I²IT

Gyanamrit

2020-21

Department
of
Electronics and Telecommunication

Department of Electronics and Telecommunication

VISION

To nurture young minds and provide them with a strong foundation through academic excellence & skill-based knowledge, transforming them into efficient professionals who can take on challenges in the fields of Electronics and Telecommunication Engineering for a sustainable technological development.

MISSION

- To educate students on domain knowledge in Electronics and Telecommunication Engineering using adaptive teaching-learning practices.
- To create a conducive learning environment that offers value-added education, enabling students to be career ready.
- To cultivate research & innovation as a bent of mind among students by industry-academia interaction.
- To enrich students with self-learning ability to sustain with technological changes.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

- Apply skills acquired in E&TC to analyze problems & design innovative solutions
- Inculcate the habit of self-learning using state-of-the-art technologies & innovations for continuous improvement.
- Internalize and display professional ethics, team spirit & respect societal values.
- Inspire students for higher studies & research.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- Understand fundamental concepts and acquire co-design skills of E&TC to apply them to its cognitive areas.
- Enhance programming skills for efficient coding practices using open source platforms.
- Develop analytical skills to achieve optimized and cost-effective technological solutions for challenges in E&TC.
- Bringing awareness about electromagnetic radiation hazards for the work environment
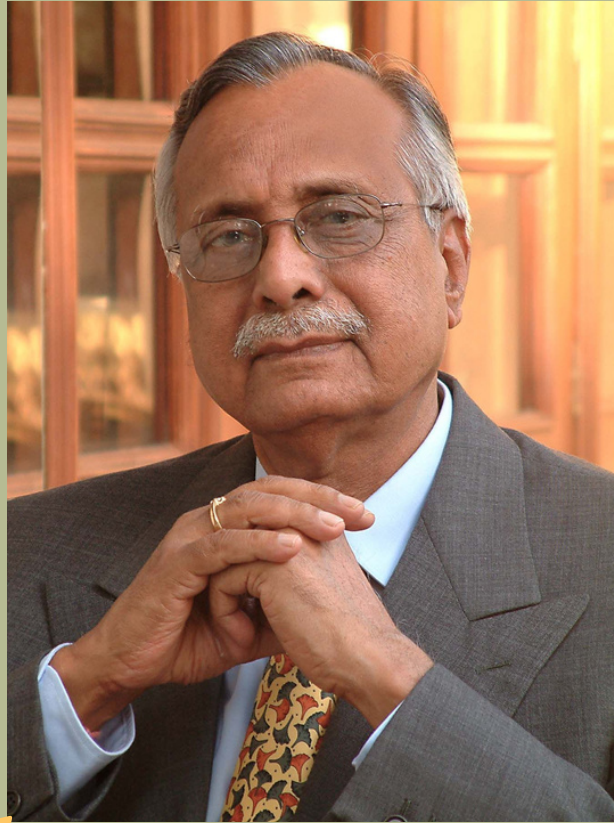
"An abiding trust in your abilities to perform, a strong determination to never give up and unshakeable belief in yourself are all you need to conquer the pinnacles of success"

Late Shri. Pralhad P. Chhabria
(12/03/1930 - 05/05/2016)
Founder President - I^{2}IT, Founder Chairman - Finolex Group

Editorial Committee

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2 Ishita Rai (BE-E&TC)
3 Harshal Fegade (BE-E&TC)
4 Abhinav Gandhi (TE-E&TC)
5 Rohit Kale (TE-E&TC)
6 Ishan Modi (TE-E&TC)
7 Kalyani kathane (SE-E&TC)
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- Dr. Risil Chhatrala
- Dr. S. M. Mahalakshmi Naidu
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HoD's Message
(Chief Editor)

Congratulations to the students and faculty associated to magazine committee for successfully publishing the second issue of departmental technical magazine Gyanamrit. Gyanamrit is creating platform which provides an opportunity to the students and staff to express their original thoughts on technical topics.

The magazine plays an instrumental role in providing exposure to the students to develop written communication skills and command over the language. It is a step towards building professional and ethical attitude in them. The entire journey of creating Gyanamrit is an outcome of rigorous effort made by students and faculty. Students not only gain the knowledge about the latest technological developments and advancements through reading and writing articles but they also develop verbal and written communication skills.

On concluding note, I would like to thank all the stakeholders for their involvement and encouragement and wish all the best for their bright future.

Prof. (Dr.) Risil Chhatrala

Faculty Incharge's message
(Faculty Editor)

This issue is particularly special to me as it was a challenge to not only live up to the standards set by the previous issue but also set new ones. Gyanamrit is all about the technology that inspires students to do something, that leaves an everlasting mark on the world of technology. Thus it was our job to ensure inspiring technological developments are being brought to the students, by the students of the institute itself. Since the team was experienced, having worked on the first issue of the magazine, they knew exactly what had to be done and how it had to be done. Everything from collection of articles right down to the final edits was more or less smooth sailing. I worked closely with the team to ensure everything was done according to a schedule. The work was performed in an organised, almost professional manner and credits to my entire Gyanamrit team, for their commendable job. I would also like to thank every member of the Gyanamrit team, without whose contribution, this issue would not have been possible. I hope you enjoy reading this magazine as much as I enjoyed working towards its creation and more importantly I hope that the articles in this magazine inspire you.

      All the best to you.

Prof. (Dr.) Varsha Degaonkar

Editorial Head (student) message

On behalf of the entire Electronics and Telecommunication department and all the readers, I extend my whole hearted gratitude to the honourable and very supportive Principal Dr. Vaishali Patil and our HoD Dr. Risil Chhatrala for their dynamic, inspirational, enthusiastic contribution and motivation towards our department also boosting our confidence for the consecutive publishing of second Issue of the Magazine Gyanamrit. This technical magazine named 'Gyanamrit' signifies an emanation of knowledge. We received some of your encouraging feedback for our first edition on Latest trends in technology that has given us confidence to bring out more such theme based editions in the near future. Team 'Gyanamrit' will always remain indebted for the immense support and interest shown by you all. Electronics and Telecommunication Engineering is an ever-expanding field and the power what technology holds today is definitely beyond one's imagination. This edition is full of exciting new technologies. Our endeavour with each edition is to update you on the latest trends of technologies coming up and flashing some light on the innovative minds of the youth today. Lastly, quoting my special thanks to the departmental faculty members and my team members without whom this Issue wouldn't have been possible. We hope all the readers will enjoy this issue as much as we enjoyed creating it.

Ishita Rai
Lead Editor-Gyanamrit

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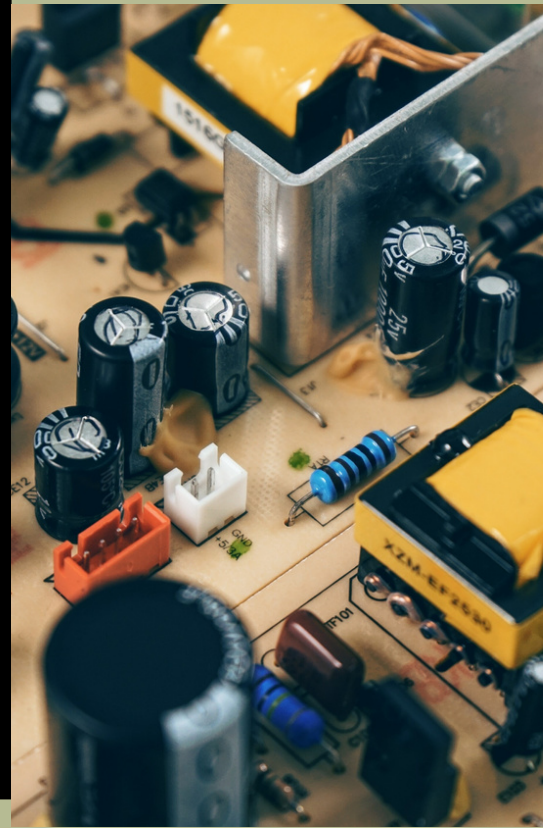
Gyanamrit

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Neural Networks (NN) Basics And Neuron Activation Functions

Dr. S. Mohan Mahalakshi Naidu
Associate Professor
Electronics & Telecommunication Engineering Department

Neural networks are adaptive learning systems, inspired by the biological neural systems. These may be trained with input-output data or may operate in a self-organizing mode. The basic block in an NN is the mathematical model of a neuron as in Eqn. 1. Three fundamental components of a neuron are the connection links that provide the inputs with weights for = 1,..., , an adder that sums all the weighted inputs to prepare the input to the activation function along with the bias associated with each neuron, and an activation function maps the input to the output of the neuron..

$$O = f\left(\sum_{n=1}^{m} w_n i_n + b \right)$$

an activation function f is typically a sigmoid function. The scalar parameters of the neuron, the weight and the bias, are adjustable. Single input neuron, multi-input neuron, and multi-input multi-neuron models are shown in Fig. 1.

