

# TECHSARANSH

2019-2020

( NAAC with 'A' Grade | 7 UG/PG Programs Accredited by NBA  
Approved by AICTE | Affiliated to VTU Belagavi )



**BMS** Institute of  
Technology & Management

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# Vision

To emerge as one of the finest technical institutions of higher learning, to develop engineering professionals who are technically competent, ethical and environment friendly for betterment of the society.

# Mission

Accomplish stimulating learning environment through high quality academic instruction, innovation and industry-institute interface.

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# About BMSIT&M

BMS Institute of Technology and Management is one of the prestigious institution established in 2002 and run by BMS Education Trust (BMSET), with the vision of establishing a premier technical institute on par with international standards. BMSIT&M offers eight UG, three PG programmes and Ph.D. / M.Sc. (Engg.) in ten disciplines. Among these six BE and one PG programme are NBA accredited. National Assessment and Accreditation **Council has awarded “A” Grade.**

The Institute has well qualified and experienced faculty members, technical and supporting staff members. Faculties have successfully implemented Outcome-Based Education (OBE), which is mandatory as per Washington accord. Our students regularly undergo industry internships, open courses, and employability **improvement training. This, coupled with the institute’s close partnership with industries** has ensured a large number of placements to **students. The institute’s** well-equipped laboratories, good infrastructure, teaching - learning aids, etc. provide the right impetus to the growth of the students.

BMSIT&M has Centre for Industry Partnership Research and Consultancy Cell (CIPRAC) striving to bridge the gap between Industry and Institute. Departments have been conducting project based learning, skill development programmes, faculty development and research based activities to bridge the gap between Industry and Institute.

# From the Editorial Desk

TechSaransh is a compilation of abstracts of the projects executed by the final year students in the academic year 2019-20. It covers seven under graduate and three post graduate programmes. These projects are chosen by the students based on their domain of study as well as multidisciplinary in nature. Completion of these projects in this pandemic period boosted their confidence and moral to take up scaled up and industry relevant project in future. Some of the students gained confidence to become entrepreneurs as well. We are happy to say that seven of our projects were funded by KSCST.

BMSIT&M has Student Project Review and Assessment committee (SPRAC). This committee is to mentor students to select & execute best projects based on the current industry needs and to monitor the end to end project activities right from prior information collection, project selection to project execution and exhibition.

This compilation of abstracts will serve as a reference material for the forthcoming batches to understand the scale and diversity of projects taken up in various domains and thus help them for further development of their projects.

**Dr. G. S. Jayadeva**

**Prof. M.Sridevi**

# Message from the Principal



It is very heartening to know that our institute BMS Institute of Technology and Management is bringing out a new edition of TechSaransh-2020, a professional compilation of the abstracts of final year projects done by students.

While the world came to standstill during the Covid-19 pandemic, our final year students continued to work on projects, of course adhering to all the guidelines prescribed by the SOP of the Governments. They demonstrated their commitment to complete the projects of high quality despite all the challenges they confronted. The support and contribution of our teachers and technical staff is no lesser in this.

I hope the abstracts of projects in the book serve as a leading light for the subsequent batches while making choice of their projects. They can build on the work that has been done earlier. This edition of TechSaransh shall also be disseminated to all the stakeholders, especially the industries to showcase their quality and relevance to industry and society.

I wish all the best to project students, their faculty supervisors and all those who helped to bring out this issue of TechSaransh.


**Dr. Mohan Babu. G.N.**  
**Principal**

# **COMPUTER SCIENCE & ENGINEERING**

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# BMSIT&M | Techsaransh 2020

<b>Project Title:</b> "POTHOLE DETECTION SYSTEM USING DEEP LEARNING AND OPEN SOURCE MAPS"		<b>Project ID:</b> CSE_1
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** In this Project we intend to make a "Pothole Detection System". It assists the concerned authorities to find and fix the issue. A manually controlled or an automatic drone which will be equipped with our Pothole detection system. The system uses technologies such as Machine Learning/ Deep Learning to achieve the results. This aims in solving the issue in an efficient manner. Potholes are one of the biggest issues in Indian road transportation system. More than 2000 people are killed every year due to pothole related incidents. A pothole detection system will aid in detection and also help inform public & government agencies to ensure public safety & help governments fix & maintain roads better. Better maintained roads can also save nearly 3000Cr worth of damages in the transport industry every year. Hence it is not only required to save lives but for better economic performance within our country.

**Keywords:** Pothole detection, Deep Learning, Sensing Systems, Thresholding, K-Means, Fuzzy C-Means



# BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Eye and voice controlled wheelchair		<b>Project ID:</b> CSE_2
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** The smart wheelchair developed for people with disabilities dependent on the eye-tracking and by utilizing the voice assistant module. The smart wheelchair contains two modules, including a module for processing the image, a wheelchair-controlled voice associate module and constrained by appliances. The module for picture processing comprises a camera mounted on the wheelchair that can capture the picture and handling those images. The captured picture moved into a Raspberry Pie micro controller process using Open CV to get pupil movement in the 2D bearing. The movement of pupil is then moved remotely to the module for managing a wheelchair. The eyeball movement is also used as the controller to regulate the operations. Speech recognition technology is a technology that provides a way of interaction for human with the wheel chair. Hence, the problems faced by the people can be easily solved by using this technology for controlling the wheel chair. This can be implemented by using the smart phone or smart assistant enabled device as an interface between the human and the wheel chair.

**Keywords:** Image Processing, Voice Assistant, Speech Reorganization, Eye Detection.

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<b>Project Title:</b> INFOCRYPT	<b>Project ID:</b> CSE_3	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** This project is aimed at demonstrating the use of a recently proposed levelled Homomorphic Encryption(HE) scheme, with which, it is possible to delegate the execution of a machine learning algorithm to a computing service but, at the same time, retaining confidentiality of the user data. The computational complexity of the homomorphic encryption scheme depends primarily on the number of levels of arithmetic operations being carried out on the encrypted data. Hence, a new class of machine learning algorithms are defined, in which the algorithm's predictions, viewed as functions of the input data, can be expressed as polynomials of bounded degree. This project also aims at proposing confidential algorithms for binary classification based on polynomial approximations to least-squares solutions obtained by a small number of gradient descent steps. Cloud service providers leverage their large investments in data centres to offer services which help smaller companies cut their costs. But one of the barriers to adoption of cloud services is the concern over privacy and confidentiality of the data being handled by the cloud, and the commercial value of that data or the regulations protecting the handling of sensitive data.

**Keywords:** Paillier, Cryptosystem, Machine Learning, Partially, Homomorphic, Encryption, InfoCrypt

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Women safety wearables using IoT and Analysis using speech recognition	<b>Project ID:</b> CSE_4	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Women's safety is a very serious concern because of increasing violence against women these days, the challenge to their safety continues to have a significant effect on their economic security, health, political participation and general well-being for many women. So, there is a great need for devices that address this problem. Existing applications and devices are not very effective since they require multiple sensor inputs and mechanical trigger to generate an emergency alarm. However, these systems fail in the event of a human error and will not immediately function during an emergency. In this project, we propose a solution that solves these problems by providing a wearable device that automatically activates when exposed to threat. This wearable device consists of a voice recognition module in raspberry pi that takes input from a microphone and is activated only when the heart rate readings are higher than regular readings. The device also sends the live location and email along with the attested picture from the camera module to the authorities. The system can also be used as a solution for the protection and health issues of senior citizens and has potential for other applications. Because the system requires fewer operating steps and the drawbacks of the current system can be overcome automatically.

**Keywords:** raspberry pi ,heart rate,Security,Microphone

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Prediction of Crop Yield and Price Forecasting using machine learning approach	<b>Project ID:</b> CSE_5	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Forecasts of Crop prices are intended to be useful for farmers, policy makers and agribusiness industries. In the present era of globalization, management of crop security in the agriculture dominated developing countries like India needs efficient and reliable crop price forecasting models more than ever. The recent innovation in Artificial Intelligence and Machine Learning provides a potential price forecasting technique that is feasible with the given data in developing economies. This research proposes and implements a system to predict crop cost and yield from previous data. This research focuses on creation of a prediction model which may be used to future prediction of crop yield and cost. This model predicts the yield and price of crop using time series data. The prediction is based on analysing a static set of data by using supervised machine learning techniques. Training of algorithm is done to increase the accuracy rate of prediction. The proposed models are Multilayer Perceptron and Decision tree which is analysed using the historic data with parameters like temperature, crop yield and rainfall in kharif and rabi seasons. It also aims towards achieving high accuracy with minimum RMSE error. Yield and price prediction of crops from using both the models is presented from the literature survey performed. Simulation results proved that the decision tree model is capable of predicting the yield and price with high accuracy when compared with the multilayer perceptron model. This neural network model is not feasible because the loss is obtained in hampered values. Hence decision tree model is used in order to develop the best crop yield and price prediction model.

**Keywords:** Multilayer Perceptron, Decision tree, Prediction, Crop yield, Machine Learning

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<b>Project Title:</b> Soil Fertility Analysis and Crop Prediction		<b>Project ID:</b> CSE_6
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** Through the exploitation of scientific knowledge and technology, man has made wonderful strides in the field of automation, the focus of which lies in 'Robotics and Machine Learning'. All around us we see machines taking over work with accuracy and ease. Seen as a subset of artificial intelligence, machine learning relies on data, patterns in data and inference to aid technology in thinking for itself. This paper aims to apply the science of machine learning in the field of agriculture, by carrying soil fertility analysis using most accurate algorithm. The fertility of soil plays a principal role in determining the suitability of cultivating a particular crop on a given soil type. Analysis is carried out by the examination of various properties of the soil like the pH value, Electrical Conductivity, Moisture content, Temperature and (N)Nitrogen (P)Phosphorous (K) Potassium levels, followed up by soil type classification. Finally, a recommendation for the most suitable crop is provided in real time.

**Keywords:** Ensemble , k-nn, Machine Learning, Prediction, Random forest, SV.,

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Real time visual recognition with results converted to Audio for Visually impaired	<b>Project ID:</b> CSE_7	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Sense of Vision plays a very important role in the everyday life of human beings. Keeping this in mind, this project aims to aid the blind in being comfortable in their environment and acts as a visual aid. This project tries to transform the visual world into the audio world with the potential to inform blind people objects as well as their spatial locations. Objects detected from the scene are represented by their names and converted to speech. Their spatial locations are encoded into the 2-channel audio with the help of binaural sound simulation. Our system composes of several modules. Video is captured with a portable camera device on the client side, and is streamed for real-time image recognition. The location of the objects is estimated from the location and the size of the bounding boxes from the detection algorithm. Then, a sound generation application renders the binaural sound with locations encoded. The sound is transmitted to the user with wired earphones. Sound is played at an interval of few seconds, or when the recognized object differs from previous one, whichever earliest. The prototype device is tested in a situation simulating a blind person being exposed to a new environment. The main purpose of this project is to eliminate the barrier between the blind and the others using an automated system to recognize the moving objects and obstacles in front of them and interpreting them appropriately.

**Keywords:** Machine Learning, Raspberry pi, Convolution Neural networks, Deep learning, SVM, Computer Vision.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Diagnosis of Pulmonary Diseases using Computer Vision	<b>Project ID:</b> CSE_8	
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** This project proposes a convolutional neural network model trained from scratch to classify and detect the presence of pneumonia from a collection of chest X-ray image samples. Unlike other methods that rely solely on transfer learning approaches or traditional handcrafted techniques to achieve a remarkable classification performance, we constructed a convolutional neural network model from scratch to extract features from a given chest X-ray image and classify it to determine if a person is infected with pneumonia. This model could help mitigate the reliability and interpretability challenges often faced when dealing with medical imagery. Unlike other deep learning classification tasks with sufficient image repository, it is difficult to obtain a large amount of pneumonia dataset for this classification task; therefore, we deployed several data augmentation algorithms to improve the validation and classification accuracy of the CNN model and achieved remarkable validation accuracy. The risk of pneumonia is immense for many, especially in developing nations where billions face energy poverty and rely on polluting forms of energy. The WHO estimates that over 4 million premature deaths occur annually from household air pollution-related diseases including pneumonia. Over 150 million people get infected with pneumonia on an annual basis especially children under 5 years old. In such regions, the problem can be further aggravated due to the dearth of medical resources and personnel. For example, in Africa's 57 nations, a gap of 2.3 million doctors and nurses exists. For these populations, accurate and fast diagnosis means everything. It can guarantee timely access to treatment and save much needed time and money for those already experiencing poverty.

**Keywords:** convolutional neural network; pneumonia; Computer Vision

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DRUG DELIVERY USING DRONES	<b>Project ID:</b> CSE_9	
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** Unmanned Aerial Vehicles (UAV) have the potential to revolutionize the healthcare sector especially in the domains of delivery and transportation. The project employs drones to deliver healthcare products such as drugs and medical kits. This reduces the total time taken for the delivery of the drugs. Inaccessibility would no longer pose a threat to the delivery of drugs. The main aim of this project is to develop the idea of innovative drone delivery with particular emphasis on healthcare. An android application is developed to monitor the status of the drug delivery, this aid's in providing an efficient, accurate as well as fast delivery of drugs.

**Keywords:** Unmanned Aerial Vehicles (UAV)



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> "VISION BASED SIGN LANGUAGE TRANSLATION"		<b>Project ID:</b> CSE_10
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Abstract: Abstract: Developing sign language application for deaf people can be very important, as they'll be able to communicate easily with even those who don't understand sign language. Our project aims at taking the basic step in bridging the communication gap between normal people, deaf and dumb people using sign language. The main focus of this work is to create a vision-based system to identify sign language gestures from the video sequences. The reason for choosing a system based on vision relates to the fact that it provides a simpler and more intuitive way of communication between a human and a computer. Video sequences contain both the temporal as well as the spatial features. So, we have used two different models to train both the temporal as well as the spatial features. To train the model on the spatial features of the video sequences we have used Inception model which is a deep CNN (Convolutional Neural Net). CNN was trained on the frames obtained from the video sequences of train data. We have used RNN (Recurrent Neural Network) to train the model on the temporal features. Trained CNN model was used to make predictions for individual frames to obtain a sequence of predictions or pool layer outputs for each video. Now this sequence of prediction or pool layer outputs was given to RNN to train on the temporal features.

**Keywords:** Keywords: Keywords: Convolutions Neural Net , Recurrent Neural Network, Spatial Features

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ACCIDENT ALERT SYSTEM	<b>Project ID:</b> CSE_11	
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**Project Execution Time:** In\_House




**Project Category/Area:** Environmental\_Societal

**Abstract:** The IoT is a rapidly increasing and promising technology which is becoming more and more present in our everyday lives. The IoT offers limitless possibilities of automation for both public and private industries. Image processing is a technique in which existing image is altered or processed in a desired manner. It involves the alteration and analysis of pictorial information. A large number of lives are lost in road accidents each day. The most common reasons are driver's mistake and late response from emergency services. There is an urgent need to have an efficient road accident prevention and detection system which will monitor the driver's behaviour and alert him when he is distracted. This system sends information about the accident to nearby emergency services about the accident location so that emergency personnel can reach the accident location on time to prevent the loss of life. This project aims to use the techniques of IoT and image processing in the field of transportation and health care by not just preventing the accident but also detecting the accident and alerting the emergency services.

**Keywords:** Internet of Things, Accident Alert, Image processing

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Social Media Ads Analysis	<b>Project ID:</b> CSE_12	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Social media advertising is becoming big business. On Facebook there are potentially as many as one billion pairs of eyes to see an advert. In the UK, on Facebook, there are around twenty-seven million accounts a company's advert can reach. With those kinds of figures, it's easy to be drawn in by the hype and to spend money on advertising, but this leaves the central question; is social media advertising effective for small businesses? In attempt to answer this question we have launched an advert on Facebook for a case study business and monitored the traffic on the related website. We have also made observations of users interacting with Facebook advertisements. Results indicate that social media advertising can be effective for a small business even if the click-through rate is small. However, it is also suggested that low click through rates from social media web sites are in part a result of poor usability on those sites which should be improved in order to deliver better results for businesses.

**Keywords:** Social media,advertiising ads,etc

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Detection of the counterfeit medical drugs using blockchain technology	<b>Project ID:</b> CSE_13	
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Drug counterfeiting is a global problem with significant risks to consumers and the general public. In the Philippines, 30% of inspected drug stores in 2003 were found with substandard/spurious/falsely-labeled/falsified/counterfeit drugs. The economic burden on the population drug expenditures and on governments is high. The Philippine Food and Drug Administration (FDA) encourages the public to check the certificates of product registration and report any instances of counterfeiting. The National Police of Philippines responds to such reports through a special task force. However, no literature on its impact on the distribution of such drugs were found. Blockchain technology is a cryptographic ledger that is allegedly immutable through repeated sequential hashing and fault-tolerant through a consensus algorithm. This project will develop and test a pharma cosurveillance blockchain system that will support information sharing along the official drug distribution network. This study aims to develop a pharma co surveillance blockchain system and test its functions in a simulated network. Two instances will be developed: one for Ethereum and another for Hyperledger Fabric. The proof-of-work (PoW) consensus algorithm of Ethereum will be modified into a delegated proof-of-stake (DPoS) or practical Byzantine fault tolerance (PBFT) consensus algorithm as it is scalable and fits the drug supply chain environment. The system will adopt the GS1 pedigree standard and will satisfy the data points in the data standardization guidelines from the US FDA. Simulations will use the following 5 nodes: for FDA, manufacturer, wholesaler, retailer, and the consumer portal. Results: Development is underway. The design of the system will place FDA in a supervisory data verification role, with each pedigree type-specific data source serving a primary data verification role. The supply chain process will be initiated by the manufacturer, with recursive verification for every transaction. It will allow consumers to scan a code printed on the receipt of their purchases to review the drug distribution history. Development and testing will be conducted in a simulated network, and thus, results may differ from actual practice.

