlistment, electromagnetic radiation as microwaves or lasers and electric conduction through media. This framework now daily is exceptionally prevalent everywhere throughout the world.

It is useful in cases where interconnecting wires are inconvenient, hazardous or impossible. It is carried out using direct induction followed by resonant magnetic induction, electromagnetic radiation in the form of microwaves or lasers and electric conduction through media. This system now a day is very popular all over the world. Radio waves are the energy and people use them to send and receive cell phone, TV, radio, Wi-Fi signals day to day. This technology now a day has a wide foot-hold all over the world. This technology today has matured enough to allow us a new means to power our mobile and gadgets.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT

ON

"DESIGN OF ROBOTIC ARM FOR TRASH COLLECTION AND SEPERATION"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

The rising population of India poses serious threats with regard to the availability of living space, utilization of natural resources and raw materials, education and employment. But another serious peril that follows is the escalating amount of waste generated each minute by an individual. An astounding 0.1 million tons of waste is generated each day in India. Sadly, only 5% of this colossal amount of waste is recycled. One possible solution for this problem could be segregating the waste at the disposal level itself. In India, the collection, transportation and disposal of municipal solid waste (MSW) are unscientific and chaotic. Uncontrolled dumping of waste on outskirts of towns and cities has created overflowing landfills which are not only impossible to reclaim because of the haphazard manner of dumping but also has serious environmental implication in terms of ground water pollution and contribution to global warming. This has found to reduce the average life span of the manual segregators. Developing a mechanized system to help save the lives of many and making the world a cleaner and a greener place is the noble objective of our project.

This proposed system is going to collect some database of garbage images where it need to train those images and need to get some features of all the images and then by using the pi-camera it is going to capture a real time image then has need to detect the features of that particular image whether it is a garbage image r not if yes then it will checks for the segregation either dry or wet waste by using k-NN algorithm. Then if there is no garbage on the road then raspberry pi will inform the robot to move forward. If there is any waste present on the road then according to the segregated it will pick and place the garbage in specific direction.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"SUPER MARKET SELF CHECKOUT BASED ON LI-FI"

Submitted in partial fulfillment of the requirements for the award of the degree

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ABSTRACT

Vast markets have an incredible assortment of merchandise furthermore; unique grocery stores may have distinctive dispersion of product. A large portion of the clients think that it's hard to remain in long line for charging the obtained items and they need to look through the item in the huge shopping centre. This is more time consuming, the shopping centres utilize different advances for electronic business to spare the time and increment the solace. Simple and effectiveness required for charging in regular day to day existence.

The tag is remarkably created character which is connected on the item that distinguishes the items exceptionally. These labels are recognized by the user. The reader is an electronic gadget that distinguishes the label which is known to it. The principle goal of proposed framework is to give innovation oriented, low cost, effectively scalable and tough framework for helping shopping face to staffs need to monitor the items they pitch to ensure what they are offering is in the feed.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"Estimation of Horizontal and Vertical Position of GNSS antenna"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

In this project, some of the ideas of positioning using GPS are explored, GPS is a satellite-based navigation system made up of a network of 24 satellites placed into orbit by the U.S department of defense. It provides the use of a handheld GPS receiver in the areas of precise positioning, mapping locations, navigating across the mapped locations.

This project is to estimate the horizontal and vertical position of GNSS receiver antenna using observation file and navigation file which are extracted from the receiver system. The GNSS is a satellite route framework for deciding position, speed and time with high exactness by the procedure of trilateration. The receiver independent exchange format file is utilized to extract the parameters from GPS route information document. These parameters are implemented in the formulas using MATLAB software, the cartesian coordinates of GPS receiver are obtained and they are plotted individually in 2 dimension.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"HUMAN DETECTION USING QUADCOPTER"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

Quadcopters are the unmanned air vehicles and these are playing an important role in different areas like surveillance, military operations, fire sensing and some important areas having many complexities. The similarities between the quadcopter and helicopter model is the vertical take-off and landing. The control of quadcopter is easier than the helicopter model of vehicles but it is entirely different whereas the lift force is produced by the four motors. This project mainly helpful for detecting human beings. Detection of moving objects is the first step of detection process. The main aim is for rescue purpose to determine the moving objects such as human beings since quadcopter can be moved freely in the air. Human detection in a smart surveillance system aims at making distinctions among moving objects in a video surveillance.