Neuron activation functions

Fig 1: Neuron Models a) Neuron Model b) Multi-input Neuron Model c) Multi- input multi-neuron model
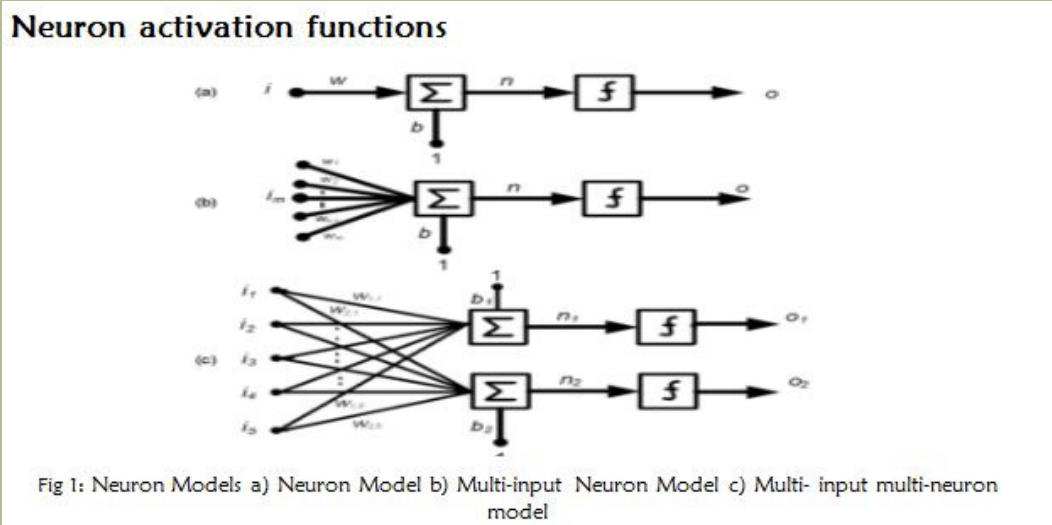
Neuron activation functions

Several activation functions have been used in neural networks. The simplest of all is the linear activation function used as a linear approximators. This function can be uniploar with saturation levels of 0 and 1or bipolar with saturation levels of -1 to +1 as shown in Fig. 2(a). The threshold and signum functions outputs vary abruptly between 0 to +1 and -1 to +1, respectively as shown in Fig. 2(b). These are used in perceptrons for classification problems. The sigmoid and Gaussian activation functions are nonlinear, differentiable, and continuous. These properties extend the application of neural networks from linear analysis to complex and nonlinear analysis applications. The sigmoid functions are a family of S-shaped functions. Logistic function, as shown in Fig. 2(c), is the most widely used sigmoid function andit has lower bound of 0 and upper bound of 1. Another commonly used sigmoid function is the hyperbolic tangent function with lower bound at -1 and upper bound at 1 as shown in Fig. 2(c). In both of these sigmoid functions, for inputs grater than 0, output initially rapidly and later slowly increases. For inputs less than 0, output rapidly decreases and later slowly decreases. Gaussian functions are symmetric bell shaped functions it represents the input with zero mean and standard deviation equals to one. Standard normal curve is the Gaussian function with bounds 0 and 1. It peaks at zero input and is more sensitive around zero input and less or zero sensitive at tails. In Gaussian complement, more sensitive at tails and zero at zero input.
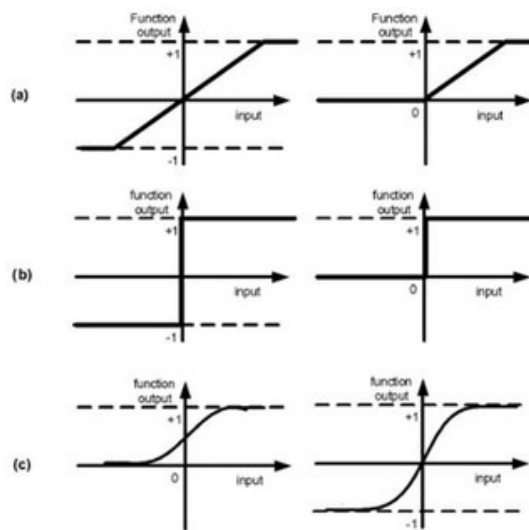
Fig 2:Neuron activation functions: a) linear bipolar (left) and unipolar (eight) activation functions b) signum (left) and threshold (right) activation functions, c) sigmodial or log-sigmoid (left) and hyperbolic or tan-sigmoid (right) activation function

BE Projects

Smart Food and Supply Chain Model

Abhishek Ranjan
Aditya Kumar Sinha
Bhamare Sarish Manish

In an age of technological advances, all things will require monitoring and control. In this report, the proposed IoT framework in order to facilitate the monitoring of the food, the shelter, for food, for those that have been contaminated by the environment during storage and transportation. These factors have made it work, which is measured in terms of the cost of what was written, and in-depth analyses were carried out, but the automated response is not an option. The development of multi-purpose sensors over the past decades, has been studied with the purpose to develop innovative products to market, with applications in a variety of areas, including in the food industry. It is a single integrated system that can provide reliable information on the packaged food products to be stored during the retention period. This technology, coupled with the internet of things (iot) can provide more information than traditional food technology.

The original system in operation is based on a simple but effective method for the continuous monitoring of, and the food directly to the consumer's home, which is appropriate that it is prepared to the user of the products, the vacuum packaging of the food. We o er a solution in order to analyze the temperature and humidity of the air, the light, since these are factors that have an impact on the nutritional value of the products, such as fruits and vegetables, and an analysis of the results to the user via a mobile app. Intelligent internet of things (iot)-based food system, our supply chain management using an MCU, and a variety of sensors that continuously monitors for a variety of factors that can a ect the quality of the food. Have something to say, is how the cloud is used, which adds to the visual information. The database, which is maintained with the help of MySQL, and the login page is created for the administrator, with the continuous monitoring of temperature and humidity.
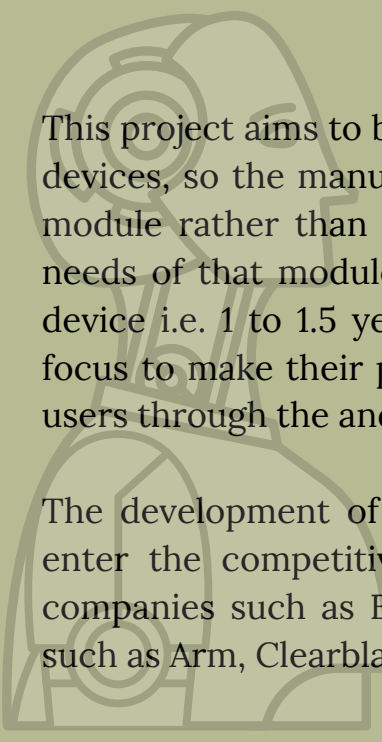
BE Projects

IoT framework for Connected Device Manufacturers (EaSE Modules)

Anagha Anand
**Chaitrali Pare**
Mohnish Sancheti
Soham Jarandikar

IoT devices are pieces of hardware, such as sensors, actuators, gadgets, appliances, or machines, that are programmed for certain applications and can transmit data over the internet or other networks. They can be embedded into other mobile devices, industrial equipment, environmental sensors, medical devices, and more. IoT (Internet of Things) allows us to get connected with things to the Internet. These things have the power to exchange information between them and transmit data to other devices and systems. Also, they can receive data as well. Machines and smart devices also have the capability to share information regarding their internal state. Using the Internet, people can connect to the digital network and devices like computers and smartphones for sharing information, chat and more.

The industry designing and manufacturing IoT devices/equipment is relatively slow compared to other ones. IoT is an emerging prospect of innovation which will be a crucial cog in the upcoming technological uprising. In spite of this there are a few companies solely concerned with the development and manufacturing of IoT devices.