**Keywords:** Drug conterfeits, blockchain, etherum, Hyper Ledger.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ANALYZING VOCAL PATTERNS TO DETERMINE EMOTIONS	<b>Project ID:</b> CSE_14	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** In human-machine interface applications, emotion recognition from the speech signal has been a research topic for many years. To identify the emotions from the speech signal, many systems have been developed. In this project report speech emotion recognition based on the previous technologies which use different classifiers for emotion recognition is reviewed. Speech has several characteristic features such as naturalness and efficiency, which makes it an attractive interface medium. It is possible to express emotions and attitudes through speech. Here in this project, a study has been carried out to recognize human emotion through speech using the Feedforward Neural Network. To recognize emotion through speech various speech features were extracted. Based on these speech features classification of the emotions has been done and the classification performance of Multilayer Perceptron (MLP) and Long short-term memory (LSTM), which are based on Feedforward Neural Network is discussed. Here emotion recognition is done for different emotions like happy, sad, angry, and neutral. The classification performance is based on extracted features. Inference about the performance of speech emotion recognition systems based on the different classifiers is also discussed.

**Keywords:** Speech emotion recognition, Gammatone-Frequency Cepstral Coefficients.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Accident Detection and Human Rescue System in VANET	<b>Project ID:</b> CSE_15	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Increase in the population of vehicles and lack of proper traffic management has driven the rise in the accidents. The survey reports on an average 3,700 people are killed every day globally in road accidents. The worst part is large number of victims lost their lives due to late information to emergency services. The proposed system tackles this issue with VANET (Vehicular Ad-hoc Network) architecture involving Vehicle-to-Infrastructure communication. The system is cable of reaching emergency services in no network coverage area via radio-frequency communication. On average, the response of the system takes less than 10 seconds to reach out emergency services thereby rescuing the precious lives of the victims.

**Keywords:** Vehicular Ad-hoc Network

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Diabetic Retinopathy Detection Using Deep Learning:	<b>Project ID:</b> CSE_16	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Diabetic Retinopathy Detection Using Deep Learning: Diabetic Retinopathy (DR) is an eye disorder which causes vision blurriness and blindness in diabetic patients. The diagnosis of diabetic retinopathy (DR) through colour fundus images requires experienced clinicians to identify the presence and significance of many small features which, along with a complex grading system, makes this a difficult and time-consuming task. In this project we develop a neural network architecture to automate the task of detection and classification of Diabetic Retinopathy into five different stages, No DR, Mild, Severe, and Proliferative. This architecture is then integrated into a web architecture for easy and reliable access for Tele Medicine. The neural network architecture consists of two models, Stage 1 Model and Stage 2 Model for detection and classification of the disease respectively. The dataset we have chosen consists of 3659 images of all the five classes derived from three different sources. We have achieved a training accuracy of 91.32% and testing accuracy of 91.67% in the Stage 1 Model and training accuracy of 88.34% and testing accuracy of 93.56% in the Stage 2 Model.

**Keywords:** Diabetic Retinopathy, Neural network architecture, Retinal colour fundus image

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Smart Assistant for Blind and Visually Impaired	<b>Project ID:</b> CSE_17
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** According to World Health Organization report there are 285 million visually impaired people among which 39 million are totally blind. Blind people mostly use a white cane or a guide dog for their assistance. However, these techniques are limited as they do not guarantee risk avoidance for them. This goal has been realized through the use of an ultrasonic device to determine the range of obstacles and also a micro-controller to act accordingly. The system includes a warning system through voice rendering system that echoes the obstacle name and its distance from the user.

**Keywords:** ultrasonic,microcontroller



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Polyculture using Precision Farming	<b>Project ID:</b> CSE_18	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Agricultural field simulation to facilitate crop rotation and heterogeneous cultivation within the same crop cycle. The system is achieved by using multiple microcontrollers, sensors, actuators and a stand-alone server. This system is also devised to act as a security system which can monitor and report illegal entry of foreign entities. The system can be easily operated using a very simple, user friendly web interface. The website can also be remotely accessed through user credentials.

**Keywords:** Precision farming crop disease segmentation

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Anti Theft Tracking and Accident Detection of Vehicles	<b>Project ID:</b> CSE_19	
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**Project Execution Time:** In\_House





**Project Category/Area:** Application\_Oriented

**Abstract:** Recently vehicle tracking system is getting vast popularity because of the rising number of the stolen vehicles. Vehicle tracking systems have brought this technology to the day-to-day life of the common person. This project explores how to avoid this kind of stealing and provides more security to the vehicles. The implemented system contains a single-board embedded system which is equipped with Global System for Mobile Communication (GSM) and Global Positioning System (GPS) along with a microcontroller installed in the vehicle. If the vehicle is met with an accident, an immediate message is sent to the ambulance with the current location of the vehicle. In response to which emergency action can be taken by them immediately.

**Keywords:** Anti Theft Tracking, Accident Detection

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> CROP DISEASE DETECTION AND ITS SOLUTION	<b>Project ID:</b> CSE_20	
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**Project Execution Time:** In\_House



**Project Category/Area:** Application\_Oriented

**Abstract:** Plant disease has long been one of the major threats to food security because it dramatically reduces the crop yield and compromises its quality. Accurate and precise diagnosis of diseases has been a significant challenge. To prevent this situation, we need better and perfect guidance to make the correct identification of diseases, and the ability to distinguish between two or more similar types of diseases in visuals. This is where Artificial Neural Networks (ANN) comes handy. Since single ANN's can't get the appropriate results, we use best Deep Learning Neural Networks- Convolution Neural Network (CNN). For optimum yield, the crops should be healthy therefore some highly technical method is needed for periodic monitoring. Periodically images are obtained by digital camera. To provide impactful solution for the identified problem and to obtain both quality and quantity of an agriculture product. The work is complex and challenging in terms of high variability in outdoor conditions and general symptoms. RGB values of the monitored images are extracted and compared with threshold image.

**Keywords:** DETECTION NEURAL NETWORK

# BMSIT&M | Techsaransh 2020

<b>Project Title:</b> An automated face recognition and information retrieval for traffic management		<b>Project ID:</b> CSE_21
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** An automated face recognition and information retrieval for traffic management. The goal of this project is to present a critical survey of existing literatures on human face detection systems. The face is one of the easiest ways to distinguish the individual identity of each other. Face recognition is a personal identification system that uses personal characteristics of a person to identify the person's identity. This project demonstrates realtime face recognition on Android. Here we present a system, called FaceNet, that directly learns a mapping from face images to a compact Euclidean space where distances directly correspond to a measure of face similarity. Once this space has been produced, tasks such as face recognition, verification and clustering can be easily implemented using standard techniques with FaceNet embeddings as feature vectors. We can define the face detection problem as a computer vision task which consists in detecting one or several human faces in an image. This project proposes an efficient method for traffic management and theft based on combination of complementary and discriminative feature sets. Performance of the proposed approach is useful for the vehicles users. The users doesn't need to carry all the required document's with them every time. The users have to update the proper information in the database.

**Keywords:** Traffic management, Face recognition, FaceNet

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SwamAI-ji: Question Answering System	<b>Project ID:</b> CSE_22	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** A chatbot is a piece of software designed to conduct a conversation or dialog. They can be found in a wide range of industries to serve a variety of purposes, ranging from providing customer support to aiding in therapy to simply being a source of fun and entertainment. From the customer support dialog boxes, one can find on e-commerce websites to virtual assistants like Siri and Alexa, it's likely that one has encountered chatbots. Dialogue systems and conversational agents - including chat bots, personal assistants and voice control interfaces - are becoming ubiquitous in modern society.

**Keywords:** chatbot , virtual assistants

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> "MONITORING, PROCESSING AND PREDICTION OF DROUGHT"	<b>Project ID:</b> CSE_23	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Drought is a natural disaster that comes with high hazardous impacts on the society. The fundamental and primary objective of this work was to conceptualize a new concept and a new approach which can extract key information from series of satellite images and data which can monitor drought like condition. A conceptual live prototype model was developed. The developed approach is to account for urbanization and also develop a machine learning approach to analyze the problem and predict drought based on the climatic conditions in order to reduce the high hazardous impacts caused on livelihoods and also to reduce the economic losses. MATLAB tool was used to perform image processing and machine learning

**Keywords:** Drought, Matlab, Machine learning, Image processing, satellite image

# BMSIT&M | Techsaransh 2020

<b>Project Title:</b> An Automatic Answer Checker		<b>Project ID:</b> CSE_24
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**Project Execution Time:** In\_House



**Project Category/Area:** Application\_Oriented

**Abstract:** An automatic answer checker application that checks and marks written answers similar to a human being. This software application is built to check subjective answers in an online examination and allocate marks to the user after verifying the answer. The system requires you to store the original answer for the system. This facility is provided to the admin. The admin may insert questions and respective subjective answers in the system. These answers are stored as notepad files. When a user takes the test, he is provided with questions and area to type his answers. Once the user enters his/her answers the system then compares this answer to original answer written in database and allocates marks accordingly. Both the answers need not be exactly same, word to word. The system consists of in-built artificial intelligence sensors that verify answers. This software application is built to check subjective answers in an online examination and allocate marks to the user after verifying the answer. The answers need not be exactly same, word to word

**Keywords:** Answer checker, Artificial Intelligence

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> RECOGNITION AND DETECTION OF CRACK By Deep Learning		<b>Project ID:</b> CSE_25
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** The project deals with issues of image crack analysis in pavement management systems based on computer vision technology. Development of pavement management systems is necessary to predict the long-term performance of roads and to prioritize maintenance policies. An algorithm is proposed to detect cracks in pavement images. The CNN algorithm is used for pavement classification. The project also describes the implementation of the proposed algorithm as experimental automated system software. This software has been developed in Python using the computer vision library OpenCV, keras.

**Keywords:** vision technology , CNN algorithm , OpenCV, keras.



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Detection of Tumor from CT Scan Images using Machine Learning		<b>Project ID:</b> CSE_26
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Medical imaging is the technique and process of creating visual representations of the interior of a body for clinical analysis and medical intervention. The field of medical imaging is gaining importance with an increase in the demand for automated, reliable and fast diagnosis which can provide insight to the image better than human eyes. Identification plays an important part in the diagnosis of benign and malignant tumours. A prime reason behind an increase in the number of cancer patients worldwide is the ignorance towards treatment of a tumour in its early stages. Our project aims at reducing this ignorance and helping patients worldwide, irrespective of type of medical facility available around them in the region they stay and being able to help them in identifying the disease and in understanding as to how urgently medical attention needs to be given to them by categorising it so as to treat the disease safely. This can be very useful in places where there are no specialised doctors available to give expert opinions to patients. Once the disease is identified, future course of action can be taken by the patient and their family so as to treat them and eventually making patient healthy and not having them to suffer to identify the disease

**Keywords:** Tumor, CT Scan, Machine Learning, Medical Imaging

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Sentiment Analysis and Data Visualisation of Social Media Feeds		<b>Project ID:</b> CSE_27
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Microblogging today has become a massive mean of communication. Millions of messages and microblogs appear regularly. These messages often backed by personal opinions on variety of topics and current issues. The inherent nature of social media content offers us a practical application of sentiment analysis. Sentiment analysis on entities (for example, organisations, businesses, products etc) in microblogs thus is a effective way of gauging public opinion for business marketing or even social studies. This project aims to analyze microblogs on Twitter which is a social media platform where people can share their views about almost anything in the form of “tweets”. We aim to analyse various tweets surrounding several domains and the sentiment that follows with it. We will then visualise said trends and map different variables that could possibly be classified. The output data presented can be used by individuals and businesses to adopt changes to their market strategy to better suit the mass media. The output of our sentiment analysis will be presented in the form of graphs which will be displayed in a website.

**Keywords:** classification, corpora, kannada lexicon, opinion mining in kannada.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF AN AUTOMATED SIGN LANGUAGE INTERPRETER	<b>Project ID:</b> CSE_28	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Communication plays a very important role in the everyday life of human beings. Keeping this in mind, this project aims to aid the deaf and the dumb in communicating with others. Sign language is used for this form of communication and it is an incredible advancement that has grown over the years. This project helps in improving the communication with the deaf and the dumb using flex sensor technology. We convert the sign language so that it is understood by common people and will help them to communicate without any barriers. The main purpose of this project is to eliminate the barrier between the deaf and dumb and the others using an automated system to recognize the hand gestures and interpret them appropriately. The system uses a combination of sensors fixed onto a glove to capture various sign gestures. The sensor values for these signs are then recorded by the Arduino and processed using K nearest neighbor machine learning algorithm. There are many challenges that come with the usage of the sign language. Not everyone knows how to interpret the sign language. Hence, we use a sensor based glove to overcome this issue. Currently, the system is able to successfully classify 21 letters and basic phrases with an accuracy of 93% for the chosen value of K in the nearest neighbor algorithm.

**Keywords:** Automated Sign Language (ASL), Data Gloves, Arduino, flex sensors, Supervised Learning

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF AN AUTOMATED SIGN LANGUAGE INTERPRETER		<b>Project ID:</b> CSE_29
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Communication plays a very important role in the everyday life of human beings. Keeping this in mind, this project aims to aid the deaf and the dumb in communicating with others. Sign language is used for this form of communication and it is an incredible advancement that has grown over the years. This project helps in improving the communication with the deaf and the dumb using flex sensor technology. We convert the sign language so that it is understood by common people and will help them to communicate without any barriers. The main purpose of this project is to eliminate the barrier between the deaf and dumb and the others using an automated system to recognize the hand gestures and interpret them appropriately. The system uses a combination of sensors fixed onto a glove to capture various sign gestures. The sensor values for these signs are then recorded by the Arduino and processed using K nearest neighbor machine learning algorithm. There are many challenges that come with the usage of the sign language. Not everyone knows how to interpret the sign language. Hence, we use a sensor based glove to overcome this issue. Currently, the system is able to successfully classify 21 letters and basic phrases with an accuracy of 93% for the chosen value of K in the nearest neighbor algorithm.

**Keywords:** Automated Sign Language (ASL), Data Gloves, Arduino, flex sensors, Supervised Learning

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF AN AUTOMATED SIGN LANGUAGE INTERPRETER	<b>Project ID:</b> CSE_30	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Communication plays a very important role in the everyday life of human beings. Keeping this in mind, this project aims to aid the deaf and the dumb in communicating with others. Sign language is used for this form of communication and it is an incredible advancement that has grown over the years. This project helps in improving the communication with the deaf and the dumb using flex sensor technology. We convert the sign language so that it is understood by common people and will help them to communicate without any barriers. The main purpose of this project is to eliminate the barrier between the deaf and dumb and the others using an automated system to recognize the hand gestures and interpret them appropriately. The system uses a combination of sensors fixed onto a glove to capture various sign gestures. The sensor values for these signs are then recorded by the Arduino and processed using K nearest neighbor machine learning algorithm. There are many challenges that come with the usage of the sign language. Not everyone knows how to interpret the sign language. Hence, we use a sensor based glove to overcome this issue. Currently, the system is able to successfully classify 21 letters and basic phrases with an accuracy of 93% for the chosen value of K in the nearest neighbor algorithm.


**Keywords:** Automated Sign Language (ASL), Data Gloves, Arduino, flex sensors, Supervised Learning

# CIVIL ENGINEERING

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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DEVELOPMENT OF KERBS AND PAVER BLOCKS FOR LOW VOLUME TRAFFIC PAVEMENTS USING ALKALI ACTIVATED ALUMINO-SILICATES AND DEMOLITION WASTES	<b>Project ID:</b> CV_2	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reearch\_Oriented

**Abstract:** Concrete is one of the most widely used construction materials; it is usually associated with Portland cement as the main component for making concrete. The global warming is caused by the emission of greenhouse gases, such as carbon dioxide (CO<sub>2</sub>), to the atmosphere by human activities. The cement industry is held responsible for some of the CO<sub>2</sub> emissions, because the production of one ton of Portland cement emits approximately one ton of CO<sub>2</sub> into the atmosphere. In this respect, the alkali activated Alumino-silicates and demolition wastes with a much lower environmental footprint shows considerable promise for application in the concrete industry. As part of this project, it is proposed to utilize alkali activated Alumino-silicates and demolition wastes for the development of kerbs and paver blocks for low volume traffic.

**Keywords:** Smart dynamic concrete, Alumina-silicates, Molarity, Elevated temperature



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Stabilization of black cotton soil using ferric chloride and bagasse ash	<b>Project ID:</b> CV_3	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Soil stabilization is the process of altering the soil conditions of expansive to enhance their physical properties to improve the strength, durability, etc. by mixing suitable additives. Traditional stabilizers can be used in high potentially cost effective and locally available materials from industrial and agricultural wastes as a stabilizer to improve the property of clay soils. The study investigated the engineering properties of expansive clay soil when stabilized by the combination of bagasse ash and ferric chloride. Basic Index and Engineering properties of the black cotton soil was determined. Bagasse ash varying from 5% to 25% was mixed with the soil sample and ferric chloride varying from 0.10% to 1.00% was mixed with the untreated soil sample, the optimum percentage of ferric chloride and bagasse ash was determined by observing the max. strength gained for each of the additives mixed with the soil sample by conducting Unconfined Compressive test. The Combination of optimum percentage of ferric chloride and bagasse ash was mixed with the soil sample and the samples were cured for a period of 1,7 and 14 days and the Strength characteristics of the soil specimen is studied for each curing period.