In the proposed system the input video is converted into multiple frames in order to ease the process. The key frames are selected and converted into grayscale images where pre-processing is done in order to detect all the boundaries in the image. To detect human beings in an image, objects need to undergo some operation such as background subtraction, contour detection. Then the human beings are classified using texture based method.

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

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PROJECT REPORT ON

"COORDINATE TRANSFORMATION OF SATELLITE ORBITS FOR IONOSPHERIC PIERCE POINTS: COMPUTATION AND VISUALIZATION"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The ionosphere is the ionized part of earth's upper atmosphere, from about 60 km (37 mi) to 1,000 km (620 mi) altitude, a region that includes the thermosphere and parts of the mesosphere and exosphere. The ionosphere is ionized by solar radiation, plays an important role in atmospheric electricity. GNSS are subjected to errors induced by the ionosphere. The ionospheric delay affects the speed of microwave signals differently depending on their frequency a characteristic known as dispersion, delays measured on two or more frequency bands can be used to measure dispersion, and this measurement can then be used to estimate the delay at each frequency. The principal source of the dispersion comes from the TEC in the ionosphere, along the line of sight from the Satellite to the receiver. The measurement of the TEC along the line of sight, instead a prediction can be made using a simplified model of the ionosphere is difficult. The signal transmitted from the Satellite to the receiver crosses the ionospheric shell in the so-called IPP. The height is taken as 350km above the earth atmosphere to calculate IPP.

The ionospheric layer will cause slant and vertical delay, due to electron content. Ionosphere delay will affect the speed of microwave signal which causes dispersion in ionosphere. Hence, the electron content in the ionosphere is calculated to find the delay. Therefore, the calculation of IPP is required to find electron content in the ionosphere. The IPP's plays an important role in calculating electron content. To overcome the problems of delay and dispersion IPP calculation is required. The data of 32 Satellites from SP3 file are taken to calculate the azimuth and elevation of the Satellites. To calculate the longitude and latitude of IPP, azimuth and elevation of Satellites are required. Hence, by Plotting longitude versus latitude of IPP, the Plot of IPP can be obtained. Therefore using IPP, the TEC in the ionosphere can be calculated.

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PROJECT REPORT ON

"OPTIMIZATION BOW-TIE ANTENNA FOR ITS PARAMETERS"

Submitted in partial fulfillment of the requirements for the award of degree

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ABSTRACT

The present paper deals with a brief review on different shapes of bowtie antenna used to improve its Performance including, better return loss, flatter input impedance, and more stable radiation pattern. Bow-tie microstrip antennas has become one of the most used in the present day communication scenario due to their compact in nature compared to rectangular patches. The ever increasing demand for compact wireless communication equipment explicitly necessitates research in compact antenna options. Design of bow-tie antenna is based on design of triangular microstrip antenna.The bow-tie patch actually is the combination of imaginary image of two triangular patches which are fabricated in a single substrate. The Bow-tie microstrip antennas have been designed for wireless LAN communication,where the operating frequency is at 2.45GHz.

This project was divided into a few parts.Firstly designing the antenna using microwave office software where it involves matching network with the microsrtip transmisson line feeding. Then simulations need to be done to observe the return loss and radiation pattern of the antenna.Lastly this project will proceed with hardware development by fabricate the antenna and compare the simulation and measurement result. Wireless technology is one of the main areas of research in the world of communication systems today and a study of communication systems is incomplete without an understanding of the operation and fabrication of antennas. This was the main reason for our selecting a project focusing on this field. The first group focused on the fabrication and testing of a slotted waveguide Omni directional antenna and a biquad directional antenna. The second group focused on the design and simulation of patch antennas (which are widely used in cell phones today) with an emphasis on optimization of a 2.45 GHz rectangular probe fed Bow-tie antenna.

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PROJECT REPORT ON

"IoT BASED WATER UTILITY MONITORING SYSTEM"

Submitted in partial fulfillment of the requirements for the award of the degree

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2.....	.....