This project aims to build a common backend and hardware module for multiple IoT devices, so the manufacturers can focus on the device compatible with a common module rather than building a module and manufacturing a device satisfying the needs of that module. This will reduce the typical time of development of an IoT device i.e. 1 to 1.5 years to merely 20-45 days. All the manufacturers will have to focus to make their product compatible with modules that can be accessed by the users through the android application.

The development of this product will allow smaller manufacturing companies to enter the competitive field of IoT devices which currently is limited to larger companies such as Bajaj, Havells, Orient, Syska etc. or the IoT specifc companies such as Arm, Clearblade, Enovo, Inspire etc.
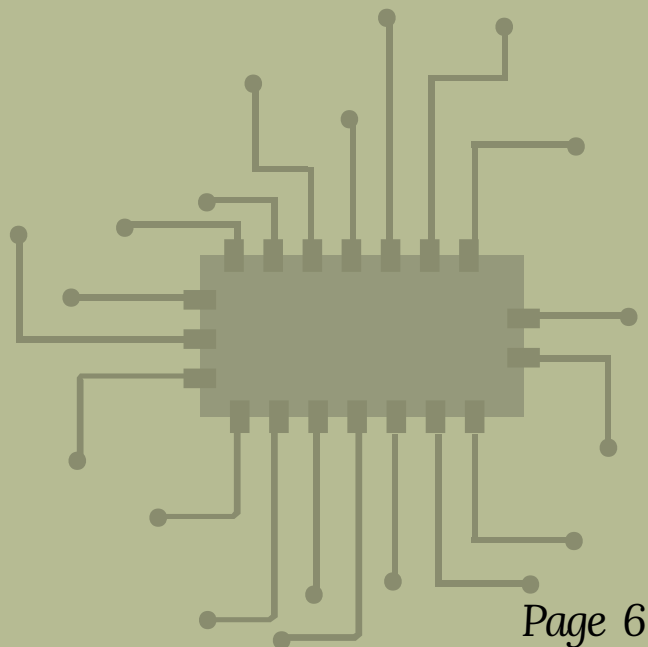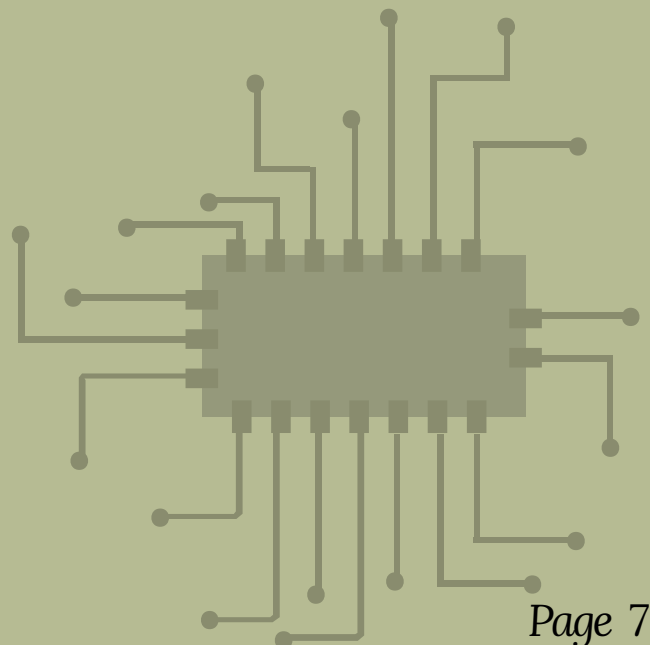
BE Projects

ECG Classification Using Machine Learning

Prajakta Joshi
Amruta Pavase
Mayank Pathak

Heart diseases remain by far the main cause of death and a challenging problem for biomedical engineers to monitor and analyze.The Electrocardiogram (ECG) is the most widely used technique to detect cardiac diseases. In this project, ECG data is classifed as normal arrhythmia and non-normal arrhythmia which are at risk of heart failure using a machine learning algorithm. Database is selected from UCI Machine Repository to validate the model. The features from the dataset are chosen using correlation-based selection method due to the elimination of redundant data . Random Forest classifier is used for classification and the performance of the model is calculated using confusion matrix where the accuracy of the model is 83.09%.
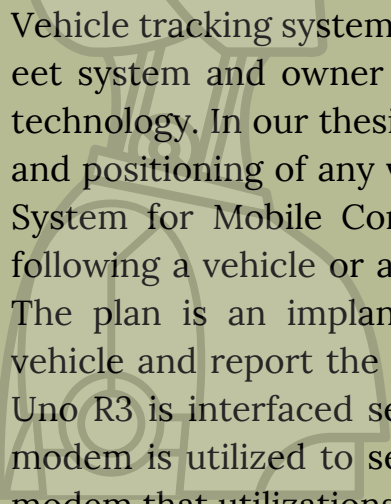
BE Projects

Vehicular Emergency Alarm System

Krushna Sarsekar
**Manish Tekale**
Prashant Kolage

As we know day by day traffic on the roads are extensively increasing. Therefore, number of accidents are increasing on roads. Accidents often relate to risk of lives which ratio is increasing in our country. Pre-emption of accidents on roads is not possible so we can at least decrease the effects of accidents.

This system describes mainly fire and smoke taking place inside and under hood vehicles. As many people or their pupils get stuck inside car and not due to fire but at least due to smoke they get su ocated and there is also their risk of life. The proposed system describes that victim should get medical concerns as early as possible. Sensors are attached to the controller. In case accident occurs to the vehicle sensors will get activated and with the help of GSM module we can get alert message to the emergency contact number. Therefore we can reduce the time of delay to get the medical help. With the help of this alert system we can save many lives or reduce the time to get the medical help on accident location. We can get real time location of the vehicle by mead of GPS module.
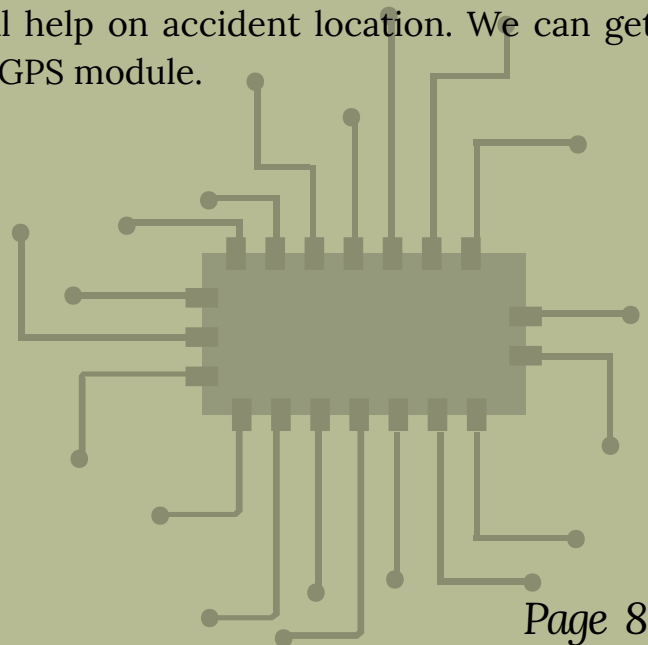
Vehicle tracking system is a well-established technology in this era which is used by eet system and owner of vehicle all over the world. It is a very safe and reliable technology. In our thesis we are going to design a system which is used for tracking and positioning of any vehicle by using Global Positioning System [GPS] and Global System for Mobile Communication [GSM]. We will be principally zeroing in on following a vehicle or a bicycle utilizing Arduino Uno R3 and GSM module sim908. The plan is an implanted application, which will consistently screen a moving vehicle and report the situation with vehicle on request. For doing so the Arduino Uno R3 is interfaced sequentially to a GSM modem and GPS beneciary. The GSM modem is utilized to send the situation of the vehicle from far o place. The GPS modem that utilizations satellite innovation for its route framework will persistently give information like longitude, scope information. At the point when the condition from each specifc sensor is valid, the framework naturally sends a return answer to the versatile demonstrating the situation of the vehicle as far as scope and longitude through SMS. We can likewise see the situation of vehicle on an advanced planning for example on Google map with the assistance of programming by means of Internet. We can likewise control the vehicle in the event that it is taken.
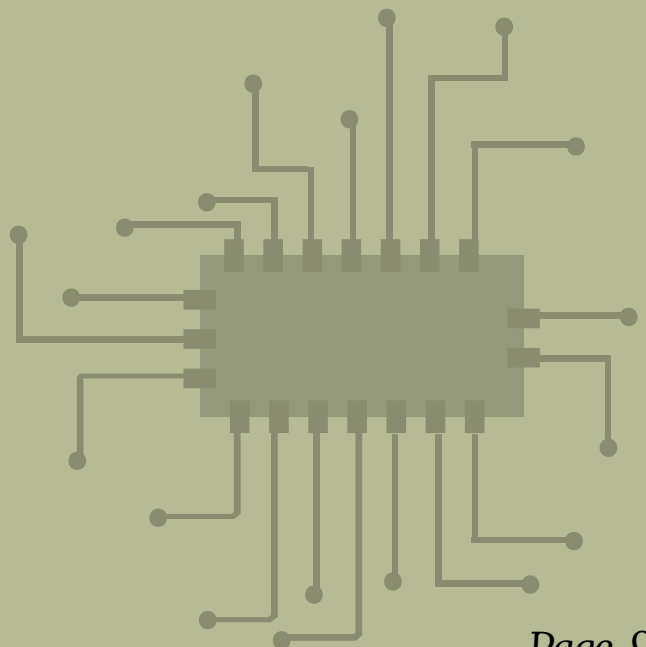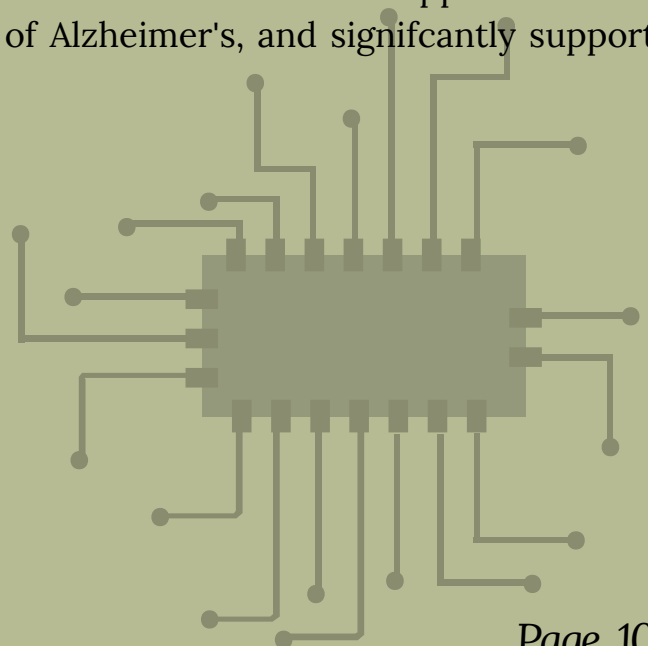
BE Projects