**Keywords:** Stabilization , expansive soil , ferric chloride , Bagasse

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ASSESSMENT OF WATER QUALITY IN BANGLORE NORTH AREA,KARNATAKA,INDIA		<b>Project ID:</b> CV_4
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Lake water is a source of drinking and domestic use for rural and urban population of India. The aim of current study was to assess water quality of Bangalore North Lakes Bangalore. For this, lake water samples were collected from twelve different locations on the basis of their importance and for analysis for different parameters like Temperature, Colour , Turbidity, Electrical Conductivity, Total Dissolved Solids, pH, Total Hardness, Calcium, Magnesium, Alkalinity, Sulphate, Nitrate, Chloride, Phosphate, Fluoride , Dissolved Oxygen (DO), Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD). Some heavy metals i.e., Iron, Zinc, Cadmium, Nickel, Chromium, Copper, Arsenic and Lead were also to be analyzed. The study report discusses about the analysis of lake water quality.

**Keywords:** Water quality, Lakes, Chemistry, Parameters

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Experimental analysis of Bellandur lake water on concrete strength	<b>Project ID:</b> CV_5	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** ABSTRACT: As we all know the problems of potable drinking water in the world at present time, this study on the feasibility of lake water to use on construction industries will help to reduce the problem to some extent in this project, we performed tests on various physical and chemical properties of Bellandur lake water and compare the results obtained in accordance to the Indian standard code of conduct. Also casted the concrete samples using potable water and lake water to see the variations on strength parameters. Our main aim is to cast concrete samples using Two different types of water, cure under identical conditions and see the result. If the result is satisfactory then we can use the lake water in the construction industries to reduce the problem of drinking water in the various part of world.

**Keywords:** Polluted, potable, dissolved, hazardous, obtained, casted, strength, cure.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ANALYSIS OF RISKS IN MATERIAL MANAGEMENT IN –CONSTRUCTION INDUSTRY	<b>Project ID:</b> CV_6	
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**Project Category/Area:** Reearch\_Oriented

**Abstract:** ABSTRACT: Analysis of Critical risk factor from the collected data by identifying risk factors influencing material management in construction projects. Data is collected with the help of an extended Questionnaire survey comprising of all the risks and responses from different contractors and sub-contractors through which mitigation of the obtained critical risk factor is carried out. Risk management is essential to construction activities in minimizing losses and enhancing profitability. Risk analysis and management in construction depend mainly on intuition, judgement and experience. Formal risk analysis and management techniques are rarely used due to a lack of knowledge and to doubts on the suitability of these techniques for construction industry activities. Main objective is to help project professionals streamline their project and reduce difficulties during execution of the project

**Keywords:** Risk management, material management, critical risk factor, Risk Analysis, project management, construction management

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Utilization of Waste Plastic and Construction Demolition Waste in Paver Block	<b>Project ID:</b> CV_7
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** The aim of this project is to utilize plastic waste and construction demolition waste and replace cement and other conventional materials. This helps to reduce the wastage of landfill area for disposal of waste and pollution caused by producing conventional concrete paver blocks. Twenty Six Thousand Tonnes of Plastic waste / day is generated in India out of which Ten Thousand Tonnes remains uncollected as per CPCB. According to CPCB 2017, 25 – 30 MT of Construction & Demolition waste are formed in India out of which only 5% is processed. Above 7% of the total world carbon dioxide is contributed by cement industries. Utilization of substitute materials for cement such as fly ash, non-recyclable plastic, decreases utilization of cement. Over extraction of naturally available minerals is impacting the natural environment. The study includes developing a prototype paver block by making use of waste plastic and construction & demolition waste in place of cement and sand, there by complete replacement of cement and partial replacement of sand which is responsible for causing pollution. Study includes testing the prototype paver block and comparing it with the conventional paver block with respect to properties like compressive strength, water absorption and durability. Thereby, the project aims at producing a cost-effective paver block for rural and low traffic roads, reducing the waste disposal to landfills and having a clean environment.

**Keywords:** Paver block, Plastic waste, Construction and Demolition waste, Recycling

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Analysis of a Multi-storey Residential Building Using BIM	<b>Project ID:</b> CV_8
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**Project Execution Time:** In\_House



**Project Category/Area:** Reaearch\_Oriented

**Abstract:** ABSTRACT: Building Information Modeling is a process which involves the generation and management of digital representation of physical and functional characteristic of a Civil Structure. Building information models are files which can be extracted, exchanged or networked to support decision-making regarding a building or other built asset. Building Information Modelling (BIM) involves the creation of 3D virtual model that contains all of the key project information from one or more sources. BIM has various applications and purposes such as facility management, cost estimation, construction sequencing, scheduling, etc. This project proposes to design and analyse a multi-storey building with the help of BIM in order to how it's application in construction industry.

**Keywords:** Virtual model, application of BIM, design and analysis

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ANALYSIS OF RISKS IN MATERIAL MANAGEMENT IN –CONSTRUCTION INDUSTRY	<b>Project ID:</b> CV_9	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** ABSTRACT: Analysis of Critical risk factor from the collected data by identifying risk factors influencing material management in construction projects. Data is collected with the help of an extended Questionnaire survey comprising of all the risks and responses from different contractors and sub-contractors through which mitigation of the obtained critical risk factor is carried out. Risk management is essential to construction activities in minimizing losses and enhancing profitability. Risk analysis and management in construction depend mainly on intuition, judgement and experience. Formal risk analysis and management techniques are rarely used due to a lack of knowledge and to doubts on the suitability of these techniques for construction industry activities. Main objective is to help project professionals streamline their project and reduce difficulties during execution of the project

**Keywords:** Risk management, material management, critical risk factor, Risk Analysis, project management, construction management

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Experimental Analysis and Study on Removal of Phosphate from Waste Water using Phytoremediation and Biochar	<b>Project ID:</b> CV_10	
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** The presence of excess phosphorous in waste water is a cause of concern as it finally ends up in surface water bodies causing eutrophication. This leads to choking of water bodies and ultimate destruction of the water source. . Anthropogenic sources of Phosphorous to water bodies include discharges from point sources, such as wastewater treatment facilities, and non-point sources, such as agricultural and urban runoff. Nutrient pollution has significant consequences for aquatic ecosystems as it encourages rapid growth of plant and microbial biomass. This has a cascading effect as the rapid growth may deplete dissolved oxygen concentrations, leading to hypoxic or anoxic conditions in the water body, decreased transparency and changes in the composition of the natural community The present study attempts to remove excess phosphate from water which affects aquatic eco system and human health .It includes determining the physical, chemical & biological properties of wastewater to be used for experimental studies before passing it through the design system .A treatment system is designed using combination of bio-filter & phytoremediation for the removal of phosphate. Analysis is done to determine efficiency of Phosphorous removal from wastewater after passing it through the developed treatment.

**Keywords:** Phytoremediation, Eutrophication, Bio-filter



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Utilisation of Recycled Glass Powder for Stabilization of Black Cotton soil by Alkali Activation	<b>Project ID:</b> CV_11	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Black Cotton Soil forms a major soil group in India. It covers 20% of the total area of India. Due to its high swelling and shrinkage characteristics, Black cotton soil has been challenging for construction activities. To overcome the problems caused by black cotton soil, the soil needs to be stabilized. Stabilization increases the strength of soil and controls the swell and shrink potential of soil thus improving the load bearing capacity of soil. Lime and Cement are commonly used additives in soil stabilization. The production of commonly used additives like lime and cement contributes to a higher carbon footprint. Recycled glass powder is a construction and demolition waste. Recycled glass powder is rich in Silica and Alumina, thereby on addition of an alkali; it forms a geopolymer that enhances the strength of the soil. In this study Recycled glass powder is added in the proportions of 0%, 3%, 6%, 9%, 12%, 15% and 18 % along with Sodium Hydroxide and Sodium Silicate in the ratio of 1:2.5 to the Black cotton soil to facilitate the geopolymerization reaction. The effect of Recycled glass powder based geopolymer on the strength of Black cotton soil for the curing period of 3 and 7 days is investigated. The Unconfined compressive strength of Black cotton soil increases with the increase in proportion of geopolymer up to an optimum value of 9%. With the increase in curing time the strength of Stabilized Black cotton soil increases. A Recycled glass powder based geopolymer can be used as an effective soil stabilizer.

**Keywords:** Black Cotton soil, Unconfined Compression strength(UCS), Geopolymerization, Recycled Glass Powder, Curing

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> “DISASTER ANATOMIZATION OF LANDSLIDE USING LIMIT EQUILIBRIUM METHOD AND DEVELOPING AN ALERT SYSTEM USING IoT AT KODAGU DISTRICT”	<b>Project ID:</b> CV_12	
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**Project Execution Time:** In\_House



**Project Category/Area:** Environmental\_Societal

**Abstract:** In this Research an attempt has been made to carry out the Geo technical investigation of a hilly land area in India. In this area hills are made of mud and loose fine sandy soil or silty clay having very little percentage of clay showing that cohesion is less. During heavy rain, the water passes through these types of soil and the soil mass of these areas fall down suddenly causing damage to houses, structures constructive and blockage to the edges of roads. Here soil sample were collected as disturbed samples to conduct laboratory test for the investigation of the soil characteristics. We have observed that the soil profile contains poorly graded silty sand with reddish colour. Also, different engineering properties have been determined in the laboratory from the test conducted and we have found that the probable reason for this landslide is due to the Poor shear strength characteristics of this soil. Therefore a soil stabilization and nail technique can be applied, which will be used for the improvement of natural and artificial slope. By applying above mentioned technique the stability can be increased for an unstable slope. In this Project we will demonstrate as how the stability of a dry slope can vary using soil stabilization and nailing of different diameter at varying distance from each other and thus obtain a maximum factor of safety. The analysis was based on numerical analysis by using Geo-studio (2018) on mathematical Model. Appropriate positioning of reinforcement will give the ultimate result and will also be cost effective.

**Keywords:** Shear strength , Stabilization , Slope Stability , Geo Studio

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> EXPERIMENTAL STUDY OF UTILISING TIMBERCRETE IN DEVELOPING LOW ENERGY BUILDING COMPONENTS FOR RURAL AREAS	<b>Project ID:</b> CV_13	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Alternate building materials are those which can be used economically by replacing the conventional building materials. These are made from waste products and thus it even minimizes environmental pollutions. Green building materials are composed of renewable, rather than nonrenewable resources. Green materials are environmentally responsible because impacts are considered over the life of the product. Depending upon project-specific goals, an assessment of green materials This experiment is aimed to develop a new type of mix that can be accepted as a part of growing construction industry. In this experimental study a new type of mix is prepared by replacing coarse aggregate completely with saw dust. The compressive strength properties of concrete are produced by adding saw dust in different proportions and compared with design mix of grade M25 concrete mix. As the coarse aggregates are replaced the self-weight of the block will be reduced to a greater extent which is a beneficial property as if the high rise structures are concerned. The curing process is also different as the block made of saw dust requires moist curing for better results.

**Keywords:** Timbercrete, Saw Dust, Low Energy Building, Green Building

## BMSIT&M | Techsaransh 2020

	<b>Project Title:</b> EXPERIMENTAL INVESTIGATION OF STRENGTH CHARACTERISTICS OF SOIL BLOCKS PRODUCED FROM PETROLEUM CONTAMINATED SOIL	<b>Project ID:</b> CV_14
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**Project Execution Time:** In\_House




**Project Category/Area:** Environmental\_Societal

**Abstract:** Oil contamination causes serious geo environmental concern and adversely affects the soil environment due to the release of toxic by-products. Hence, the aim of the study was to investigate the influence of oil contamination on soil physical and chemical properties and phytoremediation as a treatment option based on field studies conducted for analyzing significant parameters. Phytoremediation of oil-contaminated samples was carried out by *Chromolaena odorata*. The evaluation of soil physical and chemical properties includes field and laboratory tests. A pumping test was conducted to estimate aquifer parameters in the field. The hydraulic conductivity for field soil sample (unsaturated condition) is carried out by a filter paper test. Laboratory tests to evaluate physical and chemical parameters include total petroleum hydrocarbons of contaminated (crude oil varying from 0 to 10% at an interval of 2%) and uncontaminated samples and plant parameters. Characterization of contaminated and uncontaminated soil sample was performed by Fourier transform infrared (FTIR) spectroscopy

**Keywords:** Oil contaminated soil, soil blocks, compressive strength, water absorption.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF SENSOR-BASED PROTOTYPE FOR URBAN FLOODS EARLY WARNING SYSTEM	<b>Project ID:</b> CV_15	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** The present study attempts to Aid in disaster management and emergency response preparedness, by developing a prototype of AI based Urban Flood Warning System. The methodology involves Study of topography map and satellite images, followed by Analysis of land use pattern on a special and temporal scale (time based). This further shall lead to Identification of the low-lying areas of Bangalore, with subsequent Fixation of observatories from the affirmation stations. This study shall also provide inputs to serve as guideline for existing and Future Township planning. The outcome of study shall assist in reduction in intensity of impacts due to urban flooding, and Safe-guarding of all life-forms and property.

**Keywords:** Topography, Urban, Flood, Warning, AI.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ENVIRONMENTAL PERFORMANCE EVALUATION AT G.E.-B.E., BENGALURU	<b>Project ID:</b> CV_16	
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**Project Execution Time:** Industry

**Project Category/Area:** Industry\_Project

**Abstract:** The present study attempts to strengthen the prevailing Environmental Management System at General Electronics, Bharat Electronics Limited (G.E.-B.E.L) Bengaluru by analysing the existing procedures and practices. This is inclusive of Revision of presently practiced targets to further reduce environmental impacts, followed by Conversion of significant aspects to non-significant aspects, by inculcating innovative, efficient and sustainable solutions. The areas include Re-evaluation of the adequacy of existing Rain Water Harvesting Unit, Monitoring, revision and upgradation of existing Sewage Treatment Plant and Effluent Treatment Plant, and Environment friendly approach towards greenery management. The overall objective is towards Enhancement in the stringency of the Environmental Targets to reduce the Ecological and Carbon Footprint of the industry.

**Keywords:** Carbon, Footprint, Environmental, Management, System.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Comparison Study on Properties of different grades of cement	<b>Project ID:</b> CV_17	
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** It has been seen in past few decades that many countries are developing at very fast rate and India is one among them. Due to this rapid development an immense pressure has been put on the construction industries for the infrastructure development. As we all know the development of any country can be measured by its infrastructure development. So, it has become necessary to increase pace of construction activities as there is need that infrastructure must get ready in as less time as possible. The development in the construction sector leads to development of innovative and sustainable materials to be used so as to reduce the consumption of natural resources. It also becomes necessary to compare the performance of traditional materials and new materials in the present market to ensure their quality and durability. The main aim of the project work is to study the properties of various grades of cement (33, 43 and 53 grade cements). The different grades of cements said earlier were used for the experimental investigation to compare their performances in its fresh and hardened state. The outcomes from the experimental investigation were presented and discussed.

**Keywords:** Sustainable material, Grade of cement (OPC 43, 53 and PPC), Quality, Durability, Compressive strength, comparison of properties.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF 3AXIS 3-D CONCRETE PRINTER WITH RHEOLOGICAL MODIFICATIONS	<b>Project ID:</b> CV_18	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented


**Abstract:** 3D printable concrete (3DPC), a current trending technology in the construction industry wherein concrete is extruded through a nozzle which is fixed to a gantry girder that deposits the concrete layer by layer in order to construct the structure. 3DPC is the technology construction industry has to adopt in the near future due to the non-availability of skilled labors, delivery of the project at a faster rate when compared to conventional construction methodology in a much efficient way with optimal usage of resources by reducing the wastage. This technology can also be employed under harsh climatic conditions where humans cannot be employed or inefficient to work in such environment. The concrete which is to be used in 3DPC is much different from the conventional concrete due to the fact that, this concrete has to have various properties such as extrudability, buildability, pumpability and durability. These properties contradict among themselves because, for the concrete to be flowable in nature it should possess higher water to binder ratio. But, for the concrete to set at a faster pace (i.e., buildability) it has to have a lower water cement ratio. These properties can be enhanced by making various alterations in the conventional concrete mix design such as addition of admixtures (mineral and chemical) and innovative constituents. In this report, A detailed study on the fabrication of a 3Axis 3D printer and also experimental analysis on mix design for cement mortar is conducted and finally results are discussed.

**Keywords:** 3D Printing, New upcoming Technology, Buildability, Pumpability, Durability.



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<b>Project Title:</b> DESIGN AND DEVELOPMENT OF 3AXIS 3-D CONCRETE PRINTER WITH RHEOLOGICAL MODIFICATIONS	<b>Project ID:</b> CV_19	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** 3D printable concrete (3DPC), a current trending technology in the construction industry wherein concrete is extruded through a nozzle which is fixed to a gantry girder that deposits the concrete layer by layer in order to construct the structure. 3DPC is the technology construction industry has to adopt in the near future due to the non-availability of skilled labors, delivery of the project at a faster rate when compared to conventional construction methodology in a much efficient way with optimal usage of resources by reducing the wastage. This technology can also be employed under harsh climatic conditions where humans cannot be employed or inefficient to work in such environment. The concrete which is to be used in 3DPC is much different from the conventional concrete due to the fact that, this concrete has to have various properties such as extrudability, buildability, pumpability and durability. These properties contradict among themselves because, for the concrete to be flowable in nature it should possess higher water to binder ratio. But, for the concrete to set at a faster pace (i.e., buildability) it has to have a lower water cement ratio. These properties can be enhanced by making various alterations in the conventional concrete mix design such as addition of admixtures (mineral and chemical) and innovative constituents. In this report, A detailed study on the fabrication of a 3Axis 3D printer and also experimental analysis on mix design for cement mortar is conducted and finally results are discussed.