ABSTRACT

Water quality is observed only at the municipal water tanks which are located zone wise and hence water quality is not been checked at end points where chances of water contamination is present due to rust in the pipeline, hole in the pipeline and some other reasons. Even if water flow is checked at end points, it is time consuming, labor intensive and all end points are not going to cover. Hence, there is need of smart water distribution system with continuous water quality flow check.

Water is an important resource for all the livings on the earth, for life and its existence. Ensure the safe supply of drinking water it should be monitored in real time IoT (Internet of Things) based water utility monitoring has been proposed. The primary concept of real-time IoT based water resources information system is to provide comprehensive and accurate information. The need of water requirement, its distribution and quality check, a water flow is monitored through web interface based on water flow sensor value to ensure equal and adequate water distribution to each connection (end point). Improve water management systems, especially by exploiting the emerging technologies this approach will be more helpful to the utilities operators. The Internet of Things could prove to be one of the most important methods for developing more utility-proper systems and for making the consumption of water resources more efficient.

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No. 578/HR/CLD/36/2018-19
Date: 23/02/2018

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This is to certify that Ms. ASHRITHA, student of ALVA'S INSTITUTE OF TECHNOLOGY, BANGALORE, has undergone ***Internship*** *in BEL from 29/01/2018 to 22/02/2018 and has undergone* ***Orientation*** *in "ELECTRONIC WARFARE AND AVIONICS" SBU.*

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

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PROJECT CO-ORDINATOR (CLD)
NANJUNDA SWAMY
209723
MANAGER (HR/CLD)

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(A Govt. of India Enterprise, Ministry of Defence)
I.E.Nacharam, Hyderabad - 500 076, India
Phone : 91-40-27194700, Ext:.....
Fax : 91-40-27171406

CERTIFICATE

This is to certify that **Mr. K Lakshmi Narasimha, USN No. 4AL15EC038,** studying **Bachelor of Technology (III Year) in Electronics and Communication Engineering at Alvas Institute of Engineering and Technology, Moobdiri, Mangalore, India** has completed internship titled **"Electronic Warfare systems and its applications"** at BEL, Hyderabad from 10 Jan to 08 Feb 2018 under my guidance and supervision. During the internship, the student has worked on various technologies used in EW Systems. Also, the student is observed to be sincere and hardworking.

Ch. Viswanadham

(Ch Viswanadham)
Senior Deputy General Manager (D&E)
Email: viswanadhamch@bel.co.in
विश्वनादम सी.एच.
VISWANADHAM CH
स्टाफ.सं./Staff. No. 208757
व.उमप्र (वि.एवं.अ)/Sr. DGM (D&E)

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This is to certify that Ms. POOJA M, student of ALVA'S ENGINEERING COLLEGE, MOODBIDRI, has undergone Internship in BEL from 17/01/2018 to 03/02/2018 and has undergone Orientation in "MISSILE SYSTEM" SBU.

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

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This is to certify that Ms. SNEHA G N, student of ALVA'S ENGINEERING COLLEGE, MOODBIDRI, has undergone Internship in BEL from 17/01/2018 to 03/02/2018 and has undergone Orientation in "MISSILE SYSTEM" SBU.

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No. 5784HR/CLD/36/2018-19
Date: 05/02/2018

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CERTIFICATE

This is to certify that Ms. PRIYANKA V, student of ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRE, has undergone Internship in BEL from 17/01/2018 to 05/02/2018 and has undergone Orientation in "NAVAL SYSTEM 1" SBU.

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

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Date: 05/02/2018

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This is to certify that Ms. SHREYA S POOJARY, student of ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRE, has undergone Internship in BEL from 17/01/2018 to 05/02/2018 and has undergone Orientation in "NAVAL SYSTEM 1" SBU.

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

Sandhya-b N
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संध्या बी. एन / SANDHYA B.N.
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This is to certify that Ms. VIDHYASHREE G, student of ALVA'S INSTITUTE OF TECHNOLOGY, MOODBIDRE, has undergone Internship in BEL from 17/01/2018 to 29/2018 and has undergone Orientation in "MILITARY RADARS" SBU.