Face Recognition System for Alzheimer Patient

Gayatri Dube

Vipin Samson

Prakash Kumbhar

Alzheimer's disease is a state characterized by a progressive indicative decline over several years. It causes memory loss and affects daily task performance. Memory loss leads to challenges like remembering people's names, faces, places, or other information. The prevalence rate for Alzheimer's disease is increasing and accordingly, needs more attention and address. Thus, the objective of this project is to support Alzheimer's patients with mild (early-stage) and moderate (middle-stage) conditions to stay involved in society and continue to live independently. The proposed system is a web application which uses facial recognition technology and location detection along with daily task reminder feature. The web application aims to improve daily communication, enhancing their ability to perform daily tasks by including a notification feature. It has location tracking/detection to maintain the safety of Alzheimer's patients, and help prevent them from getting lost outside their house by tracking their location. Results have shown that the application has beneffited those living with the symptoms of Alzheimer's, and signifcantly support their daily lives.

BE Projects

Mobile App for hostelers Login and Log-out system

Mali Pooja Ganpati
Rohan Vijay Solunke
Murade Nikhil Ravindra

Hostelers need to do a manual entry for going outside and coming into the hostel. So many times hostelers can make a proxy of each other's entry, which is totally against hostel rules and regulations. When hostelers did not approve the 'leave form' from Warden and respective mentors, they use proxy methods. This causes the Warden to check if all hostelers are present in the hostel or not.

But if we convert this system into a digital one, using Mobile App, it will reduce proxies. Nowadays everyone has Android phones so we can develop a mobile app through which they can log in and log out.

In this app, using few unique parameters and from the information collected, the user can be given an identity specific to him/her. In addition to this, we also include 2-Auth Authentication and Entry on Particular Location Coordinates only.

Even in the current pandemic, it is best to make contactless entries as there is only one register on the security guard's table which is common for boys as well as girls. Also, hostelers use a common pen to sign. So these two things, pen, and register are getting touched by different hostelers which will increase the chances of spreading the virus. This can be avoided using our digital system. Overall performance of this application improves the current process. This application can be deployed in any of the academic institutes which has a campus residence facility.
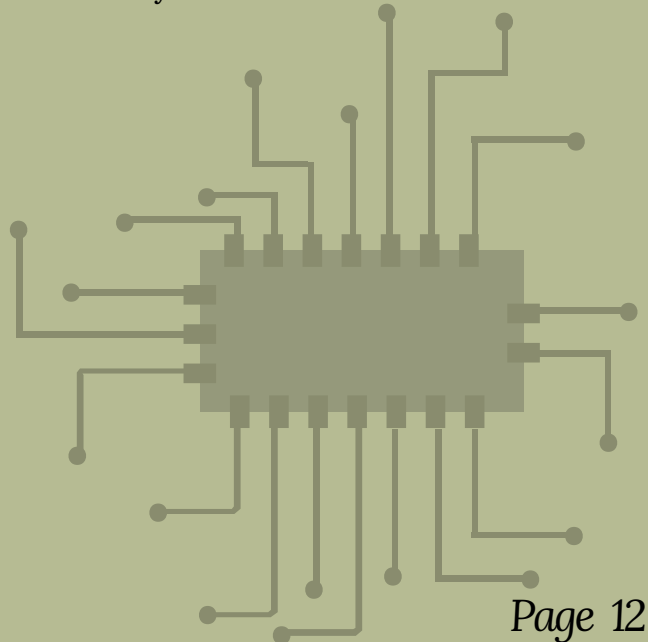
BE Projects

IoT Based Home Intruder Alert System

Priyanka Kshirsagar
Nikita Kore
Rajashree Devale

The Internet of things (IoT) describes the network of physical objects-"things"- that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet.This concept can be used for home security in an effective way.

The IoT enabled system is able to send security alerts to the User in real time. System can recognize familiar faces and let them into the house. Suspicious human intrusion is actively detected in the surroundings.User can monitor his/her home virtually by only a smartphone/computer. The system itself acts as a major deterrent for intruders/burglars. This system will also help in keeping an eye on your home or office.

It provides 24*7 security to the premises. It allows the user to monitor their property virtually from anywhere in the world. The system can notify the User in various ways. We will be demonstrating the communication with the help of GSM/GPRS and wifi. This will lead to reduction in cases of robbery and other threats.

BE Projects
Heart Disease Prediction Using Big Data Tools

Harshal Fegade
Nikhilraj Rindhe
Vineet Singh

Heart Disease is one of the leading cause of deaths in humankind. Lots of researchers have been discovering new technologies to prognosticate the disease early. These processes are still under research phase. Machine Learning is an emerging technology of Artificial Intelligence that contributes various algorithms for prediction of heart disease.

For predicting heart diseases, a lot of research scholars contributes their e ort in this work using various techniques and algorithms such as Decision Trees, Na ve Bayes, Support Vector Machine (SVM), KNN (K-Nearest Neighbor), Neural Networks (NN), etc. This project is a sincere e ort to develop Heart Disease Prediction System using Big Data tools and Machine Learning techniques.

For developing Machine Learning Models, Cleveland dataset from UCI repository is used. The dataset contains 303 instances with 14 attributes that help to train a prediction model. The main aim of this project is to build an efficient prediction model and deploy it in real time scenarios.

The limitation of this project is that only the presence of heart disease is predicted but not the type of heart disease which patient have. In future work, we can enhance this in the project by appending more data to have a detail prediction of heart disease.

BE Projects
Development of Health Care Services Booking System

Pratik Nandgaon
Nikhil Tayade
Yashodhan Talekar

Mobile health (mHealth) is a practice of using mobile devices for medicine and public health. It is considered as a subset of electronic health and includes the use of mobile phones, tablet computers and personal digital assistants (PDAs), and smartwatches, for health services, information, and data collection.