**Keywords:** 3D Printing, New upcoming Technology, Buildability, Pumpability, Durability.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SUITABILITY OF ADDITIVES FOR SOIL LINER TO CONTROL MIGRATION OF CONSTITUENTS IN LEACHATE - SOIL WASTE DISPOSAL SITE, BENGALURU	<b>Project ID:</b> CV_20	
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**Project Execution Time:** In\_House





**Project Category/Area:** Environmental\_Societal

**Abstract:** Landfilling of the waste is the most extensively encouraged approach for its secure disposal, whose efficiency in particular depends on the barrier system in region. Soil liners amended with bentonite and fly ash can be used to minimize migration of ions like iron and potassium. The thickness of the liner for a required period is arrived based on the rate of migration of contaminants through the liner. The column experiments have been performed on soil samples with bentonite and fly ash. The transport parameters can be obtained by breakthrough curves using soil column test. Mathematical models with values of transport parameters are used to generate theoretical breakthrough curves. The set of values which yield the theoretical curves close to experimentally determined breakthrough curves are obtained for the iron and potassium ions through the soil liner. The values are used to determine the break through times for any thickness of the liner using MAT LAB software.

**Keywords:** Soil liner, Column test, Breakthrough curve, Diffusion coefficient.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND DEVELOPMENT OF 3AXIS 3-D CONCRETE PRINTER WITH RHEOLOGICAL MODIFICATIONS	<b>Project ID:</b> CV_21	
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** 3D printable concrete (3DPC), a current trending technology in the construction industry wherein concrete is extruded through a nozzle which is fixed to a gantry girder that deposits the concrete layer by layer in order to construct the structure. 3DPC is the technology construction industry has to adopt in the near future due to the non-availability of skilled labors, delivery of the project at a faster rate when compared to conventional construction methodology in a much efficient way with optimal usage of resources by reducing the wastage. This technology can also be employed under harsh climatic conditions where humans cannot be employed or inefficient to work in such environment. The concrete which is to be used in 3DPC is much different from the conventional concrete due to the fact that, this concrete has to have various properties such as extrudability, buildability, pumpability and durability. These properties contradict among themselves because, for the concrete to be flowable in nature it should possess higher water to binder ratio. But, for the concrete to set at a faster pace (i.e., buildability) it has to have a lower water cement ratio. These properties can be enhanced by making various alterations in the conventional concrete mix design such as addition of admixtures (mineral and chemical) and innovative constituents. In this report, A detailed study on the fabrication of a 3Axis 3D printer and also experimental analysis on mix design for cement mortar is conducted and finally results are discussed.

**Keywords:** 3D Printing, New upcoming Technology, Buildability, Pumpability, Durability.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> EXPERIMENTAL STUDIES ON DEVELOPMENT OF UNFIRED EARTH MASONRY UNITS USING ALKALI ACTIVATORS	<b>Project ID:</b> CV_22	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Bricks are the world's most versatile, durable and reliable construction material. Conventional bricks are produced from clay with high temperature kiln firing or from ordinary Portland cement (OPC) concrete, and thus contain high embodied energy and have large carbon footprint. In many areas of the world, there is already a shortage of natural source material for production of the conventional bricks. For environmental protection and sustainable development, extensive research has been conducted on production of bricks from waste materials. The incorporation of industrial by-products (such as Fly ash, GGBS, Gold mine tailings, Red mud soil etc.), Tank bed soil and the reuse of construction and demolition waste in the production of building materials are methods being used to solve this problem. Hence the present focus of this study is to develop unfired masonry blocks stabilised with geopolymer obtained from alkaline activation and to evaluate their various engineering properties such as Modulus of Elasticity, Compression and Flexural strength, density, water absorption, etc. and to compare them with conventional masonry units.


**Keywords:** Embodied energy, GGBS, Gold mine tailings, Red mud soil, Tank bed soil, Geopolymer, Alkaline activation

# **ELECTRONICS & COMMUNICATION ENGINEERING**

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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Rescue system for Road Accidents	<b>Project ID:</b> ECE_1	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** : Many road accidents go unnoticed every year mostly due to untimely aid provided. It is important that an accident as and when it happens must be reported to the hospital as soon as possible which can potentially help in saving many lives. We propose an idea wherein any accident that happens is first noticed on the Internet (Cloud). This data on the internet may be used to triangulate the position of the accident and uses many Application Programming Interfaces (API) calls to thereby alert the closest possible hospitals. The hospital that has readily deployable ambulances can service the request first. Data once made available on the Internet can be thus exchanged with concerned authorities like the Traffic Management Centre (TMC) to help clear the traffic along the driveway. This can lead to a significant reduction in time in providing aid to the victims of the accident. Data once made available can also be further used for crash investigation and associated purposes. The proposed system makes use of an accident detection module that consists of an Arduino Uno R3, an Accelerometer and a Quad-Band GSM/GPRS/GPS module SIM808. The implementation makes use of technologies like Google Cloud Platform, Google Maps APIs (Places API, Directions API), IFTTT Webhooks and Android SMS, Microsoft Outlook, ThingSpeak API, and Python 3.7.

**Keywords:** Road accidents, rescue device, API (Application Programming Interfaces), TMC (Traffic Management Centre)

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Glove Based Sign Language Interpreter For Deaf And Mute People	<b>Project ID:</b> ECE_2
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal



**Abstract:** Abstract: Sign language is a natural way for communication between normal and mute people, but often they find difficulty in communicating with normal people as we don't understand their sign language. For deaf and mute people to communicate with normal people, sign language is introduced. The disadvantage of this method is that we must know the sign language to understand the conveyed message. So, this project aims to facilitate individuals by means of a glove based deaf-mute communication interpreter system. The glove is internally equipped with accelerometer. These sensors sense the movement of hands and fingers. For every specific gesture, the accelerometer measures the orientation of hand. The process of these hand gestures is interpreted in controller. Using this device deaf-mute and a standard person can be able to communicate with each other in an affordable and convenient way. This project analyses the data from an instrumented data glove for use in recognition of signs and gestures. A system is developed for recognizing these signs and their conversion into speech. The hardware components used in this project are Renesas microcontroller, ADXL337 accelerometer, voice module, LCD, speaker, regulated power supply.

**Keywords:** Sign language, Gesture, ADXL337Accelerometer, Renesas Microcontroller, Glove



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SIMULATION OF SPACECRAFT TELEMETRY DATA IN CCSDS FORMAT	<b>Project ID:</b> ECE_3	
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**Project Execution Time:** Industry




**Project Category/Area:** Industry\_Project

**Abstract:** Satellites transmit data streams to the ground that are used to determine the health and location of the satellite. The Telemetry, Tracking and Command (TT&C) Systems of a spacecraft provides the most vital telecommunication link between a satellite and ground station. Before communicating with the spacecraft, the ground segment equipment should be subjected to test and evaluation. This activity will be carried out in absence of satellite. During this phase of activity, the actual satellite telemetry data will not be available. The telemetry simulator will be used for evaluating ground segment hardware and software for interface, functionalities, data processing, performance of the systems and long-distance data link validation. Only after satisfactory performance, the ground systems will be connected to the spacecraft. Hence, this telemetry simulator is mandatory as a part of Satellite ground segment system. The main objective of this project is to design and develop a Stand-alone hardware Spacecraft telemetry simulator in CCSDS format using Verilog programming language. Implementation of the project is divided into data generation, data transmission over ethernet, data reception and storage at FPGA, randomizing and encoding stored data, and validation of the obtained output modules. Data generation is done using Java programming language on Apache NetBeans platform. Altera Stratix V 5SGSMD5K2F40C2 FPGA board is used for data reception, storage, randomization and encoding which employs Quartus II 14.0 development software.

**Keywords:** Satellite Telemetry, CCSDS, Simulator, FPGA

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> WEARABLE DEVICE TO DETECT EPILEPSY	<b>Project ID:</b> ECE_4	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** A wearable device, developed to detect different types of epileptic seizures and monitor epileptic patients. The device uses GSR, Pulse, EMG, body temperature and 3-axis accelerator sensors to detect epilepsy. The device first learns the signal patterns of the epileptic patient in ideal condition. The signal pattern generated during the epileptic seizure, which are distinct from other signal patterns, are detected and analyzed by the algorithms developed by the author. Based on an analysis, the device successfully detected different types of epileptic seizures.

**Keywords:** Wearable, Accelerator, Epileptic

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Automatic Protection on Electrocutation	<b>Project ID:</b> ECE_5	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Electrocutation is defined as the injury or death of living beings due to electric shock. This project looks at various reasons for electrocution and also provides some solution using electronic hardware to avoid it. We identify the electrocution risk, and take measures to avoid the risks associated with electrocution. When an object comes in the vicinity of electric transmission lines we have proposed a method to instantly sense through the ultrasonic sensor and metal detector and activates the buzzer and breaks down the power. Also sends the location to a substation with the help of GSM Module to solve the problem. The power supply will be immediately disconnected if any object stays in the vicinity of the transmission line for more than threshold amount of time. Here we looked at the electrocution problems associated with transmission lines and provide the improvements that can be done on our approach.

**Keywords:** Electrocutation, GSM module, Sensors,Arduino.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> RoboMop	<b>Project ID:</b> ECE_6	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Households of today are becoming smarter and more automated. Domestic robots are entering the homes and people's daily lives, but it is yet a relatively new and immature market. Several robotic vacuum cleaners are available on the market but only few ones implement complete cleaning of floors. The purpose of this project is to design and implement a Vacuum Robot which is Autonomous. The main objective of this project is to design and implement a vacuum robot prototype by using Arduino Mega, Ultrasonic Modules, DAC/ADC, DC Motors, Servo Motor and Battery protection unit to achieve the goal of this project. Vacuum Robot will have several criteria that are user-friendly

**Keywords:** Robomop, Vacuum Robot,

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND IMPLEMENTATION OF 6T SRAM	<b>Project ID:</b> ECE_7	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Static Random access memory (SRAM) is useful building block in many applications such as data storage embedded applications, cache memories. Microprocessors etc. Large SRAM arrays that are widely used as cache memory in microprocessors and application-specific integrated circuits can occupy a significant portion of the die area, as well projected .0 occupy more system on chip (SOC) area. An attempt to optimize the performance of such chips, large arrays of fist SRAM helps to boost the system performance. However, the area impact of incorporating large SRAM arrays into a chip directly translates into a higher chip cost. Balancing these requirements is driving the effort to minimize the footprint of SRAM cells. As a result, millions of minimum-size SRAM cells are tightly packed making SRAM arrays the densest circuitry on a chip. Low power memory is required today in most priority area, with limb stability. The power is most important factor for today's technology, so the power reduction for one cell plays vital role in memory design techniques. The main objective of this project is the implementation of a power efficient SRAM cell. In this paper an effort is made to design 8X8 SRAM memory array on 90nm technology. The project aims to design and implement the memory using 6 transistors and demonstrate successful write and read operations. For high-speed memory applications such 2cs cache, an SRAM is often t121.1 Access time, speed, and power consumption are the three key parameters for an SRAM memory design. The integrated SRAM is operated with analog input voltage of 1.8V. The 8x8 SRAM memory array has been designed, implemented & analysed in standard Virtuoso 90nm technology library using Cadence tool. The power and delay analysts are performed.

**Keywords:** SRecAM, Cadence Tool Lowpower

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Autonomous Structural Health Monitoring of bridges using Wireless Sensor Networks	<b>Project ID:</b> ECE_8	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Structural health monitoring (SHM) using wireless sensor networks (WSNs) has gained research interest due to its ability to reduce the costs associated with the installation and maintenance of SHM systems. SHM systems have been used to monitor critical infrastructures such as bridges, highrise buildings, and stadiums and have the potential to improve structure lifespan and improve public safety. The legacy SHM systems used wired sensor network implementations. This not only increased the cost of the deployment but also maintainability and reconfiguration are issues that sometimes outweigh the advantages. This project introduces a wireless sensor network using Bluetooth nodes for structural damage detection in which the sensor nodes process the data locally in real-time and sends alerts only when any damage is detected.

**Keywords:** Public safety, Bridges, SHM(Structural Health Monitoring), WSN(Wireless Sensor Networks)

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> IoT BASED SMART TRAFFIC SIGNAL MONITORING SYSTEM	<b>Project ID:</b> ECE_9	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Effective traffic management is one of the keys to smart city management Aspects. Traffic flow can be handled easily because it is possible to pre-estimate in advance the number of cars to travel through a busy intersection. The idea proposed presents a work capable of transmitting vehicle count periodically and generating an alarm when large vehicles arrive at the station controlling Bangalore or urban Indian cities. Using image processing techniques, the number of vehicles that travel through a place can be determined long before the appropriate traffic junction. In addition, the monitored detail can be sent to a remote area control center located anywhere in town through internet use.

**Keywords:** IOT ,Image processing, Firebase, Blob detection, Raspberry Pi

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> IOT BASED SMART SECURITY HOME AUTOMATION SYSTEM USING BLYNK FRAMEWORK	<b>Project ID:</b> ECE_10	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** The Internet of Things moved beyond the trends and became an autonomous technical and social relevance. As per the Gartner Research, the number of connected things will have reach 26.66 billion by 2019 and by 2025 this number will have increased up to 75 billion. Right at the moment, people can feel the effect of the iot in their lives. Smart phones, smart bulbs, smart appliances and even smart security systems — all that smart stuff which can operate without human interaction. This project discuss the design circuit to control devices which we are connected to circuit and also monitor the status of electrical devices using local server and BLYNK framework app. The method creating a prototype consisting of sensors and actuators it may be humidity sensor, motion sensor, fan, bulb etc. Nodemcu is an open source IOT platform. It includes esp8266 express system. It based on esp-12 module it is used to controfan, lights, temperature sensor and can use many more controls.

**Keywords:** IoT, arduino, nodemcu, wi-fi, smart phone



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Early Detection Of Blood Related Diseases Using Deep Learning		<b>Project ID:</b> ECE_11
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Pathologists and hematologists has been provided with information for diagnosing blood related diseases with the traditional process of the CBC test or Complete Blood Count test. This manual method has proved to be tedious, bias and inaccurate. Thus, to improve the accuracy for better diagnosis, automated methods of blood cell detection and counting have been looked for. These automated methods lead to early detection of blood related diseases, infection on immune system, such as anemia and leukemia. Due to the increased pollution these days, blood related diseases have become very common. In this project, the main motive was to identify the blood cells, classify them to help in the early detection of these blood related diseases. Previous works included only classification of the cells with either less dataset or gave less accuracy results. Thus, classification of white blood cells was done with a higher accuracy of 85% by using more number epochs. This project involves latest technology like Deep Convolutional Neural Network (CNN) methods. This method is the best automated method for classifying WBCs and identifying diseases.

**Keywords:** CNN,WBC

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ACCIDENT DETECTION AND PREVENTION		<b>Project ID:</b> ECE_12
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** In our day to day life, we observe that a number of accidents take place every day. The advancements in the technology have made our day to day lives easier. The growth of population has resulted in the exponential rise in number of vehicles and the accident rates. This in turn results in a huge loss of property or economic losses and also human life. An accident is an unexpected and an unintended action and more over unpredictable which can occur at any time and place, with no prior and deliberate cause but with its disastrous effects. Our project mainly focuses on the rescue of a victim where the accident happens, alerts immediately by the IOT system to the health workers and also the police is alerted through BLYNK open source app where both end users must be registered. In this app the parameters data like temperature, status of accident etc are recorded and sent to consents. Carelessness of the driver and the poor emergency facilities are the major factors behind leading to such accidents. Many lives could be saved if emergency service could get accident information and can thus reach the accident spot in time. Our proposal is to detect the accident spot using the GPS system and accordingly informs to the hospitals, the police station and the relatives concerned using the IOT system which helps in preventing any further loss to the human life.

**Keywords:** IOT (Internet of Things), NODE MC (Node Microcontroller), GPS (Global positioning system), Sensors.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SHIELD (Smart Handheld Intelligent Embedded Locating Device)		<b>Project ID:</b> ECE_13
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** In a survey conducted by ‘The Thomson Reuters Foundation’ India was ranked the most dangerous place for women. Due to its high incidences of sexual violence. The project provides a solution by which women can protect themselves and save themselves if they ever face such situations. Due to these atrocities that women are subjected to in the present scenario, a smart security wearable device for women based on Internet of Things is proposed. It is implemented in the form of a smart watch. SHIELD (Smart Handheld Intelligent Embedded Locating Device) is an innovative safety device for women, senior citizens and anyone who needs assistance in an urgent situation. Women all over the world are facing a lot of physical harassment in public places such as railway-bus stands, foot paths etc. SHIELD is a personal protection smartwatch embedded with an automatic hand gesture controlled pepper spray. Android App integrated with watch includes features such as sending emergency messages, GPS tracker, in-app police complaint, hospital and ambulance finder, and conventional smartwatch features such as pedometer, sleep monitoring and activity tracker. Pepper Spray is attached inside the watch which can be triggered with a customized hand gesture or manual push-button.

**Keywords:** Internet of Things, pedometer, sleep monitoring, smartwatch

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Drone Integrated Weather Sensors for Agriculture Purpose		<b>Project ID:</b> ECE_14
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Abstract: The conditions within an ecosystem as well as weather of a field affect crop productivity greatly. Different weather conditions produce different effects and impact on the quality of the crop yield or on the ecosystem. Weather elements form a chain reaction, as the atmosphere is not the only one being affected, atmospheric air temperature, vapor pressure and relative humidity or moisture content can act together and form diverse effects on crops. These diverse effects in turn reduces radiation which is necessary for plants, or increases rainfall patterns. Consistent high temperatures can increase the heat transfer to local water bodies in addition to heating the air. Monitoring the climate and the weather conditions are important not only as an environmental baseline, but to maintain quality working conditions, marine studies and recreational safety. The parameters of climate are measurable, for example, atmospheric vapor pressure, temperature, precipitation and solar radiation can be captured and recorded daily on the Arduino Sensor Integrated Drone. Means and extreme datasets, maximum and minimum weather trends with deviations of lengthy time series would be calculated for each of these climate parameters which are considered in this study. These results are a simple form of climate indices, as they already describe changes in climate. All the readings and datasets are recorded on a cloud platform, as well as, in an installed microchip on the drone. Data synchronization is done with the Arduino Programming Rule.