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

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MANAGER (D&E) MR

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This is to certify that Ms. VERONICA GUDAGUR, student of ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MOODBIDRE, has undergone Internship in BEL from 17/01/2018 to 05/02/2018 and has undergone Orientation in "NAVAL SYSTEM 1" SBU.

He / She was regular and punctual in his / her attendance and his/her conduct was satisfactory during the period.

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No. 578/HR/CLD/36/2018-19
Date: 29/01/2018

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CERTIFICATE

This is to certify that Ms. VEENA S, student of ALVA'S INSTITUTE OF TECHNOLOGY, MOODBIDRE, has undergone Internship in BEL from 17/01/2018 to 29/2018 and has undergone Orientation in "MILITARY RADARS" SBU.

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This is to certify that Madhu K R has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC034

Project Title: Automated Street light control systems

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Kiran N has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC031

Project Title: Automatic Street light control system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Ashish Shanbhag has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC008

Project Title: Automatic Street Light control system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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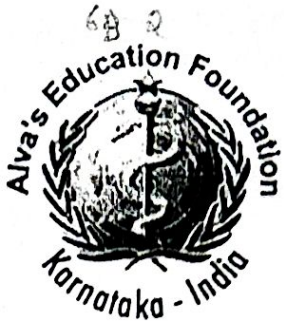

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This is to certify that Rahul Tattennavar has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC052

Project Title: Automatic Street light control system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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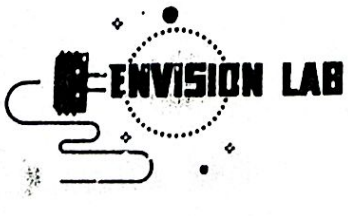

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is is to certify that Vasanth Kumar M
s successfully completed the " IoT Systems and Prototyping
ternship " under Project Envision undertaken by Oscki Labs.

N: 4AL15EC099

oject Title: Sparsh Gloves

nternship Duration: 12th January 2018 to 28th January 2018.

nternship Location: Alva's Institute of Engineering & Technology,
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This is to certify that DIVYASHREE A K has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL15EC022

Project Title: "SPARSH GLOVES"

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Shruthi I.T has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL15EC083

Project Title: Sparsh Gloves

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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Course Completion Certificate

This is to certify that

Vijay C.H.

has successfully completed the " *PCB Designing: Beginner's Course* " from 15/9/2017 to 12/10/2017 (30 hours) at Alva's Institute of Engineering & Technology, Mijar, Moodbidiri under Project Envision undertaken by Oscki Labs.

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Srinidhi J C

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This is to certify that

Akshatha S Patil

has successfully completed the " *PCB Designing: Beginner's Course* " from 15/9/2017 to 12/10/2017 (30 hours) at Alva's Institute of Engineering & Technology, Mijar, Moodbidiri under Project Envision undertaken by Oscki Labs.

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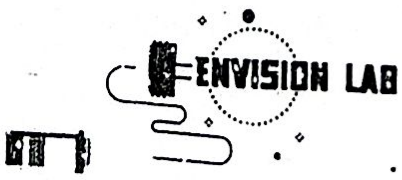

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This is to certify that Niranjan SJ has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC043

Project Title: IOT based security system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Sooraj
has successfully completed the " IoT Systems and Prototypin Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC075

Project Title: IOT based security system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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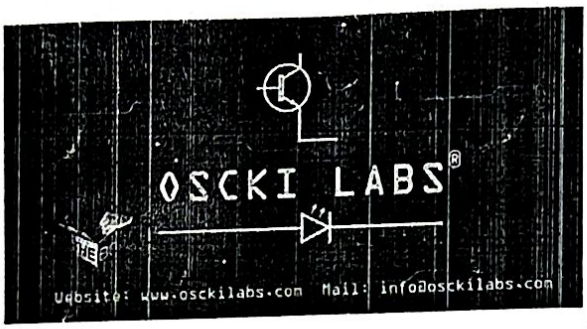

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This is to certify that Karthik.J has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC030

Project Title: IOT based security system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