Resource and patient management systems combine the medical data and analysis aspects of other software with administrative tools to help make a practice or hospital more e cient. This system combines patient management and health with the medical practice or hospital management. This approach to health care is more than a procedure because it focuses on the relationship between patient and practice and not just an illness.

With this technology one can easily book appointment, in this COVID-19 pandemic, with just a mobile application and hence reducing the Human Interaction. This can be the technology that reshapes the Health Care System. Since this mobile application can track the levels of blood pressure and heart rate, with the use of smart watches, it will become easy to contact anyone in times of emergency. Combined with advanced health data from IoT devices, this platform can then be expanded to cover telemedicine, remote health monitoring and health data Analytics for the public.
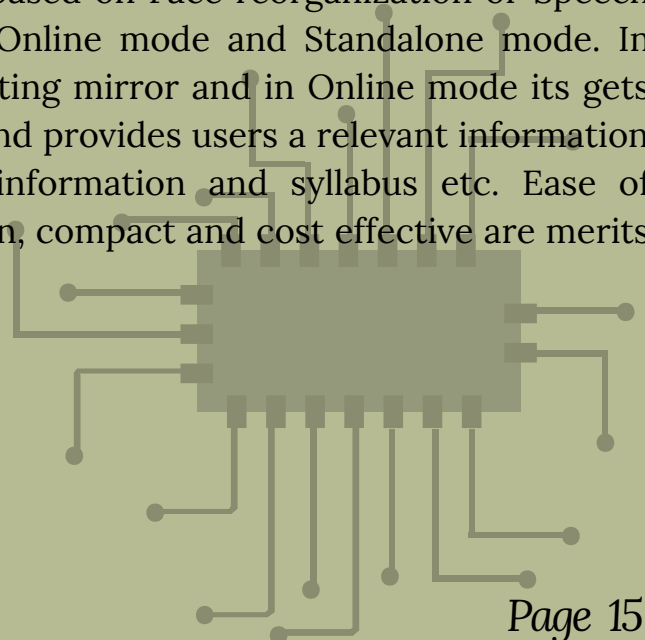
BE Projects

IoT based Smart Mirror Using Raspberry-pi

Rohan Deshpande
Asmita Tagad
Prabodhini Mhatre

Interne of things(IOT) is a new way to connect physical enviornment to the technology, System having wireless connectivity with internet so that they can communicate with human being and controlled by computer. The purpose of this project is to make traditional mirror more intelligent to make human life smart,safe and luxurious.One of the driving design principle behind this project is to create a platform for open source development. Customizability is an important aspect of anything that goes into people homes as these type of items tend to cost a lot of money. With the level of flexibility provided by the mirror, users will be able to set the mirror up exactly as they see fit.

In this project we use a high quality two way mirror, a Lcd monitor capacitive display, a frame to hold the glass and display, Raspbian OS, Magic mirror platform, a web browser with python to provide software feature and drive the display. Proposed Smart Mirror identifies its User based on Face reorganization or Speech reorganization and works in two modes: Online mode and Standalone mode. In Standalone mode it works as normal reflecting mirror and in Online mode its gets connected to internet using Raspberry-Pi and provides users a relevant information like today's meetings, hot news, traffic information and syllabus etc. Ease of operation, high degree of Human interaction, compact and cost effective are merits of proposed system
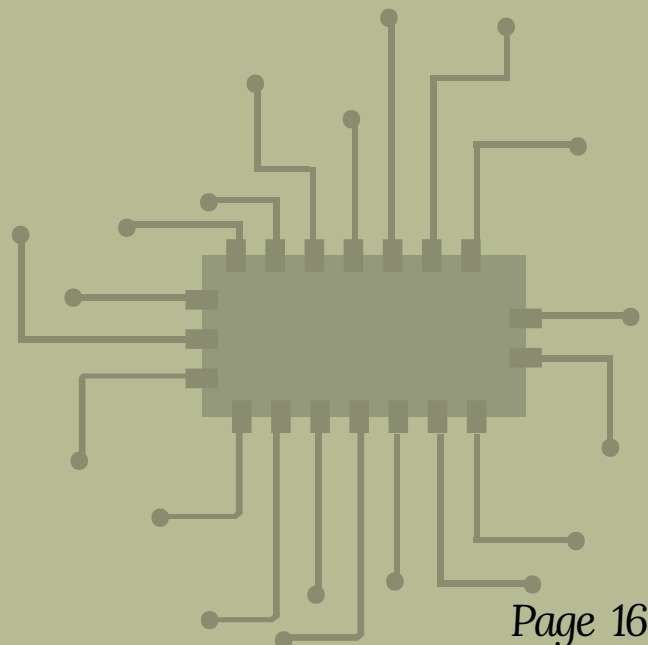
BE Projects
Non-Invasive Glucometer

Nikhil Kasbe

Priyanka Borse

Shreya Ghosh

The blood glucose monitoring techniques available in the market are invasive which require a blood sample of the patient making the person exposed to infections. A diabetic patient can also get infected easily due to a rise in blood glucose level, making the invasive method unsafe. This is where the non invasive glucometer comes to play. The proposed system is to develop a non invasive monitoring technique. In this prototype, the blood glucose level is non invasively measured by passing the suitable wavelength of laser light through human skin. The wavelength of laser is passed to the human finger which analyze the transmitted and absorbed blood samples to determine the glucose level. The next step involves measuring the corresponding values are investigated to determine the glucose level in blood. The hardware implementation of this blood glucose monitoring device is designed and the glucose level is hence derived.
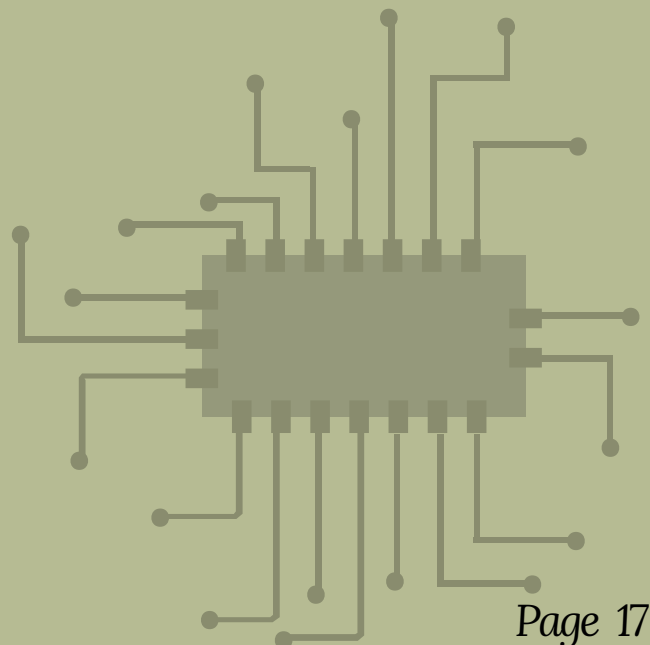
BE Projects

Underwater Image Enhancement Using RCNN

Mrunal Kshirsagar
Prerana Mashal
Ranvir Patil

Scattering of light and change in colour are problems in underwater captured images. Because of underwater images dispersion of light, in which the incident light wave is reflected and diverted many of the times by some molecules disturbing underwater. Due to reflected and diverted of underwater image captured. In this process because of the haze the captured image is improves by used dark channel prior method. Key observation is used in mostly for local patches in haze-free images this local patches have pixels, in single colour channels the intensity of that image is very low. Implementing before the haze image colour model measures the width of the haze and re-cover the improved haze-free images. In this procedure various exposure values is not required in any of the images. Because of the point across many frames it is fully relied onto the attenuation of the experienced. By using the dark channel prior in the enhancement of underwater images by using this approach is experimented.
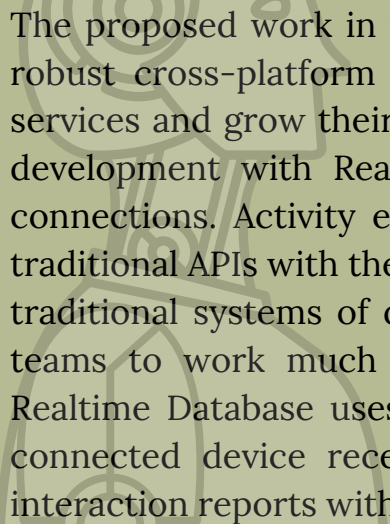
BE Projects
Development of Healthcare Service and Aggregator System