**Keywords:** Keywords: Arduino, sensor, weather data, environment.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Pruning of CNN for detection of breast cancer	<b>Project ID:</b> ECE_15	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The computer-aided detection (CAD) systems which has been used for diagnosis of breast cancer has limitations with regard to providing visible evidence of carcinoma. The importance of early detection of carcinoma and the impact of false identification has driven researchers to analyse deep learning methods for classification. Recent breakthroughs in deep learning, convolutional neural networks (CNNs) have achieved outstanding precedances in the cancer research. CNNs are used in diagnostic procedure for lesion localization, detection, risk assessment, image retrieval, and classification tasks. CNNs conjointly facilitate radiologists providing additional correct identification by delivering precise measurments of suspicious lesions. Different classification models were created and used for breast cancer classification with high accuracy. A custom CNN model was developed and pruning was employed to fearure reduction with out sacrificing the accuracy. Modern CNNs often have high capability to work with large training sets and incur inference costs. This method is presented to prune filters with relatively low weight magnitudes to produce CNNs with reduced computation costs without introducing irregular sparsity. It achieves about 30% reduction without significant loss in the original accuracy. Instead of pruning with specific layer-wise hyper parameters and time-consuming iterative retraining, one-shot pruning and retraining strategy for simplicity and ease of implementation is suggested.

**Keywords:** CNN, sparcity, pruning

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Face Recognition using Machine Learning	<b>Project ID:</b> ECE_16	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** This project describes a simple and easy hardware implementation of a face recognition system using Raspberry Pi, which itself is a minicomputer of a credit card size and is of a very low price. The system is programmed using Python programming language. Both real-time face detection and face recognition is carried out and the proposed system is tested across various standard face databases, with and without noise and blurring effects. The efficiency of the system is analyzed by calculating the Face detection rate for each of the databases. The results reveal that the proposed system can be used for face recognition even from poor quality images and shows excellent performance efficiency.

**Keywords:** Face recognition, machine learning, Raspberry Pi

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Face Recognition using Machine Learning	<b>Project ID:</b> ECE_17	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** This project describes a simple and easy hardware implementation of a face recognition system using Raspberry Pi, which itself is a minicomputer of a credit card size and is of a very low price. The system is programmed using Python programming language. Both real-time face detection and face recognition is carried out and the proposed system is tested across various standard face databases, with and without noise and blurring effects. The efficiency of the system is analyzed by calculating the Face detection rate for each of the databases. The results reveal that the proposed system can be used for face recognition even from poor quality images and shows excellent performance efficiency.

**Keywords:** Face recognition, machine learning, Raspberry Pi

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and analysis of approximate multipliers in image processing application	<b>Project ID:</b> ECE_18	
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented


**Abstract:** Approximate computing is a nascent computing paradigm that allows us to achieve these objectives by compromising the arithmetic accuracy. Many systems used in domains, like multimedia and big data analysis, exhibit an inherent tolerance to a certain level of inaccuracies in computation, and thus can benefit from approximate computing. Approximate multipliers are widely being advocated for energy efficient computing in applications that exhibit an inherent tolerance to inaccuracy. It can also decrease the design complexity with an increase in performance and power efficiency for error resilient applications. This brief deals with a new design approach for approximation of multipliers. The partial products of the multiplier are altered to introduce varying probability terms. However, the inclusion of accuracy as a key design parameter, besides the performance, area and power, makes the identification of the most suitable approximate multiplier is quite challenging. In this paper, we design and analyze factors for the selection of an approximate multipliers circuit: (1) the type of approximate full adder, half adder and 4:2 compressor (2) tree of the multiplier and (3) the placement of sub-modules of approximate and exact multipliers in the main multiplier module Approximate adders, multipliers and other logical circuits can reduce hardware overhead. These FA, HA, 4:2 Compressors cells are then used to develop circuits for the approximate high order compressors as building blocks for 4x4 array and tree multipliers. Later the comparison of the proposed architecture multiplier with the existing multiplier w.r.t area efficiency is done. Performance of the proposed multipliers is evaluated with an image processing application.

**Keywords:** dadda multiplier, approximate multipliers



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and analysis of approximate multipliers in image processing application	<b>Project ID:</b> ECE_19	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Approximate computing is a nascent computing paradigm that allows us to achieve these objectives by compromising the arithmetic accuracy. Many systems used in domains, like multimedia and big data analysis, exhibit an inherent tolerance to a certain level of inaccuracies in computation, and thus can benefit from approximate computing. Approximate multipliers are widely being advocated for energy efficient computing in applications that exhibit an inherent tolerance to inaccuracy. It can also decrease the design complexity with an increase in performance and power efficiency for error resilient applications. This brief deals with a new design approach for approximation of multipliers. The partial products of the multiplier are altered to introduce varying probability terms. However, the inclusion of accuracy as a key design parameter, besides the performance, area and power, makes the identification of the most suitable approximate multiplier is quite challenging. In this paper, we design and analyze factors for the selection of an approximate multipliers circuit: (1) the type of approximate full adder, half adder and 4:2 compressor (2) tree of the multiplier and (3) the placement of sub-modules of approximate and exact multipliers in the main multiplier module Approximate adders, multipliers and other logical circuits can reduce hardware overhead. These FA, HA, 4:2 Compressors cells are then used to develop circuits for the approximate high order compressors as building blocks for 4x4 array and tree multipliers. Later the comparison of the proposed architecture multiplier with the existing multiplier w.r.t area efficiency is done. Performance of the proposed multipliers is evaluated with an image processing application.

**Keywords:** dadda multiplier, approximate multipliers

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> “DESIGN AND DEVELOPMENT OF HARDWARE ACCELERATION FOR RANDOM FOREST ALGORITHM BASED APPLICATION”	<b>Project ID:</b> ECE_20	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** A Random Forest is a classifier that is commonly used in machine learning. Random forest is one of the state of the art supervised methods of learning in machine learning and essentially consists of two steps: training and evaluation stage. Random forests are an ensemble(forest) learning method for classification and regression, and other tasks that operate by building multiple decision trees at the time of training and outputting the class which is the class mode are mean trees prediction. Compared with other machine learning algorithms, the Random Forest has the simple, quick learning and identification capability. Due to their inherent concurrent memory accesses and computational parallelism, an FPGA is a good platform for performance acceleration of Random forests. Amortizing the cost of implementing an FPGA among different applications is desirable, but the context switching time between applications influences the forest architecture considerably. Random forest, which comprises a large number of decision trees that use FPGA, has high speed of training. In this work, a novel FPGA architecture is presented, exploring features of the Random Forest to accelerate the Random Forest Training step. FPGA displays high memory utilization efficiency as well as a batch training strategy that allows full exploitation of the high memory bandwidth offered by the on-chip memory featured on FPGA devices. Random forests are powerful not only in classification / regression but also for outlier detection, clustering and interpretation purposes. The FPGA's are thus suitable for speeding up the Random Forest.

**Keywords:** Random Forest Algorithm, Python and Matlab implementations,FPGA hardware implementations

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND IMPLEMENTATION OF SVM CLASSIFIER ON FPGA	<b>Project ID:</b> ECE_21	
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**Project Execution Time:** In\_House




**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Currently the need for faster, more accurate and larger dynamic range number representation has made way for a new number system namely Posit Unum. Through an iterative process of improving the posit, it has currently overtaken the best choice for a number system, replacing the floating-point representation IEEE754. Posits, with its sophistication and certain advantages over traditional representations it will soon be replacing all others. In this paper, we design an SVM linear classifier in Verilog using 2 different number formats i.e., IEEE754 and Posit Unum in order to perform a comparison study between their hardware resource utilization and timing for the different breast cancer datasets. We perform classification task using SVM. Support Vector Machines (SVM) is one of the most commonly used the state-of-the-art supervised machine learning algorithm for various classification problems. This algorithm provides high accuracy rate compared to other classification algorithms. However, when SVM is modelled only using Software, it is a time-consuming algorithm due to its high computational complexity. This makes the algorithm to be not suitable for embedded real time applications. So, we implement SVM classifier on hardware which decreases the latency and executes the task in real time.

**Keywords:** SVM, FPGA, IEEE754

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Recognition of Leaf Disease Using Convolution Neural Network	<b>Project ID:</b> ECE_22
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**Project Execution Time:** In\_House





**Project Category/Area:** Environmental\_Societal

**Abstract:** Crop production problems are common in India which severely effect rural farmers,agriculture sector and the country's economy as a whole. In Crops leaf plays an importantrole as it gives information about the quantity and quality of agriculture yield in advancedepending upon the condition of leaf. Plant leaf diseases and destructive insects are a majorchallenge in the agriculture sector. Faster and an accurate prediction of leaf diseases in crops could help to develop an early treatment technique while considerably reducing economiclosses. Modern advanced developments in Deep Learning have allowed researchers toextremely improve the performance and accuracy of object detection and recognitionsystems. In this project, we proposed a deep-learning-based approach to detect leaf diseasesin many different plants using images of plant leaves. Our goal is to find and develop themore suitable deep learning methodologies for our task. Therefore, we are considering theAlex Net model, which was used for the purpose of this work. The proposed system caneffectively identified different types of diseases with the ability to deal with complexscenarios from a plant's area.

**Keywords:** CNN, Alex net, deep learning, leaf disease

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Driver safety and security systems for vehicles	<b>Project ID:</b> ECE_23
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**Project Execution Time:** In\_House





**Project Category/Area:** Application\_Oriented

**Abstract:** Vehicle accidents are most common if the driving is inadequate. These happens on the most factors if the driver is drowsy or if he is alcoholic. Driver drowsiness is recognized as an important factor in the vehicle accidents. The main aim is to provide awareness and safety mechanism for the driver. It was demonstrated that driving performance deteriorates with increased drowsiness with resulting crashes constituting more than 20% of all vehicle accidents. The main aim of this project is “to check an alertness of a driver with an analysis of his eye state and to prevent accidents”. The infrared rays are transmitted by IR transmitter into driver’s eye. The eye reflects the transmitted infrared rays and these reflected rays are received by the IR receiver. If the eye is in open(blinking)status then the IR receiver output is low. If the eye is in close status (approximately 3 to 4 sec), the output of the IR receiver is high. The alarm is indicated.

**Keywords:** Driver Security, Sensors, IR Recievers, Eye Blink Sensor

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> POT HOLE DETECTION AND NOTIFICATION SYSTEM	<b>Project ID:</b> ECE_24	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Roads are the dominant means of transportation in India today. Regular maintenance of these roads is important as they are filled with unexpected hurdles such as potholes. These hurdles cause vehicle damage and also have caused a number of accidents in the past and should be given a thought about. This project is a cost-effective solution that provides timely alerts to the drivers regarding potholes. The proposed system can be divided into three sub-units: the sensing sub-unit, the server sub-unit and the user sub-unit. At the sensing sub-unit, an ultrasonic sensor is used to detect potholes, whose location coordinates are retrieved by the GPS receiver. This data is stored to the database using the GSM module, which is the sever sub-unit. At the user sub-unit a hardware module is set-up that provides timely alerts to the drivers regarding potholes. This information serves as a valuable source to the government authorities and the users

**Keywords:** ultra sonic sensor, GSM module

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> RESTAURANT ASSISTANCE USING ROBOTIC STEWARD	<b>Project ID:</b> ECE_25	
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**Project Execution Time:** In\_House





**Project Category/Area:** Application\_Oriented

**Abstract:** In today's world robotics technology is replacing manual work at a fast pace. On a typical day in a restaurant, the commonly faced issues are overcrowding, food being delivered late, taking incorrect orders, not being serviced in time which leads to customer dissatisfaction. This leads to bad customer ratings and overall impression of the hotel. These issues can be resolved by automating the entire process by using our robot. The reservations done online are verified by the robot in the restaurant. If prior reservations are not made then free tables are assigned. This robot can verify QR codes obtained on booking a table. These codes can be used to lead customers to their tables. This leads to efficient management of time and space. Robots will be used to automate the entire process in a restaurant. Orders will be placed using voice recognition technology. This cuts down on waiting times and ensures that the orders are handled correctly.

**Keywords:** Robot Steward, Restaurant, Raspberry pi, Arduino

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> REAL-TIME FACE RECOGNITION ON VIDEO ANALYTICS FOR ATTENDANCE MONITORING SYSTEM	<b>Project ID:</b> ECE_26	
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**Project Execution Time:** Industry

**Project Category/Area:** Industry\_Project

**Abstract:** The conventional method of taking attendance system is time taking and requires more effort. The number of employees and students expanding day-by-day has become an impeachable task for the institutes, colleges, and industries to maintain the attendance record of the employees and students. The chances of error and proxy in the traditional system of the attendance system are considerably high. In this project, we will be using Deep learning, which is one of the emerging technologies, which is used for efficient processing of vast amounts of data with distinct accuracy. The primary purpose is to identify multiple faces and to recognition Deep neural framework, which is implemented on the embedded GPU system. The proposed framework helps to segment the face in any background and detects the face of various features on the trained network and recognizes the face of the id and marks the attendance. After successful recognition, the system automatically updates the attendance in the database. The proposed system makes the current attendance management systems more efficient and reliable for its accuracy.

**Keywords:** Deep Learning, GPU, framework.



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> INTELLIGENT TRAFFIC LIGHT CONTROL USING IMAGE PROCESSING		<b>Project ID:</b> ECE_27
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**Project Execution Time:** In\_House



**Project Category/Area:** Environmental\_Societal

**Abstract:** As the problem of urban traffic congestion spreads, there is a pressing need for the introduction of advanced technology and equipment to improve the state-of-the-art of traffic control. Traffic problems nowadays are increasing because of the growing number of vehicles and the limited resources provided by current infrastructures. The simplest way for controlling a traffic light uses timer for each phase. Another way is to use electronic sensors in order to detect vehicles, and produce signal that cycles. We propose a system for controlling the traffic light by image processing. The system will detect vehicles through images instead of using electronic sensors embedded in the pavement. A camera will be installed alongside the traffic light. Say if there are four lanes (all lanes perpendicular to each other) it will capture image sequences in one particular lane. The image sequence will then be analysed using digital image processing for vehicle detection, and according to traffic conditions on the road traffic light can be controlled accordingly. Then the camera rotates to the next lane and same process repeats for all lanes. This is advantageous when compared to existing systems since in existing systems, decision is taken after camera captures pictures in all four directions, whereas in our proposed system, images of individual lanes are taken and according to the density of the traffic the timer is set.

**Keywords:** Image Processing, Traffic Light, Edge detection, Image matching

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Study of Communication System in Advanced Light Helicopter	<b>Project ID:</b> ECE_28	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** Abstract: The communication system in ALH is designed only to provide communication among the flight crew, between other helicopters and with the ATC. External jack is provided in the helicopter which is used to communicate with the ground crew only during the maintenance activities. But when the pilot or co-pilot wants to communicate with the ground crew during their flight within the range of 1 to 2 km, then it is not possible with the existing system. Thus to facilitate communication between ground and flight crew even during the flight there is a need to design a system called as “Ground Crew Communication System” and it uses the principle of walkie-talkie. The Ground Crew communication system works efficiently for 1 to 2 km range (mainly used during take-off and landing of the helicopters). Helicopters, due to their existing limited coverage communication system, have a strong need for satellite communication. Jet Propulsion Laboratory (JPL) under a contract with the Federal Aviation Administration (FAA) has been conducting studies for the development of low-cost, small-size, light-weight, real-time satellite communications specifically for the unique operational environment and requirements of helicopters. Due to the growth in technology we come across the satellite communication system as it can transmit disaster scene directly by a satellite. A ground relay is unnecessary and a prompt dispatch to any place is possible. The main requirements for the satellite communication system include, small size and light weight, continuous and effective communication link independent of the helicopter direction or position, transmitting power not to endanger the crew members on board and not to interface with other radio communication systems, axial radio and polarization characteristics to meet the regulated standards and positioning of the photographic scene. Thus HSCS has to be designed for disaster management and also to provide efficient communication services using helicopter.


**Keywords:** ALH, Ground crew communication system, HSCS

# **ELECTRICAL & ELECTRONICS ENGINEERING**

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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> HIGH FREQUENCY SMART INVERTER INCORPORATING SUPERCAPACITOR AND SOLAR MPPT	<b>Project ID:</b> EEE_1	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Keeping compactness and light weight as the important considerations, an inverter design is proposed. The inverter presented here is of the type of high frequency with two stages, with sine wave output, and is compatible with all the types of battery chemistry available in the market with integrated MPPT for solar battery charging. This inverter uses ferrite core transformer instead of traditional iron core transformers. Ferrite core transformers operate at high frequency in the order of kilohertz, they are also compact, have less weight and have greater efficiency, while iron core transformers operate in the order of hertz, are bulky and less efficient. Iron core transformers also produce humming noise. Apart from the ferrite core transformer, we have incorporated super-capacitors as it reduces the stress on the battery and thus increases the lifespan of the battery. It also provides the surge or extra power demand at the start of the high power loads. We have also added MPPT feature to the inverter which helps us to extract maximum power from the PV Cells and also helps to protect the battery from overcharging. The workability of the inverter is experimentally verified.

**Keywords:** MPPT, GFCI, Supercapacitors

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Retrofit of a Conventional Auto-rickshaw to an Electric Auto-rickshaw	<b>Project ID:</b> EEE_2	
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** We discuss about the numerous advantages that electric vehicles possess over conventional fuel combustion vehicles that employ fossil fuels to power them. We also propose the design of an electric auto-rickshaw by performing the retrofit of the already existing conventional auto-rickshaw by removing the mechanical drive-train and replacing it with an electric drive-train. The BLDC motor has been chosen due to its high efficiency, low maintenance and robust nature, after an extensive comparison with the other available motor options. The BLDC motor will be controlled by using hall sensors that help in determining the position of the rotor. The BLDC motor is fed using a PWM modulated inverter. This paper also deals with the design and simulation of a DC-DC buck converter that is used to step down the voltage to the necessary level required by the motor to run.