Dr. Peter Fernandes
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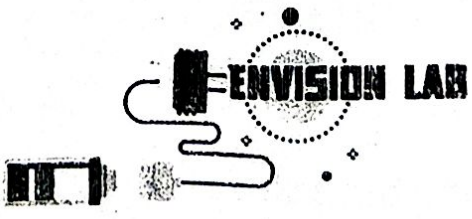

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This is to certify that Anand Kumar K has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC002

Project Title: IOT based security system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Safiya Banu has successfully completed the IoT Systems and Prototyping Internship under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC061

Project Title: IOT Based Poultry Farm

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Sangamesh S Kajagar has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AH16EC102

Project Title: IOT Based Poultry Farm

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Ramanath Vishwanath Naik has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC054

Project Title: IOT Based Poultry Farm

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that AISHWARYA MANGARSHI has successfully completed the "Arduino Sensors Interfacing and Prototyping Internship v.2.0" under Project Envision undertaken by Oscki Labs.

USN: 4AL15EC046

Project Title: HAND GESTURE CONTROL USING ARDUINO

Internship Duration: 30 Days

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri, Karnataka

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Chaitanya A has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC016

Project Title: Utility Vending Machine

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Yogyashree has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC099

Project Title: Utility Vending machine

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Revanth V has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC059

Project Title: IOT based green house craft

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Karegowda K N has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC029

Project Title: IOT based green house craft

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Heema Rubab has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC023

Project Title: IOT based green house craft

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Bhuvanesh M has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC015

Project Title: IOT Based food feeding system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Raziya Banu has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC058

Project Title: IOT Based food feeding system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Viveka has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL16EC097

Project Title: IOT based food feeding system

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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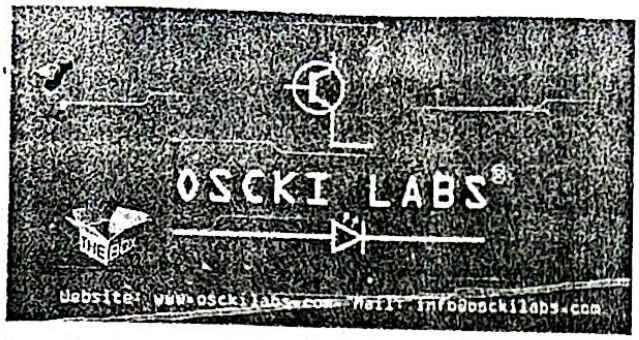

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INTERNSHIP COMPLETION CERTIFICATE

This is to certify that Rahul Itnal has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL15EC067

Project Title: Assistive folding machine

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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This is to certify that Thirtha A L has successfully completed the " IoT Systems and Prototyping Internship " under Project Envision undertaken by Oscki Labs.

USN: 4AL15EC093

Project Title: Assitive folding machine

Internship Duration: 12th January 2018 to 28th January 2018.

Internship Location: Alva's Institute of Engineering & Technology, Mijar, Moodbidiri.

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Indian Space Research Organisation
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Bengaluru - 560 037, India
Phone : 080 - 23026022, Fax : 080 - 23026025

RC: BG: 13.3

February 09, 2018

CERTIFICATE

This is to certify that the Internship project work entitled **"Signal Strength Analysis of IRNSS (NAVIC) & GPS Receivers"** has been successfully carried out at this centre by **Mr. Charan Raj S** (USN No: 4AL15EC017) a bonafide student of 3rd year **B.E. (Electronics & Communication Engineering)** course, Alva's Institute of Engineering & Technology, Moodbidri, Mangalore under the guidance and supervision of the undersigned during the period 16th Jan to 09th Feb 2018.

Guided by

V. Poompavai 9/2/2018

Dr. V Poompavai
Scientist/Engineer (SE)
RRSC-South, Bengaluru

Dr. K Ganesha Raj
General Manager
RRSC- South, Bengaluru

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Certificate of Internship

We the undersigned hereby proudly present this certificate of internship to BINDU. P Of ECE Department in Python -Product Development at ALVA'S Institute of Engineering and Technology, Moodbidri for his/her successful completion

Dr. Peter Fernandes
Principal

B. S. MANUSUDHAN
DIRECTOR