**Saurabh Kumar Singh**
Ishita Rai
Aditya Kaveri

The project aims to make healthcare accessible to the people easily. The outbreak of covid-19 has induced large social, political, and monetary consequences worldwide. It's a worldwide disaster, a first-rate task, and a health disaster. however, it is a good deal more than that It's a global crisis, a great challenge, and a health crisis; however, it is much more than that. The pandemic has uncovered the loopholes in our administration, health facilities, and social fabric. A growing number of doctors and medical students are using smartphones and compatible apps (apps) as a source of resources for daily clinical care. Many guided health programs are aimed at physicians as tools to improve and facilitate patient care. But nevertheless era can not save you the onset of the epidemic; however, it can assist save you the unfold, train, warn, and empower those on the planet to be aware about the situation, and decrease the impact. These days, with connectivity technology along with cell, cloud, analytics, robotics, AI / ML, 4g / 5g, and high-speed networks, it has become feasible to discover many new ways to respond to the epidemic. Healthcare services are di cult to locate by the general public, and hospitals lack a platform to market their services and produce leads. It is very important to use good construction practises when developing health care. Health care organizations, however, often disagree with the thinking and implementation of modern design. As a starting point to encourage the adoption of good design practices, it is important to understand the context of their intended use. The study aims to do just that by describing current health service development practices.The proposed solution is made with a combination of React Native and Firebase.

The proposed work in this report contributes in this direction, towards building a robust cross-platform application for the medical front-liners to advertise their services and grow their business. React Native combines advanced pieces of native development with React, a state-of-the-art JavaScript library for building user connections. Activity elements bind the existing native code and connect to the traditional APIs with the React and JavaScript publishing UI paradigm. Improving the traditional systems of development teams as a whole and can allow existing local teams to work much faster. Instead of standard HTTP requests, the Firebase Realtime Database uses data synchronization - every time the data changes, any connected device receives that update within milliseconds. Provide immersion interaction reports without thinking about the contact code.

Real-time database can be accessed directly from the device hence there is no need for the app server to be opened. Data security and authentication are available with real-time firebase data security rules, rules based on speech that are made when reading or writing data. Realtime Database is a NoSQL database and as a result has a more straightforward and powerful adjustment compared to relational databases. The Cloud Database API is made to allow only tasks that can be completed in faster ways.
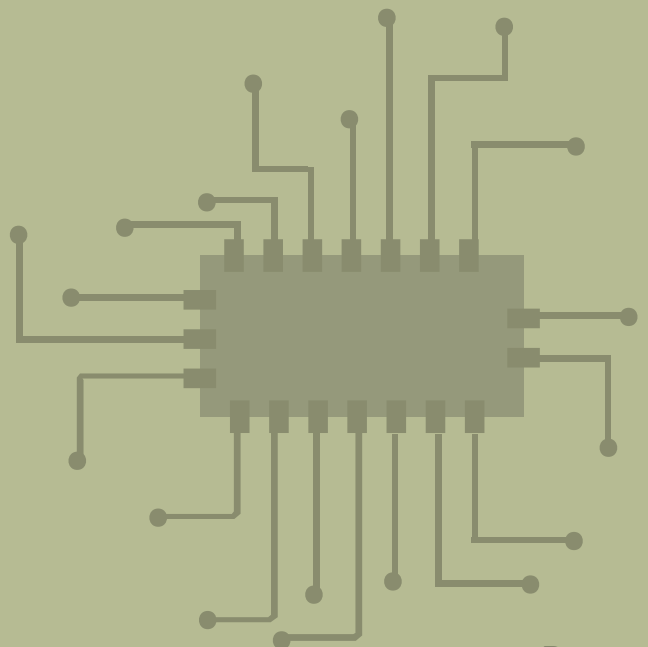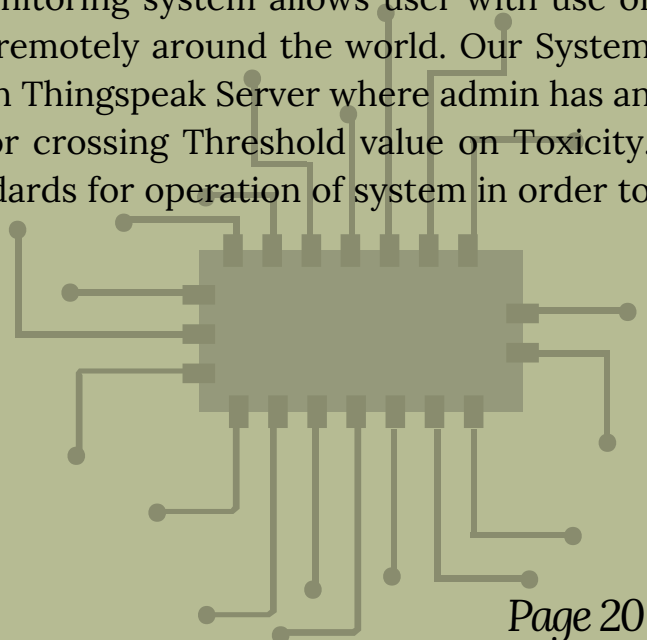
BE Projects
Water Shielder

Nishkarsh Gaikwad
Tejas Bhanushali

Water Sheilder is a device which aims on water pollution caused by industries. The basic idea of the system is to monitor and alert the authorities regarding the characteristic forms of effluents that are deposited in the water bodies. Such water contains harmful substances which affect living organisms. The requirement for such a situation is to have an identification and monitoring for harmful pollutants on the basis of their permissibility prescribed by authorized agency. This system aims for a controlled out ow from sewages that are mixed in water bodies to have administrative control for certain industries who all are responsible for it. With the facility of IoT in this system to analyses the TDS, Turblidity and pH data over the time. This will further lead to the reduction of water and air pollution on multiple scales. There is also a GSM shield connected to a microcontroller which sends the text notification to the mobile device. MQTT protocol transfers the data to the cloud and a webpage running on a local host server displays the result.

Our proposed report shows the design of our optimized system compared to existing system. Smart Industrial water monitoring system allows user with use of IoT and to real time monitor sensor value remotely around the world. Our System transmits data to Cloud server over Wi-Fi on Thingspeak Server where admin has an access to alert the subscribed Industrial for crossing Threshold value on Toxicity. Our System follows the nominal WHO standards for operation of system in order to monitor the effluents.
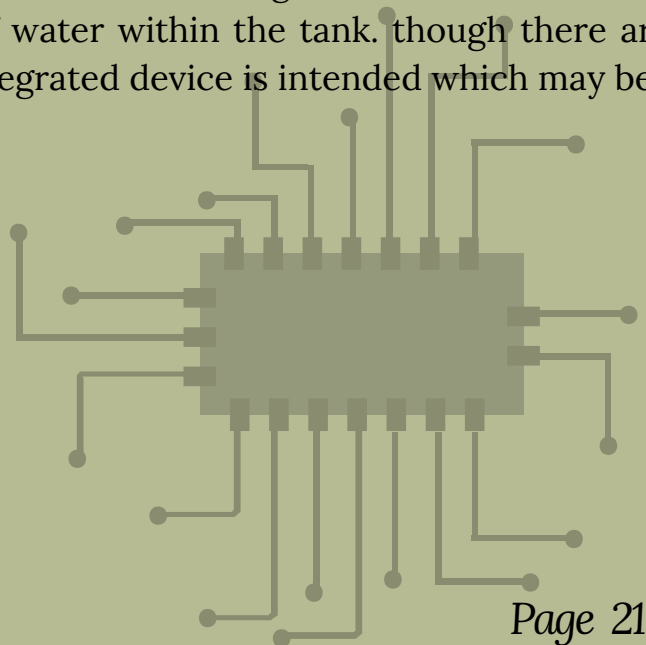
BE Projects