**Keywords:** BLDC motor, Drive-train, Electric vehicle, Induction motor drive, Pulse width modulation.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Machine Learning Based Sleep Monitoring	<b>Project ID:</b> EEE_3	
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**Project Execution Time:** In\_House





**Project Category/Area:** Industry\_Project

**Abstract:** It is fact that Humans spend one-third of their lives sleeping. Hence, monitoring of sleep is important because sleep accounts to one-third of our lives and also impacts the remaining two-third. Monitoring and tracking sleep plays an important role in diagnosing and treating sleep disorders. It also helps in maintaining a healthy lifestyle and recognizing sleep patterns and cycle of sleep. Deep Sleep parameters like NREM and REM sleep detection play a vital role in sleep monitoring and quality measurement. World Sleep Society statistics show that disorders such as insomnia, sleep apnea, and narcolepsy affect up to 45 percent of people, creating increased demand for home-based sleep monitoring system. Hence, the objective is to design a cost-effective and reliable sleep monitoring system that can give accurate sleep quality readings and can keep improving its accuracy through rigorous learning from user's data set.

**Keywords:** REM Sleep, Non-REM Sleep, Sleep Efficiency

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Solar powered portable electric vehicle charging station	<b>Project ID:</b> EEE_4	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Electrical vehicles (EV) are actually need of the hour in this drastically degrading environment. The government of India plans to have only e-vehicles in India by 2030. One of the important aspects of this transformation is having an approving charging infrastructure. The present power system could face huge instabilities with wide spread of EVs. This paper Electrical Vehicle charging station that uses hybrid power system. The solar energy is converted to electrical and used to charge the lead acid battery, which in turn charges the battery of the EVs connected to this station. When the energy from solar panels is not sufficient to meet the demands electricity from power grid is utilized. Electric Vehicle battery charger is a business of high future potential. Currently its worth is of billions of dollars, and supports millions of vehicles worldwide and is expected to grow exponentially in coming years. The need to provide a public charging service is essential. In order to make this more user friendly a set of facilities are attached along with this station like user authentication, LCD display, audio interaction, WIFI connectivity, cloud storage and thingspeak platform. They could be installed at : Hotels, clubs, Retail stores, railway stations, Shopping malls, Universities, Colleges , Airports etc.

**Keywords:** Dual power supply charging station, NODE MCU



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design & Development of Water Management System	<b>Project ID:</b> EEE_5	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Water pollution is one of the biggest threats for the green globalization. Water pollution affects human health by causing waterborne diseases. To prevent the water pollution, necessary steps are to be taken. First step is to estimate the water parameters like pH, turbidity, conductivity etc., as the variations in the values of these parameters point towards the presence of pollutants. In the present scenario, water parameters are detected by chemical tester laboratory test, where the testing equipment's are stationary and samples are provided to testing equipment's. Thus, it is a manual system with tedious process and is very time consuming. In order to minimize the time and to make the system automated, the testing equipment's can be placed in the river water and detection of pollution can be made remotely. To ensure the safe supply of drinking water, the quality should be monitored in real time for that purpose Arduino based water quality monitoring has been proposed. In this report, the design of Arduino based water quality monitoring system that monitors the quality of water in real time is presented. This system consists of different sensors which measures the water quality parameter such as pH, conductivity, muddiness of water, temperature. The measured values from the sensors are processed by microcontroller and the processed values are transmitted using IOT to the concerned authority.

**Keywords:** IOT, Sensors, ARM Controller, Cloud interface

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Automatic Brain Tumor Detection using MRI Images	<b>Project ID:</b> EEE_6	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Efficient early detection of Brain tumors enable effective therapy thereby increasing survival rates. Even with growing progress in medical technology, brain tumor detection is an extremely complex task. The segmentation, detection, and extraction of infected tumor area manually from magnetic resonance (MR) images are effective but is a tedious and time taking task performed by radiologist, which is based on their experience in the field. There are numerous automatic techniques which help in detection of brain tumor with higher degree of accuracy. However, the process of automatic detection and classification varies from technique to technique. In this project, we use techniques such as Fast Discrete Curvelet Decomposition, GLCM Feature Extraction, PNN -RBF Training and Classification, Brain structural analysis in order to detect the brain tumor region in the MRI image.

**Keywords:** Brain tumor detection, Image processing, PNN classifier

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> PROGNOSTICS HEALTH ASSESSMENT OF FUEL CELLS	<b>Project ID:</b> EEE_7	
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**Project Execution Time:** Industry



**Project Category/Area:** Reaearch\_Oriented

**Abstract:** With the breakthrough of applications of fuel cells around the corner, specifically in the automobile sector, there is a need to extend the useful life of fuel cells and maximize its use. This research project was carried out at Combustion, Gasification, and Propulsion Laboratory (CGPL) in the Indian Institute of Science (IISc) and is aimed towards helping and improving two distinct sectors with regards to fuel cells: the research community and the teaching sector. The objective of the project is to enable any researcher or company working on fuel cells to simulate the operation of fuel cells and conduct prognostics through our tool. The simulation of the operation of fuel cells is demonstrated through a website that has been developed and deployed. The tool employs multiple methods of simulations revolving around the polarization curve to ensure convenience for the end-user. The methodology for simulations uses empirical relations ranging from electrochemistry to thermodynamics which we have obtained by conducting experiments and studying the operation of fuel cells. The methodology of simulations improves on the current methodologies available on simulation of fuel cell operation. A methodology for prognostics is proposed which aims to analyse the operation of a fuel cell and predict its failure by using datasets obtained from experiments conducted at CGPL. A teaching kit has also been developed which is intended to be used as a laboratory tool. The kit simulates the exact operation of a fuel cell and is intended to be used as an alternative to a fuel cell which could prove to be expensive to purchase and use in a laboratory

**Keywords:** Fuel cells, Numerical model simulations, Prognostics, Fuel cell operation, Fuel cell performance, Online tool, Renewable Energy

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Solar Power based UPS		<b>Project ID:</b> EEE_8
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** This Project provides the development of a solar powered UPS in India's market as an alternative source of energy. We face unprecedented energy crisis in rural and suburban area. The problems become more severe during summers. However, winter in no different as there was still an average power outage of 3-4 hours every day. Those without generators and UPS faced tremendous problems in these outages. The prices of both continued to increase due to a sharp increase in their demand. We are not using solar UPS as their replacement but it can be used as backup energy during grid failure. This project consists of solar panel which consist solar cell which convert solar energy into electrical energy.

**Keywords:** Solar Energy, UPS

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND IMPLEMENTATION OF CONTROLLER AND CONVERTER SYSTEM FOR PV APPLICATIONS	<b>Project ID:</b> EEE_9	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** The solar charge controllers which are used to charge the batteries consists of DC-DC converters which are essential components in photovoltaic systems. There are wide variety of DC-DC converters which are used for different applications depending on their characteristics, but when it comes to battery charging applications generally transformer less converters are preferred as they are compact and suitable for low power applications. In the transformer less DC-DC converters there are different topologies, generally for battery charging applications and MPPT charge controllers the converters which has low output transients and fast response are preferred. In this project the design and simulation of buck-boost, zeta and SEPIC converters are done and the comparison of their transient responses are obtained based on which a particular convert is selected for the given application. And that converter is used for the design of the solar charge controller.

**Keywords:** buck-boost, zeta and SEPIC converters

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Smart City Based on IoT	<b>Project ID:</b> EEE_10	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Increasing population density in urban centers, demands suitable provision of services and infrastructure to meet the needs of city inhabitants, surrounding residents, workers and visitors. The utilization of information and communications technologies (ICT) to achieve this objective presents an opportunity for the development of smart cities, where city management and citizens are given access to a wealth of real time information about the urban environment upon which to base decisions, actions and future planning. This presents a framework for the realization of smart cities through the Internet of Things (IoT). The framework encompasses the complete urban information system, from the sensory level and networking support structure through to data management and cloud based integration of respective systems and services, and forms a transformational part of the existing cyber-physical system.

**Keywords:** Internet of things, Smart city, Hydroponics, Smart parking

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGN AND SIMULATION OF HIGH VOLTAGE PULSE POWER SOURCES	<b>Project ID:</b> EEE_11	
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**Project Execution Time:** In\_House




**Project Category/Area:** Application\_Oriented

**Abstract:** The increasing Research and Development in the field of High energy density devices like Microwave tubes, Lasers etc. have led to the development of various circuit models for the production of Pulsed power. Pulsed Power is a term used when stored energy is discharged as electrical energy into a load as a single or multiple short pulse of very high power and energy with a repetition rate that can be controlled. In this Project, various electrical pulse circuit configurations that are used in different applications have been analysed. The high-power pulses studied here are found to have an overall duration in the range of few nanoseconds to few microseconds

**Keywords:** Pulse repetition frequency, pulse duration, pulse electric field

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Two axis motion control with interpolation using PLC	<b>Project ID:</b> EEE_12
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** Abstract: This project is designed to implement two axis motion control with interpolation using PLC (Programmable Logic Controllers). Interpolation is a technique of finding new data points within the range of known data points. High precision, repeatability and direction-independent are the three important factors to evaluate the performance of two axis motion control with Interpolation. To achieve this, PLC based algorithm is implemented, which avoids complexity on the motion computation with skillful combination of the accumulator and multiplier-based hardware structure.

**Keywords:** Two -axis motion , Interpolation, PLC



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> VEHICLE MONITORING SYSTEM USING IoT & AUTOMATIC STOP – START SYSTEM	<b>Project ID:</b> EEE_13	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Electric vehicles are being widely used in recent times and thus their efficient operation mainly concerns when it is being manufactured. Thus a vehicle has to be monitored on regular intervals of time and hence their life and efficiency has to be increased. Automatic Stop - Start System is a new energy-saving product, which can obtain a good fuel economy and reduce emissions for the car. The work principle and mechanical structure are analyzed in this project. The key technologies of idle-stop-start system are analyzed based on this. Then the idle-stop-start system is modeled and analyzed. The project aims to develop an Automatic Stop – Start System for the Electric vehicle to save the energy consumed by the vehicle. This method helps in increasing the efficiency of the EV and the life of various components such as Batteries, Power electronic components increases. The project also aims to build a system which can monitor various parameters such as Voltage, Speed, Temperature, Battery charge level, etc of an Electric vehicle (EV). It helps in assisting the owner to frequently checking the status of the vehicle and maintaining the vehicle whenever there are changes in the operating conditions of the vehicle. This project presents an implementation of a Wireless Internet of Things (IoT) system applied to the traction motor drive condition monitoring in electric vehicles (EVs). The design and testing of the prototype using an RL78 microcontroller module to acquire battery's voltage, current, and temperature information for the motor condition monitoring application is presented.

**Keywords:** Electric Vehicle, IoT, RL78 microcontroller

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> FUEL LEVEL INDICATION AND MILEAGE CALCULATOR USING IOT	<b>Project ID:</b> EEE_14
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Digital technologies shape our everyday lives for calculating everything. In this project we proposed to implement a digital way to view fuel target in a vehicle. The simple aspect of this work is to check whether the fuel filled in the vehicle is appropriate to the given price or not, as for the first two pumps the tank is filled with fuel with air and then for the rest of the pumps, tank is filled with fuel. The level of the fuel is calculated with the help of float sensor. When people are moving in the highways or in the hills, they don't know how long will that vehicle will travel. So, we are embedding the mileage calculation with the level detection. With the help of the distance which is displayed in the LCD, the person can aware about how far that vehicle will move further.

**Keywords:** IoT,

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> EXPLINER ROBOT FOR INSPECTION OF HIGH VOLTAGE TRANSMISSION LINES	<b>Project ID:</b> EEE_15	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Transmission line inspection has usually been a high risk and expensive work. Hazardous works so as to damage the operator as properly as recurring that require specific handling. India relies mostly on electric energy structures for commercial as properly as home utilization. Unfortunately, the electrical energy distribution structures are inefficient causing wastage of about 30% at some stage in transmission from the power plant to the end-users. Our paper describes the introduction of a mobile tool designed to move alongside the high-strength transmission lines continuously analyzing various parameters including energy loss at some stage in the transmission of power from the generation sites to the houses of the consumers. In case of any malfunctioning or abnormality, the tool intimates the people responsible through IoT. Parameters like GPS, temperature, and distance are measured and solar panel is employed by coupling with the battery making the tool environment-friendly. The content supplied over here gives the improvement of a teleoperated Expliner robot designed for preventive renovation of high-voltage electric powered transmission. Automated transmission line examination and fault revealing is proposed to perform through image processing and sensory data acquisition.

**Keywords:** Tele-Operated, IOT (Internet of things), Expliner

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> COMPARATIVE STUDY OF VARIABLE FREQUENCY DRIVE TO RUN AN AC INDUCTION MOTOR USING SYNCHRONIZED AND UNSYNCHRONIZED PWM GENERATOR WITH AND WITHOUT FILTER	<b>Project ID:</b> EEE_16	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** This comparative study has been performed to check the most efficient and smooth working of an AC induction motor by reducing the total harmonic distortion by using different methods in variable frequency drive. Hence the results are obtained using the simulation of various methods and observed the best technique for direct torque control (DTC) of the machine. This paper is presented based on the results obtained using MATLAB simulation software. There are various methods for speed control of induction motors. Our project specifically describes three methods: a. 3-phase, 2-Level variable frequency drive. b. 3-phase, 3-Level variable frequency drive with unsynchronized mode of operation of PWM generator. c. 3-phase, 3-Level variable frequency drive with synchronized mode of operation of PWM generator. Speed control using variable frequency. The proposed system is a MATLAB Simulink model, which is an open loop model designed to achieve desired speed Control of a three-phase induction motor by varying its frequency. The Simulink model has four main blocks, namely the inverter, synchronous machine and current Hysteresis control. For accuracy of output results and simplicity, we have used dq to abc Transformation block and sin function block. The inverter is comprised of six insulated- gate Bipolar transistors (IGBTs), which are fired by gate pulses generated by current hysteresis Block. The inverter generates variable frequency and variable voltage output, which is given to Motor terminals. The project presents the working principle of variable frequency drive (VFD), its performance, and the use of Pulse Width Modulation (PWM) in a three-phase inverter to Control the frequency and thus the speed. The proposed method conformed to performance Predictions and delivered the desired outputs.

**Keywords:** PWM generator, Asynchronous machine

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Real Time Forest Flora Monitoring System	<b>Project ID:</b> EEE_17	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** A new system to monitor the forest floor is proposed which entails the use of a UAV (Unmanned Aerial Vehicle) equipped with a dedicated set of systems and sub-systems that is used to obtain data from the forest in the form of images and other electrical signals that is later processed to infer important metrics about the same. The information obtained at the end has to be stored and constantly updated over time in the form of a database.


**Keywords:** UAV




**INFORMATION SCIENCE  
& ENGINEERING**

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<b>Project Title:</b> DESCRIPTIVE ONLINE EXAMINATION SYSTEM		<b>Project ID:</b> ISE_1
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented





**Abstract:** The aim of the project is to develop a system capable of conducting examination online which prevents the leakage of question paper and makes whole process online without any help of manual work. Defining Examination paper according to syllabus and delivering printed question paper at multiple examination center has been huge task of administration and logistics. During each process there is manual intervention and possibility of leakage of question paper to outside world increases. Technology can help to simplify this process up-to great extent. Using the Descriptive Online Examination System technology, we will be able to conduct the examination process without any manual intervention. Everything inside this technology is Digital and the whole document is in an encrypted format with secure locking. Digital process eliminates complexity of managing examination process and also able to save significant cost by implementation of smart question paper and answer script and its delivery process using the technology. Here the question paper is uploaded to the Main Server in which the document format is encrypted and then sent to the College Server where all the User devices are connected to this server. Each User's Wi-Fi MAC Address is registered with the College Server. At the specified time, On User's device, the question paper will be displayed and he/she can start answering of it. After the time limit gets over, automatically the device saves the data and stores it to the server and then the device turns off. Descriptive Online Examination System is a Smart way of conducting the examination. This process allows Distributing Question paper and answering them through Digital Technologies for normal exams. The Process is carried out using servers and android applications. A Descriptive Online Examination System System is an application that allows an institution to conduct examination via the Servers (with WiFi-LAN). This system makes it easier for examiners to conduct exams and collate results. Today, most institutions are conducting their exams online to eliminate the bottlenecks associated with pen and paper type of examination. Technology has supported Descriptive Online Examination Systems successfully for a number of years, and has progressively enhanced the process over the years to have room for more students and ensure a smoother examination process.

**Keywords:** EMS, QP



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Condition Monitoring of Automatic Sprinkler System Using Feedback Mechanism	<b>Project ID:</b> ISE_2	
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**Project Execution Time:** In\_House




**Project Category/Area:** Environmental\_Societal

**Abstract:** India's major supply of financial gain is from the agriculture sector and 70% of the population rely upon agriculture. In Asian nations, most of the irrigation systems are opened manually. These antique techniques are replaced with semi-automated and automatic techniques. In India, traditional irrigation techniques, that is operated by hand are used widely because of its low price. There are different kinds of ways for the irrigating field. The automatic irrigation system isn't thus rife here. The proposed system permits versatile management of mechanical device valves for releasing water to fields and data concerning the current standing and quantity of water discharged that is distributed to the user by app through the online Server which acts as information collector of this method. A mobile application is employed to indicate the action performed within the garden. The proposed solution provides simple and versatile management of irrigation methods and provides optimum water consumption. The shrewd sprinkler water system innovation depends on real water need. This framework can be modified to naturally begin a set time and day of consistently. Little versatile sprinklers can be incidentally positioned on gardens if extra watering is required or if no perpetual framework is set up. The framework has been effectively picked, actualized, and worked in the field. The framework setup has been changed to meet the water necessities as per the yield development stages. Using IoT for water system can be stretched out further to different exercises in cultivating. For example, dairy farming, fire discovery, and atmosphere control. This would limit human intervention in cultivating exercises.