Smart Water Quality Measurement System Using IoT

Abhishek Kumar Maurya
Subodh Kumar Yadav
Wasim Raja

In recent days, the foremost vital downside that our society faces is water deficiency. Due to contamination of water bodies, water provide, water for agriculture and healthy fisheries has been severely impaired. Over 5 various individuals die annually from water borne diseases. it's conjointly cause contamination of marine ecosystems and reduce in crop yields. inaccessibility of simple water quality detector has been a serious cause that has LED to any or all on top of mentioned issues. An autonomous, real time and integrated device is intended to live physical and chemical properties of water. Designed device uses sensors to find the standard parameters (pH, temperature, turbidity, conductivity). device outputs ar processed by NodeMcu, that sends parameter values to echt user via GSM module and it sends parameter values on the cloud.GPS module allows U.S. to grasp the location of wherever the water check is being conducted.Ultrasonic device is employed to detect the extent of water within the tank. though there ar existing ways to find quality of water, an integrated device is intended which may be employed in all the 3 fields.
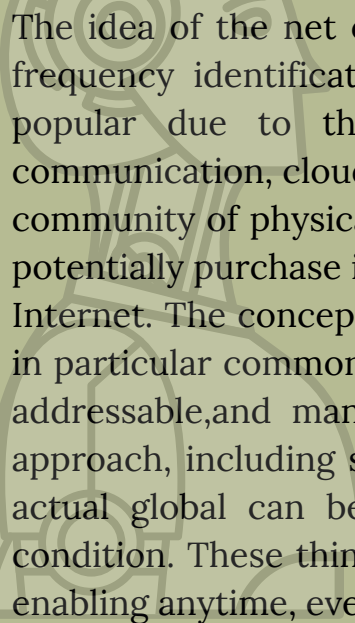
BE Projects
Industrial Fault Monitoring System

Maladhari Ashutosh Devidas
Madduri Hemanth Reddy
Govind Omprakash Sikchi

Internet of things (IoT) is hastily increasing technology. In this task, a system so that you can routinely monitor the diverse faults that could arise in business programs is developed. This gadget detects and generate alarms every time a fault is detected. It also sends statistics to cloud the usage of iot techniques.

The center of any system is a fault analysis gadget capable of hit upon failures not simplest while they are taking place, however also a prefailure status. It's far a complicated solution for the supervision stage of the manufacturing unit wherein in most cases simplest scadas(supervisory manipulate and records acquisition) and alarms based totally on variables values are taken into consideration.

The dearth of historical facts is the primary hassle that need to be solved when designing the selection making aspect. It may be on occasion a problem to decide what the superior classification approach to apply is, and it's far always an delivered difficulty to repair the parameters of the device. Normally conservative techniques are used. This results in a extremely good wide variety of false alarms in the course of the preliminary phases of the predictive renovation gadget implementation. Human professional's supervision and understanding is one of the main helps for a great design of the selection making device and its configuration.
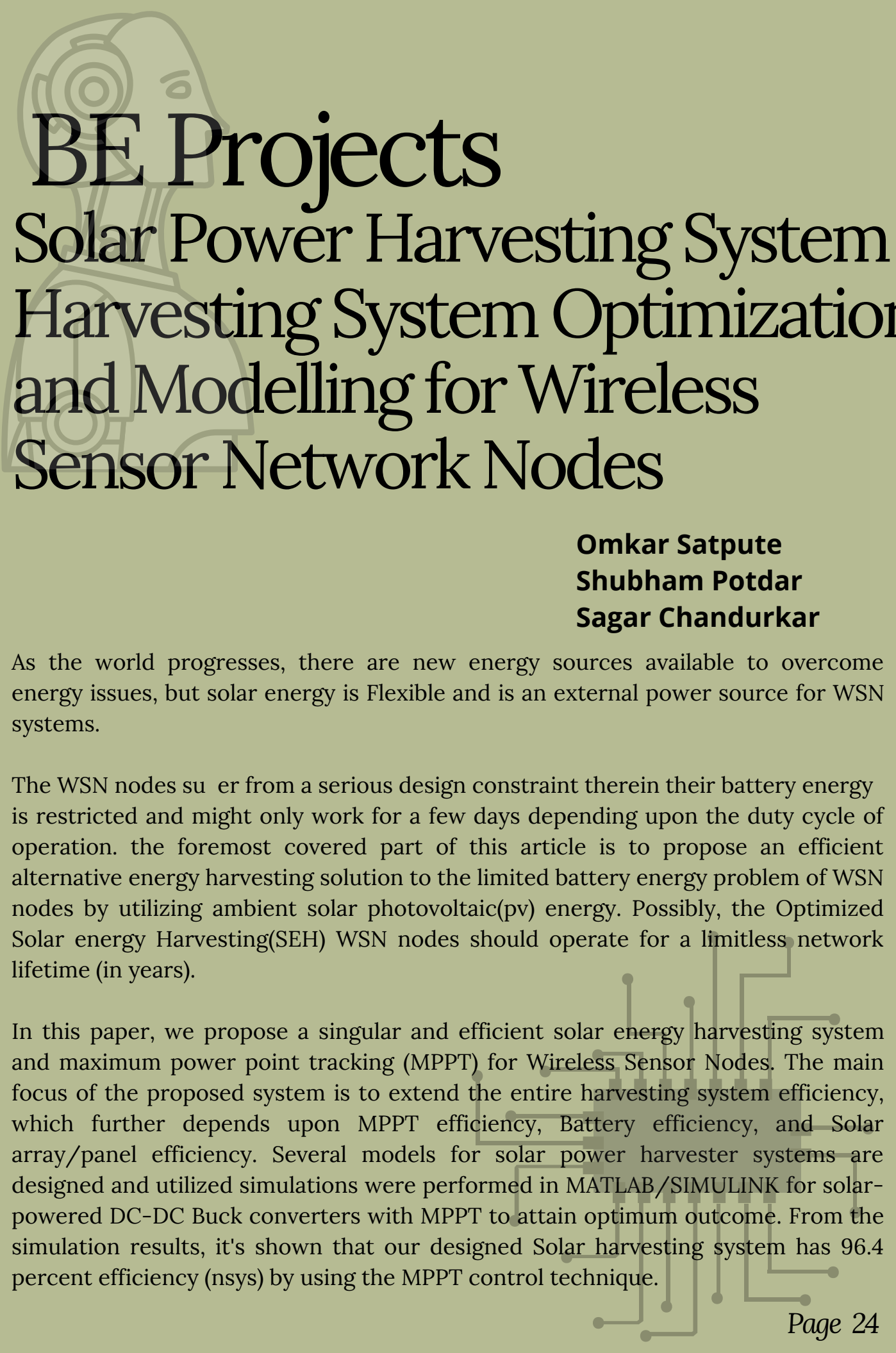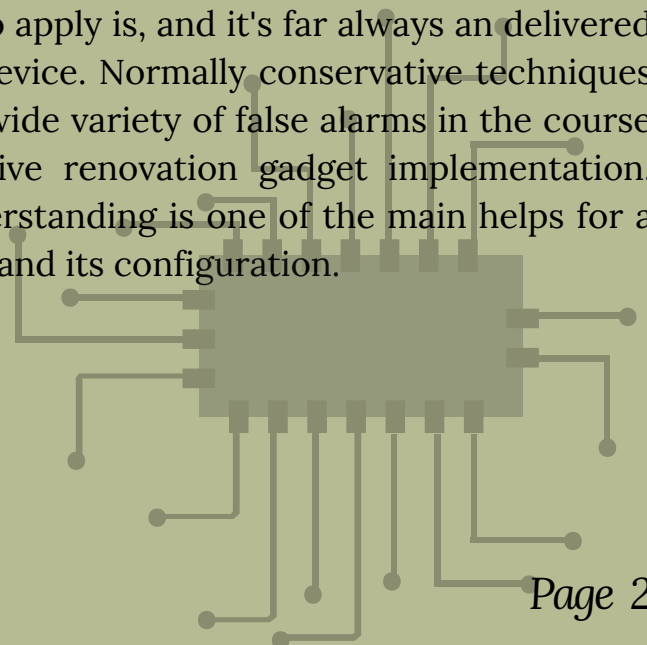
The idea of the net of factors turned into added via the participants of the radio frequency identification development network in 1999. This idea could be very popular due to the increase of cell devices, embedded and actual time communication, cloud computing and statistics analytics. The Internet of Things is a community of physical gadgets, internal electronics, software, and sensors that can potentially purchase items from the world around us, as well as share notes over the Internet. The concept of the Internet of Things refers to the general idea of things, in particular common gadgets that can be readable, localizable, easily recognizable, addressable,and managed over the Internet, regardless of whether a beginner, approach, including stress or Wi-Fi, LAN, WAN, anyone. The matters or objects of actual global can be humans, region item), and time of information (item) or condition. These things can without difficulty get incorporated in the digital world enabling anytime, everywhere connectivity.