**Keywords:** Sprinkler system, IoT, automatic irrigation

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> RECOGNISING THE WEEDS USING MACHINE LEARNING ALGORITHMS	<b>Project ID:</b> ISE_3	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** The aim of the project is to develop a system capable of finding the weeds in the given field images and to highlight them so that it will be done without the need of the human work. Weed detection is a process where we detect the weeds in the given farm or any field where we recognize the weeds from the crop. The weed is actually the plant that grows in an unwanted places like in garden and fields where it does not allow the crop to grow freely by reducing the space of growth for them. With the machine learning algorithms we can find the weeds in the given image and classify them from the normal crop. The weeds can be detected using the machine learning algorithms like the convolutional neural network. We can do this by taking the data sets that we have and by training the system with these dataset and then using the same for finding out the weeds in the given image. For example, if we consider an images of the rice plant, the other plants than the rice plant will become the weeds like the plants of wheat in that case which reduce the efficiency of the rice plant. Weed detection systems are an important solution to one of the major and existing problem that is the un-mechanized weed control where it marks an introduction of the mechanized system for the weed detection and the weed control. The weed detection may also help in the less use of the herbicide as it can be used only there where the weeds are detected and to reduce the quantity of the herbicide that is used by the crop. It can also make a basis for many of the systems where we need to eliminate the human power needed to remove the weeds which can be done by interfacing the automated robot to remove the weeds wherever the weeds have been detected by these systems. This system can be conveniently used as this will be the first step of any system that works on removing the weeds or in an automated systems.

**Keywords:** machine learning, Weed detection, automated systems.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Smart Surveillance System using Deep Learning	<b>Project ID:</b> ISE_4
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Deep learning is the segment of artificial intelligence which is involved with imitating the learning approach that human beings utilize to get some different types of knowledge. Analysing videos, a part of deep learning is one of the most basic problems of computer vision and multi-media content analysis for at least 20 years. The job is very challenging as the video contains a lot of information with large differences and difficulties. Human supervision is still required in all surveillance systems. New advancement in computer vision which is observed as an important trend in video surveillance leads to dramatic efficiency gains. We propose a CCTV based theft detection along with tracking of thieves. We use image processing to detect theft and motion of thieves in CCTV footage, without the use of sensors. This system concentrates on object detection. The security personnel can be notified about the suspicious individual committing burglary using Real-time analysis of the movement of any human from CCTV footage and thus gives a chance to avert the same. The aim of this study involves constructing a system to recognize on going behaviour that is performed by a discriminated human subject for each bounding box. A unified stream framework is proposed by concatenating the two following deep learning models: a CNN architecture for posture recognition and a recurrent neural network (RNN) architecture for motion dynamics feature extraction.

**Keywords:** Visual Saliency, Dominant Behavioral Detection, Predictive Curiosity, Anomaly Detection, Deep Learning, Computer Vision

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> MACHINE LEARNING BASED TRAFFIC CONGESTION PREDICTION	<b>Project ID:</b> ISE_5	
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**Project Execution Time:** In\_House





**Project Category/Area:** Application\_Oriented

**Abstract:** In a smart city, the road would be equipped with a traffic flow analysis sensor. Therefore, free flow of road traffic is necessary for faster connectivity and transport systems. Traffic congestion affects many cities around the world, causing a number of problems, such as fuel waste, increased levels of stress, delayed deliveries, and monetary losses. As a result, accurate prediction of traffic jams is urgently needed to minimize those losses. Yet forecasting is a major challenge to produce promising results in urban networks for vibrant and unpredictable traffic flows. This research project proposes a new model of traffic jam prediction based on previous traffic results. Classification of online traffic continues to be of long-term interest to the networking community. This acts as feedback for realistic approaches such as network control, quality of service and intrusion detection. In this project, we present a machine-learning approach that uses a decision tree to precisely classify internet traffic. Accuracy is not our only concern; it is also extremely critical in terms of latency and throughput. Congestion is both burdensome and agonizing. India is the second largest road network in the world. The national highways cover almost 97,991 km of a total length of 5.4 million km of the road network. The main cause of traffic congestion is the large number of vehicles caused by growth and economic development. In the event of congestion, average urban residents spend more than 10 hours a week driving. Sensors will be designed to measure traffic flow on smart city roads, and there are still few traffic prediction approaches using neural networks and other prediction models that are not as effective for many real-world applications. Thus, this paper proposes a solution for traffic analysis using a random forest algorithm that would select only part of the data to be analyzed as two-thirds of all data and predict traffic congestion on a specific path, and would notify vehicles intending to move along that specific path well in advance. Precise information on traffic flows therefore allow road users to move quickly and safely.

**Keywords:** Traffic congestion, Machine learning, IOT

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> GESTURE RECOGNITION SYSTEM FOR DECENTRALIZED SIGN LANGUAGE	<b>Project ID:</b> ISE_6	
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Gesture recognition is a technology which is can be used to identify what kind of movements a person is making in real time. This technology uses a plethora of methods in the backdrop to make it work. Also there are many design architectures to make it work. This technology of identifying and classifying of different gestures has a huge application in sign language recognition, where a persons with different needs sign their language to communicate. Thisbparadigm of problem has its root in the communication gap. For abled person to communicate to a differently abled one, he must know signing of gestures. This problem dwells even deep when the gestures being used is of a non standardized format/ decentralized sign language, an indigenously made language with a few users. This might happen for kids who never went to a signing school and now has to interact with the world in his scriptures of signs that he complied with his family to communicate with them only and a few others. While there have been multiple approaches to tackle this situation, this project tries to derive a new perspective to it. All the existing sign language recognition systems which we have at disposal right now have one of the two or both major flaws; they are, number one being a device centric approach which makes the user to wear some kind of peripheral attached to processing units which senses the gestures, hence constraining the user in feasibility and pragmatically and number second being devised to sense only a limited set of vocabulary, that is usually being able to recognise only one or some of the standard sign languages only. The new perspective this project thrives on is to use a restrain free environment and a limitless sense of vocabulary. These new perspectives drive the project to use underlying architecture as a Deep Convolution neural network with transfer learning to set a sense of limitlessness on vocabulary and using just a camera module to classify gestures. We believe these new perspective and choice of architecture will allow us to perform better in this domain than the former epitomes.

**Keywords:** Sign Language, Gesture Recognition, ASL, Decentralized Sign Language, CNN

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> IOT BASED SYSTEM FOR CROP PREDICTION	<b>Project ID:</b> ISE_7	
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**Project Execution Time:** In\_House


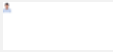


**Project Category/Area:** Application\_Oriented

**Abstract:** As new technologies has been introduced and utilized in modern world, there is a need to bring advancement in the field of agriculture also. Various Researches have been undergone to improve crop cultivation and have been widely used. In order to improve the crop productivity efficiently, it is necessary to monitor the environmental conditions in and around the field. The parameters has to be properly monitored to enhance the yield are soil characteristics, weather conditions, moisture, temperature, etc. Internet of Things (IOT) is being used in several real time applications. Introduction of IOT along with the sensor network in agriculture refurbish the traditional way of farming. Online crop monitoring using IOT helps the farmers to stay connected to his field from anywhere and anytime. India being an agricultural country, its economy predominantly depends on agriculture yield growth and allied agro industry products. In India, agriculture is largely influenced by rainwater which is highly unpredictable. Agriculture growth also depends on diverse soil parameters, namely Nitrogen, Phosphorus, Potassium, Crop rotation, Soil moisture, Surface temperature and also on weather aspects which include temperature, rainfall, etc. India now is rapidly progressing towards technical development. Thus, technology will prove to be beneficial to agriculture which will increase crop productivity resulting in better yields to the farmer. The proposed project provides a solution for Smart Agriculture by monitoring the agricultural field which can assist the farmers in increasing productivity to a great extent. This work presents a system, in form of an android based application, which uses data analytics techniques in order to predict the most profitable crop in the current weather and soil conditions

**Keywords:** Crop yield, crop type, prediction, IOT

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> COGNITIVE BASED SECURITY ENHANCEMENT OF AADHAR DATA USING IMAGE STEGANOGRAPHY	<b>Project ID:</b> ISE_8	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The aim of the project is to develop a system capable of storing the biometrics of Aadhar card holders securely in the database by encrypting and then embedding the biometrics data of the card holder with the photo of him/her. Embedding Data using Cognitive technique refers to the techniques and processes used to secure the biometric images of the Aadhar card holder in the database which can be used for purposes such as ID proof, bank transactions and KYC linkage. Steganography is method of securing data in which, data hidden within data. Steganography is an encryption technique that can be used along with cryptography as an extra-secure method in which to protect data. Aadhar information in India is one of the most copious. Securing large amount of data is one of the most challenging tasks that our country is facing. Because of the vast usage of Aadhar information across the country, it can lead to a lot of data misuse. Thought there has been a lot of work done over securing data, it has been failing due to the fact that single algorithms or methods which are used, can be easily exposed to attackers if there is a single vulnerability in the system and hence crash the system. Also storing multiple attributes increase the data overhead for single users thus resulting in increase in storage size. By embedding the biometric data using cognitive methods, it is possible to store data securely by using multiple algorithms feasible to each card holder according to their photo. For example, the Aadhar data of three people are stored in three different ways using different algorithms. If an attacker is able to decode the data of one user, he/she will not be able to decode the data of the other two users as they use different algorithms. At any rate, steganography protects from pirating copyrighted materials as well as aiding in unauthorized viewing. In this project, we store the Aadhar biometric data in the photo of the Aadhar card holder.

**Keywords:** Cognitive Steganography, Aadhar data, Biometric, Information Security

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SECURITY ENHANCEMENT IN IMAGE STEGANOGRAPHY USING GENERATIVE ADVERSARIAL NETWORKS	<b>Project ID:</b> ISE_9	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented



**Abstract:** The technique of concealing information within photos, videos, music etc. is called image steganography. Steganography excels in that it does not disclose the presence of any data as opposed to other methods such as cryptology which only try to prevent reading the said data. A major factor in assessing the steganography algorithms is its security. Steganography has subsequently earned remarkable ground in the drawn-out battle with steganalysis. Steganography must be able to resist identification by steganalysis algorithms in order to boost the reliability of image steganography. Conventional steganography methods embed secret data into an image, which eventually leaves a sign of alteration that can be detected by increasingly propelled AI-based steganalysis algorithms. Within this project, we suggest a method for concealing secret information within photos utilizing generative adversarial networks. This is planned for the side-stepping identification of current steganalysis tools and the achievement of better yields. It is speculated that this technique has a deeply reliable extraction of data and a clear potential to challenge best-in - class steganalysis measurements by producing higher performing and increasingly stable payloads.

**Keywords:** Image Steganography, Generative Adversarial Networks, Information Security, Artificial Intelligence



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> VR integration in e-commerce platform	<b>Project ID:</b> ISE_10	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** WebVR is a JavaScript API that makes use of VR devices your users have — such as a Daydream Headset and Pixel phone — to create fully immersive 3D experiences in your browser. Integrating current ecommerce website environment in futuristic virtual reality environment. This project focuses on combining VR and ecommerce platform together in a website to provide users real life retail store experience with the help of virtual reality. As Ecommerce sector is booming now a days. So we came up with idea of integrating Virtual Reality in Ecommerce store where a person can get accurate description and size of object they are going to purchase. We are going to setup our project in such a way that user can interact with the objects via a click get the description of the product and also have option of adding product to the cart. On our checkout counter we are going to display all the products that user has added to the cart. We are also going to display the total amount in our cart counter so user can know how much they have to pay. As it is Virtual Reality based we can have 360 degree head motion to look around the store. We came up with this idea so user can have real life like experience of store at their home. It can server as source of entertainment also and provide much more flexibility as compared to the ecommerce stores we have right now. In future most of the people will be able to buy Virtual Reality Headset. Once it is available to most of the people it can serve as source of business also

**Keywords:** VR, webVR

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Malicious URL Detection using Extreme Gradient Boosting technique		<b>Project ID:</b> ISE_11
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Web assumes an imperative part in the today's reality which motivates unauthorized access to the information, internet is growing rapidly day by day which motivates the number of malware softwares. Malicious is a virus in which intentionally interrupting the user (or) accessing the personal information as a unauthorized user. Malware is a software which disrupts (or) damages to a computer system. Any one wants to search a file (or) any website they search with the help of URL name , In the address space bar give the URL name it will take you to the particular page (or) website Malicious websites are the main backbone and cornerstone for all the internet criminal activities,the danger of these sites may damage the users information we need to protect the end users from visiting this sites. Pernicious sites cover a scope of various endeavor which are dangerous to visit that is the reason distinctive sorts of noxious destinations apportion different dangers to clients. Malicious connections are military unit utilized by the aggressors to control the PC framework, which can be utilized to execute the violations, for example, spamming, phishing. Malicious links are used by the attackers to acquire the control of computer system, The increasing level of cybercrimes have required the necessity of characterization and distinguishing proof, To recognize such violations a URL grouping and ID model is proposed in light of the extreme gradient boosting .

**Keywords:** URL,PC,GB

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Student Academic Performance Analysis Using RPA	<b>Project ID:</b> ISE_12
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** Most of the educational institution have a manual process of analyzing student data to arrive at a proper decision about the student performance. To address the manual process of extraction and reduce the manpower of extraction and to reduce the manpower involved, we attempted to use RPA (Robotic Process Automation) which generates the reports and automates the entire process of data extraction and report generation and building the logic is per the end user requirement. We are using automation anywhere framework to design the software bot which does the same effectively when compared to manual process. This has always been an extensive process requiring time and manpower in abundance and the resultant reports prove to be insufficient in terms of the data required to arrive at a decision. Student Academic Performance Analysis is the act of collecting data through the extraction process of required data. It is done in order to understand the quality and quantity of students that are performing and categorized the same for further study as well as to conduct analysis of the skill set in order to categorize them on the basis of the improvement required to enhance the productivity of the current as well as future students.

**Keywords:** RPA, productivity, Performance Analysis

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> An Approach to Smart Street Using IOT Application		<b>Project ID:</b> ISE_13
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** The primary aim of smart street lights system is to conserve electricity by reducing the wastage of electricity which in turn helps in reducing the manpower. Street lights are often lit up all night even when unnecessary i.e. when no one is around which wastes huge amount of electricity. Electricity which can be used productively elsewhere. In a manual street light system, the street lights are switched on with full intensity from sunset to sunrise. There is no variation in intensity even when it is not needed. Hence electricity is wasted. This can be avoided by installing a smart street lighting system which can detect when to increase the intensity or completely turn off the lights. This can be achieved with the help of motion detectors which can detect any moving objects like cars, people or animals. Our smart street system can also detect flooding of streets during monsoon season with the help of an ultrasonic sensor installed with the Arduino. With the help of a Wi-Fi module, the message can be sent regarding the flooding of certain streets as detected by the ultrasonic sensor, to the concerned authorities. The authorities will then direct the traffic in that area as needed. Our system can also detect harmful gases with the help of a sensor. The system is also equipped with a temperature and humidity sensor which sends real-time data regarding as such. Smart street lights can also serve many other purposes. This system will also be equipped with a depth sensor which can detect flooding in the streets and send data regarding this to a server which can in turn warn the vehicles intending to travel through that area. This would help in preventing accidents.

**Keywords:** Internet of Things, Temperature and Humidity Sensor, Light Dependent Resistor, MQ7 gas sensor, ultrasonic sensor, ESP WIFI module

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> FOOD WASTAGE MINIMIZATION SOLUTION		<b>Project ID:</b> ISE_14
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**Project Category/Area:** Environmental\_Societal

**Abstract:** India has a population of 1.3 billion. Out of this, a whopping 190.7 million people are undernourished- which implies that around 14.5 % of the population go hungry every day. It is important to understand that this is not because of the lack of food being produced either, but a consequence of supply chains not able to reach these people, as well as large amounts of food going to waste in restaurants, residencies, and celebrations. Currently there are a few Voluntary/Non-Governmental Organizations trying to spread awareness about this and reduce food wastage by going and collecting them voluntarily. These organizations get frequent calls from Restaurants, Celebrations, House Parties etc. to pick up any excess or fresh food. They should contact these volunteers and find out if they are available to pick up the food. Once the set of volunteers are identified, they are given the location of the nearest identified clusters where the food can be served. The drawbacks here are that the process of calling and identifying the available volunteers takes up around 30 minutes to 2 hours. Beyond which the food may get spoilt or thrown away. As citizens of a socialist country, it is our duty to help the needy in any way we can. With the advancement of technology, it is now possible to minimize the wastage of food that occurs as well as provide the same to the underprivileged. We start the same by providing a platform i.e. an application for those with the capacity to donate and those that can assist distribute said donations to donees. With use of modern technology, we aim to remove the miscommunication, automate time constraint management, and minimize the distance required. Hunger-saviour application is achieved through graphical user interface which makes it easy and convenient for donors and volunteers to use it. Purpose of this app is to bridge the gap among donors, volunteers and clusters(slums). This project also highlights an underlying problem in the food industry since attention is not paid to food wastage. Through this project we shall be able to make use of the leftover food and donate it to the needy ones.