The parameters had been carefully selected on the premise of the potential dangers they are able to reason to the regular working of the industry device. The sensors utilized in our venture are temperature sensor lm35, lpg fuel sensor mq6 and smoke sensor mq9. These sensors will accumulate their respective records after which send the same facts to element speak that is an iot website.
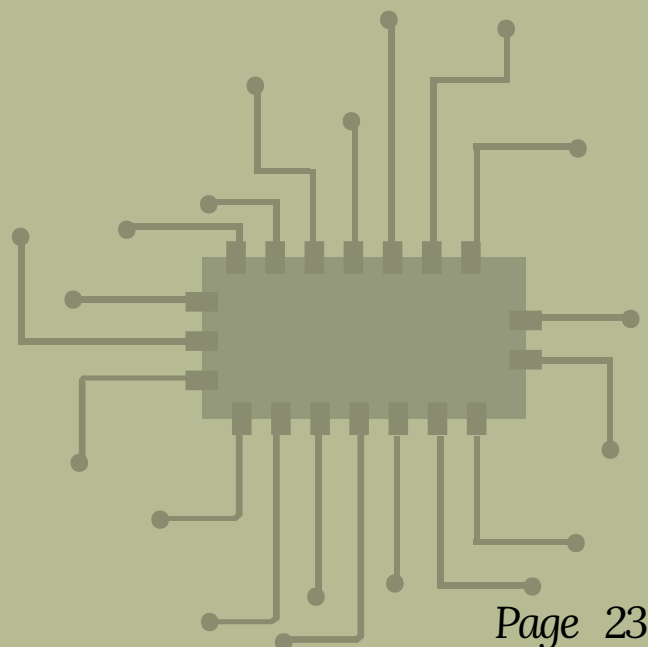
BE Projects
Solar Power Harvesting System Harvesting System Optimization and Modelling for Wireless Sensor Network Nodes

Omkar Satpute
Shubham Potdar
Sagar Chandurkar

As the world progresses, there are new energy sources available to overcome energy issues, but solar energy is Flexible and is an external power source for WSN systems.

The WSN nodes su er from a serious design constraint therein their battery energy is restricted and might only work for a few days depending upon the duty cycle of operation. the foremost covered part of this article is to propose an efficient alternative energy harvesting solution to the limited battery energy problem of WSN nodes by utilizing ambient solar photovoltaic(pv) energy. Possibly, the Optimized Solar energy Harvesting(SEH) WSN nodes should operate for a limitless network lifetime (in years).

In this paper, we propose a singular and efficient solar energy harvesting system and maximum power point tracking (MPPT) for Wireless Sensor Nodes. The main focus of the proposed system is to extend the entire harvesting system efficiency, which further depends upon MPPT efficiency, Battery efficiency, and Solar array/panel efficiency. Several models for solar power harvester systems are designed and utilized simulations were performed in MATLAB/SIMULINK for solar-powered DC-DC Buck converters with MPPT to attain optimum outcome. From the simulation results, it's shown that our designed Solar harvesting system has 96.4 percent efficiency (nsys) by using the MPPT control technique.
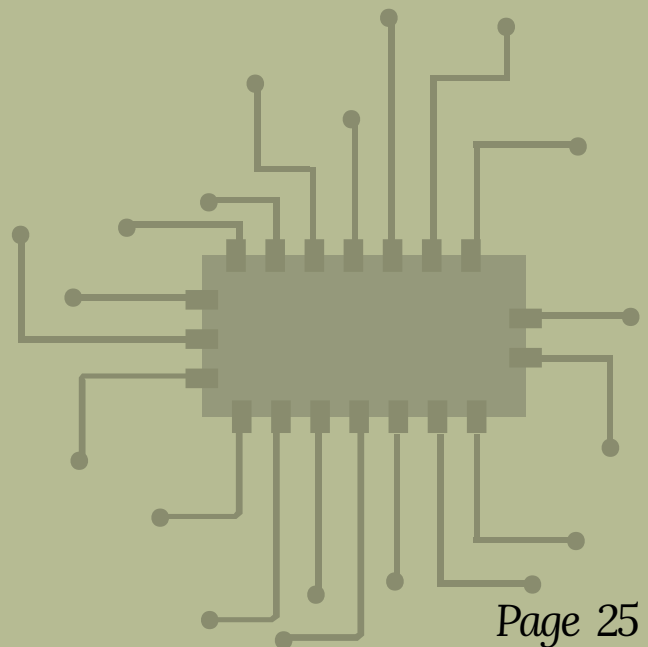
BE Projects
Drowsiness Detection

Deepak Gutte
Abhinav Biyani
Kaushal Varma

In this system, we proposed to reduce the number of accidents caused by driver fatigue and thus improve road safety. This system treats the automatic detection of driver drowsiness based on visual information and artificial intelligence. We locate, track and analyze both the driver face and eyes to measure PERCLOS (percentage of eye closure) with Softmax for neural transfer function. it will be also uses alcohole pulse detection to check out the person is normal or abnormal. Driver's fatigue is one of the major causes of tra c accidents, particularly for drivers of large vehicles (such as buses and heavy trucks) due to prolonged driving periods and boredom in occupied conditions
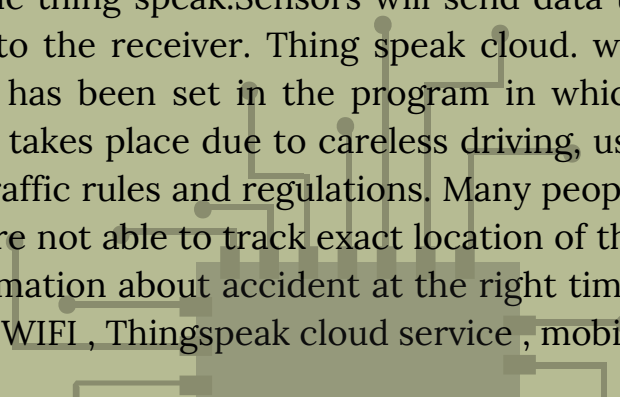
BE Projects
Smart Helmet using IoT

Abhijeet Dharekar
Amol Kalbhor
Ajay Mudhol

It is very unfortunate to hear the news of any accident and if it happens with our near and dear ones it causes great pain to us. Road accidents are very common in India whatever the reason may be two wheeler accidents happen mostly because of not wearing the helmet or wearing it improperly such as not putting on the buckle belt Helmets save the riders life by reducing the shock of the impact from the accident. The sensors which includes Vibrational sensor, Accelerometer sensor, Gyroscopic sensor which are used for monitoring the divergent parameters. The GPS module gives information about the exact location of the person where the person has met accident and the same notification will be sent using GSM.

The basic goal of our system is accident detection and notifcation. This helmet smart endures rider comfortable as well as with big safeguarding and dependability. This smart helmet operates on raspberry pi 3B controller which is WIFI based, acts as a server for the networking system. Bluetooth and raspberry pi 3 are attached with cloud based services. The smart helmet is attached with both vehicle and the images can be encapsulated and send to the thing speak.Sensors will send data to raspberry pi3. Thus the data will be send to the receiver. Thing speak cloud. will send messages to receiver whose number has been set in the program in which database are recorded . several mischances takes place due to careless driving, use of mobile phones while riding violation of traffic rules and regulations. Many people die because of the late reporting (i.e) they rre not able to track exact location of the accident. Sometimes we don't get the information about accident at the right time. Keywords - Raspberry pi3 controller, GSM , WIFI , Thingspeak cloud service , mobile sensor, Vibration sensor.

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Success is the result of perfection, hard work and determination. Team Gyanamrit is dedicated in bringing the best magazine.

With this determination, we have worked hard to bring this edition. We would like to extend our deepest gratitude to the President, Ms. Aruna Katara. Also, we are deeply thankful to our Principal, Dr. Vaishali Patil, for her constant encouragement and support. Heartiest accolades for our HoD Dr. Risil Chhatrala and Faculty In-charge Dr. Varsha Degaonkar, without them Gyanamrit wouldn't have been what is today. At the end we would like to express our sincere thanks to all the students, Alumni, teachers and industry experts for providing us with their valuable inputs through articles and interviews.

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THANK YOU, READERS.

-The Editorial Team
Gyanamrit

Department of Electronics & Telecommunication

Batch 2020-21

Hope Foundation's
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4. To embrace an environment that allows all stakeholders to benefit from the technology-enabled processes and systems.