**Keywords:** Hunger-saviour, donor, volunteers and clusters

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> INTELLIGENT MEDICINE BOX FOR MEDICATION MANAGEMENT USING IOT	<b>Project ID:</b> ISE_15	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Aging populations and the rising incidence of chronic disease consume a disproportionate amount of healthcare resources. In the World, about 75% of healthcare dollars go to chronic disease care and two out of every three Medicare recipients suffer from at least two chronic diseases. More than 40% of world population suffers from chronic conditions, often with no cure in sight, which can get hugely expensive. Once a patient falls prey to a chronic disease, the need for continuous health monitoring becomes more important than in prevention and wellness. A number of device makers and other players are aiming to tackle this challenge through integrating the relevant streams of data needed to accurately monitor the health of a patient with a given condition. Health IoT thus helps the hospital authorities to have continuous monitoring on the patients as well as it reminds the patient to have the medicines intime. So the doctor can have direct view over his patients by this. Thus the medication procedures can be shifted from hospital centric to home centric. Earlier the medicine box proposed with Ultrasonic sensors, IR sensors and Weight based sensors. These sensors may have less reliability because of ambient light and improper calibration problems. Our system includes a featured medicine box which is wirelessly connected to the hospital administration. Hospital administration monitors the routine details through a webpage which is managed at the hospital side. An android application is installed on the patient's smart phone. Medicine box is provided with different compartments. An LED on top of each compartment denotes the correct box. Whenever patient opens a wrong compartment, a buzzer will get activated with the help of Arduino. A Wi-Fi shield is attached to the Arduino board and this Arduino microcontroller picks up the data and sends it through ESP8266 Wi-Fi module which automatically updates these details to the hospital webpage.

**Keywords:** Health Monitoring, IoT, Madicine Box

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> PROJECT TITLE: “DESIGN OF NOVEL MACHINE LEARNING ALGORITHM FOR PREDICTING JOB GRATIFICATION AND EMPLOYEE ATTRITION”	<b>Project ID:</b> ISE_16
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** Employee turnover imposes costs on the organization. The employee has to be replaced and the new employee trained. The quit may also cause significant and costly disruptions to the production process. This provides clear incentives for the firm to prevent quits or, at least, to be able to predict when and where quits can be expected. The recent increase in the technological capacity to gather large magnitude of data and analyse it has changed the way in which decision makers use them to decide on making the optimal decision. Employee attrition very similar to customer churn is an important and deciding factor affecting the revenue and success of the company. To avoid this problem, many companies at the moment are taking guide via machine learning strategies to expect the employee churn/attrition. In this project we are analysing data from past and present using different classification like SVM, Random forest (RF), Decision tree (DT), Logistic Regression (LR) and an Ensemble model(EM) to come up with better predictive model for the dataset present. Through this we are hoping to help the company to predict employee churn and take effective measures to retain the employees and improve their economy loss due to the loss of valuable employees.

**Keywords:** Decision Tree(DT),Random Forest(RF),Logistic Regression(LR)

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> “DRIVER DROWSINESS DETECTION AND ALERT SYSTEM”		<b>Project ID:</b> ISE_17
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** In recent years, an increase in the demand for modern transportation necessitates a faster car-parc growth. At present, the automobile is an essential mode of transportation for people. Driver drowsiness is a significant factor in the increasing number of accidents on today’s roads and has been extensively accepted. OpenCV technology employ the movement of the driver’s eyes and position of the driver’s head to determine the level of their fatigue. Image Capture Utilizing a web camera exhibited inside the vehicle we can get the picture of the driver. Notwithstanding the manner in which that the camera makes a video cut, we have to apply the calculation on each edge of the video stream to get the edges for the further procedure. Partitioning into Frames It is figured out how to get the consistent situation where video is recorded and should be readied. Be that as it may, the video isn't which is utilized simultaneously so it is changed over into picture. Hereafter the video must be partitioned into edges for exploring. Face Recognition In this stage it is recognized that the region containing the quintessence of the driver. A predefined count is for area of face in each packaging. By face acknowledgment we infer that finding the face in an edge or by the day's end finding zone of facial characters through a kind of advancement with the use of PC. The packaging may be any subjective packaging. Simply facial related structures or features are recognized and all others sorts of articles like structures, tree, bodies are ignored. Eye Detection After acknowledgment of face eye ought to be distinguished for further taking care of. In the methodology eye is the decision parameter for finding the state of driver. Driver drowsiness detection is a car safety technology which helps prevent accidents caused by the driver getting drowsy. Drowsiness influences mental alertness, decreasing an individual’s capability to handle a vehicle safely and expanding the possibility of a human mistakes that could lead to deaths and injuries. Furthermore, it has been indicated to slow response time, decreases awareness, and impairs judgment.

**Keywords:** Drowsiness Detection, Eye Aspect Ratio; Mouth Aspect Ratio; Facial Landmark.



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> “PREDICTION OF EMPLOYABILITY OF ENGINEERING GRADUATES”	<b>Project ID:</b> ISE_18	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The ‘employability’ of a student has been defined as whether the student is capable of getting an on campus placement offered in VII and VIII semesters of engineering. The employability prediction is still in a nascent state. The term “Employability” still has no precise definition. It can be described in many ways like the ability to secure a job, getting a job within a specified time period after graduating, it may be the ability to skill map oneself according to the job need, or the willingness of the student to extend the graduate learning at work . The major application of this project is to check if the student is employable or not, and take a respective step towards making the student employable. It can be used in different colleges where students get placed just by changing the dataset. Database Fills the form Employable (Yes/No) Field to improve in order to become employable. The employability can be checked in prior to two semesters, which brings an awareness as to in which field the student should develop. This project undergoes comparative analysis and concludes which algorithm is best suited for employability prediction with greater accuracy and easy interpretation. In this project, two streams of engineering that is Information Science and Computer Science datasets have been taken into consideration. This project has taken employability as securing a job while on campus i.e. while students are in the seventh semester and get placement offers from companies. Real data of students for three academic years are used to predict. Various algorithms of Bayesian Network, Gradient Boosting, Random Forest and Decision Tree have been used to build the classification model for graduate employability.

**Keywords:** Employability, Classification algorithms, Performance analysis

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ExypnoSteganos	<b>Project ID:</b> ISE_19	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** With the ever-rising threats to security, the industry is always in search of safer communication techniques. Encryption is an option but, it has been shown in various studies that encryption gives a false sense of security. One of the most important pillars of any security model is Data Integrity which is also not ensured by encryption. The US Department Of Defence says any systems security can be modeled around three major concepts, Confidentiality, Availability, and Integrity. We try to reduce the gaps in these concepts by developing a Deep Learning based Steganography. Steganography is the art of safe communication, hiding in plain sight. Steganography is not a new idea, in fact, it was first devised as a safe communication technique by the ancient Greeks. To achieve a state of the art steganography, we believe that data compression has to be at its core. In steganography, there are three different files namely cover file, secret file, and hidden file. The cover file is the carrier file that carries the secret. The secret file is the file to be hidden. The hidden file is the output file carrier file with an encoded secret file. To achieve the required level of compression we deploy a fairly easy to implement deep learning model. The model is an Autoencoder with Convolutional Neural Network as a building block. Autoencoding neural networks have two parts called encoder and decoder which are asymmetrical copies of each other. The system uses 3 models being trained simultaneously. In this paper, we have shown that it is possible to encode data efficiently to solve major problems of steganography. The deep learning technique not only compresses the secret file but also learn how to efficiently hide the compressed data in the cover file. We have also shown that this technique does work for any file type not just images and audio. For training images model random pictures from ImageNet and CalTech256 datasets were used. For training the audio model random audio files were taken from UrbanSounds8K and VIVOS datasets. For training video model random video files were taken from VIRAT and YouTube 8M datasets. The technique also passes all major steganalysis methods to detect if the file has any steganographic data hidden. We try to ensure the integrity of the secret file is withheld after the whole process.

**Keywords:** Steganography, Deep learning, CNN, autoencoder


# **MASTER OF COMPUTER APPLICATIONS**


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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> A Data Mining Based Model for Detection of Fraudulent Behavior in Water Consumption	<b>Project ID:</b> MCA_1	
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**Project Execution Time:** Industry


**Project Category/Area:** Environmental\_Societal

**Abstract:** Fraudulent behaviour in drinking water consumption is a significant problem facing water supplying companies and agencies. This behaviour results in a massive loss of income and forms the highest percentage of non-technical loss. Finding efficient measurements for detecting fraudulent activities has been an active research area in recent years. Intelligent data mining techniques can help water supplying companies to detect these fraudulent activities to reduce such losses. This research explores the use of two classification techniques (SVM and KNN) to detect suspicious fraud water customers. The SVM based approach uses customer load profile attributes to expose abnormal behaviour that is known to be correlated with non-technical loss activities.

**Keywords:** Fraudulent behavior, SVM, KNN, classification, water consumption.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Distinctive Operator Including Triggers and Resources	<b>Project ID:</b> MCA_2
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** The required retentions that are needed different types of business perceptions are undertaken by the organization will be provided with the help of the system automation cannibals which will be included with different types of Trigger. All types of references that have required for the digital distribution and workability will be provided to the users so that the system can accomplish multiple types of standardized task, which includes variation of client related processes and incident. Accountability and supervision for the process engineering related to the corporate client are a much-needed requirement for the institutional organizations to have a systematic and improved response system. As the response processing will differ from the association, we have to provide automated rule customization where the command system can be navigated and synchronized as the requirement arises. The philosophies for different channel working consideration can easily be maintained and organized with the help of our system as it will provide all the explorative understanding in respect to different working style and strategy where in a very cost-effective way the design can be achieved.

**Keywords:** Triggers, Resources, Automation, Business Intelligence, Agents, Content Extraction, Incidence and Engagements

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Analysis and Detection of DDoS attack using Machine Learning.	<b>Project ID:</b> MCA_3	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented


**Abstract:** The main advantage of the cloud is that it can elastically scales up and scales down to meet the variable demand and this process happens instantly according to the demand. Distribute Denial of service attacks (DDoS) is known as critical attacks which are complicated and continued to grow at a high speed. To detect these types of attacks have become a challenging task. Thus, we require a high level protection against DDoS attacks to reduce and control those effects of DDoS attacks. Detecting these types of attacks is carried out on the own cloud environment by using an attacking tool like Tor Hammer and the new dataset was generated with Intrusion Detection system. By using machine learning algorithm like support vector Machine (SVM) to detect the port scan attempts which is based on the new CICIDS 2017 dataset.

**Keywords:** DDoS, Attacks, Supervised Learning, Machine Learning



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Emara Prop	<b>Project ID:</b> MCA_4	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Emara Prop is a project that will overcome the problems that exist in the current manual system using mobile application or app. The application will significantly reduce or even overcome the difficulties faced in the existing system. This system is particularly designed for a company to carry out their operations in a smooth, fast, secure and effective manner. The project comprises of 3 major sections- Emara Admin, Emara MO (Marketing Officer), and Emara Client. Firebase Authentication acts as the authenticator for all the sections using a unique code sent to a registered number during login. Plots will be dynamically loaded from the cloud database during the initial booking process. This is achieved using the cloud platform called Firebase. Selected plot then displays the details of the plot along with the status- booked or available, which is loaded from the Firebase Real-Time database. Firebase Storage stores the uploaded documents. Documents are uploaded using a multi-threaded mechanism available on Android. Emara Prop or Emara Properties is an Android app that facilitates in booking of plots. From selection of plots by the buyer to payments, it will cover all the manual areas.

**Keywords:** Booking; Emara MO (Marketing Officer); Emara Client; Emara Admin; Cloud; Firebase; Firebase Storage; Firebase Real-Time Database; Firebase Authentication; Mobile App; Android; Multi-threaded

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Centralized User Management System	<b>Project ID:</b> MCA_5	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Centralized User Management system is a project which is developed to defeat the problems exist in the present framework. This project is upheld to dispose of and to lessen the challenges looked in existing framework. This framework is especially intended for an organization to complete their activities in a smooth and successful way. User Management system helps in overcoming from command line interface to Graphical user interface where one can easily access with the application to perform all available functionalities easily. The operation in the system will have two role's User and Admin. User will have its own set operation to be performed in the system. Admin will be assigned with all administrative operations. This solution is provided in cloud orchestration. Kubernetes provides the container-based orchestration. We achieved the goal of improving security and simplifying account management processes using an enterprise security management tool that can interact to each platform from a single console and remote agents. The user management system provides a solid base for organization's where role-based access control implemented, and security administrator can easily manage account and user rights and has more time to tighten security.

**Keywords:** Kubernet, user management system, GUI

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Enterprise Workflow Enhancer with Group Solutions	<b>Project ID:</b> MCA_6	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** The system is designed on different type of integrated technologies and distributed system so that the companies can recognize their work as they require from different parts of the world. The system provides various types of activity provisions with the help of dashboard customization and utility causes which are designed in such a way that system can be divided into multiple parts and even different types of utilities selectively utilized. The system provides various provisions of operations, optimizations and Research considerations. All the types of references which are required for the integrated working is provided to the company with the help of collaborative utility provisions which has to effectively acknowledged and each utility provision can be directed in different types of rules and regulations that has to be undertake. All types of references data required for the user references is also provided their individual users can be associated with multiple regulation of working and accessibility. Various types of repository considerations are included so that all types of data that is generated it can be properly identified and secured. The system also provides real-time information based on analytics as the companies can require different types of integrated information for planning and references. The system also includes various types of virtual working concept which will be helpful to target different types of clients worldwide. References of working can be controlled in real time with the help of different types of reports and events key performance indicators to support the workability will be provided. The system also supports integration with that different types of channels which can be based on media gateways or cloud so that any type of preferential working that is required to be performed in the properly acknowledge.

**Keywords:** Cloud service integration- Amazon S3 or EC2, Real-time analytics, user references

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Covid-19 Informatics	<b>Project ID:</b> MCA_7	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** The main aim of this project is to provide a informative system on covid-19 covering the main things that an individual is required to know so that they can avoid being infected, in case of already infected they can know about how to safeguard self and avoid spreading to other people. This website contains overall information of covid-19 and corona virus like news/articles about covid-19, prevention tips for not getting affected, statistics about the number of active cases, causalities occurred in the entire world and details about help desk for emergency help from the authorities and also to get additional information if needed. This project helps its viewers to gain some vital details in dealing with this pandemic. This report presents the over all view of this project. Thus it helps in the understanding of the covid-19 informatics project and its usage for all the viewers to have clarity and to have better understandings about the pandemic.

**Keywords:** Covid-19, Corona virus, pandemic, social distance

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Intelligent Pot for Precious Plants		<b>Project ID:</b> MCA_8
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Indian farming is diverse from poor farm villages to large farms using advanced agricultural technology. Area Facility Farming in China is expanding and leading the world. But the ecosystem management technology is still young, with low intelligence levels. Fostering the use of new information technology in agriculture can address a variety of problems that farmers face. Lack of specific knowledge and coordination leads to a output failiure. Our paper is planned to address these issues. This system provides an intelligent IOT-based platform monitoring framework and system structure for the agriculture facility ecosystem. This would be a catalyst for the transition from conventional to new agriculture. This also creates incentives for the production of new IOT (Internet of Things) agriculture application technologies and business growth. The Internet of Stuff does connect anything. The Indian population has tripled, but more than quadrupled food grain production has thus resulted in a significant rise in the food grain available per ca-pita. Traditional agricultural activities hold a great promise for a nation's economic growth. And we put in an ambitious scheme for farmers' health and the crops as well. There are no limits on day or night. At every point, it is good.

**Keywords:** IOT, Moisture sensor, Ultrasonic sensor, Relay, NodeMcu, LED's, Water pump, 12V Power supply, Arduino IDE, Blynk.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Automation Framework for Fronthaul Solution using DevOps	<b>Project ID:</b> MCA_9	
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**Project Execution Time:** Industry


**Project Category/Area:** Product\_Development

**Abstract:** In an associated world, portable systems – today principally determined by advanced mobile phones - should advance and bolster an expanded number of different gadgets and administrations, generally adding to the exponential traffic development toward 5G. To address information requests in a business manageable manner, the remote business is tested by re-examining base station designs. Fronthaul is a term that alludes to the association of the C-RAN, another sort of cell arrangement design of pooled or centralized baseband units (BBU). The Fronthaul solution is implemented to address information requests in a business manageable manner. The project involves automating a gating mechanism and configuring it to perform our processes in a linear manner. This automation framework project enables a hassle-free release to the client with all sanity checks provided in the continuous integration process of the Fronthaul project. As part of the Feature Testing, we wanted to avoid manual intervention at all the stages except Code review to capture the issue at the early stages instead of catching at the last level. It will assist us in getting the outcomes, brisk, and precise.

**Keywords:** DevOps, 5G Network, Fraunthaul

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESIGNING OF PRICING MODEL IN E-COMMERCE	<b>Project ID:</b> MCA_10	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Design of pricing model in e-commerce is a project that platform for wholesaler,retailer, and customer that existing in the current system, it is B2B and B2C e-Commerce application where it approaches B2B and also B2C, most of the e-Commerce application was either B2B or B2C but we are the one which provides a communication between the wholesaler and retailer, retailer and customer, and if needs establish between wholesaler and retailer. Currently, the Internet will become the major part of our society which we can't remove from society, especially with the invention of new technologies in the market the way which business is happening. Hence in the market, small scale and medium-sized companies are ready to go with new technologies with the help of the internet.The design of the pricing model in e-commerce refers to the making business online from offline, which helps majorly to many small scale business people but they are going online they can improve their business by going online.

**Keywords:** ECommerce, Business Model,Technology

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> E-Platform for Health suite	<b>Project ID:</b> MCA_11	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented


**Abstract:** E-Platform for Health Suite is an application that is being developed to provide a user with more opportunities to communicate with physicians and may improve the relationship between physicians and patients. It includes the use of mobile in collecting the community and clinical health data, delivery of healthcare information to patients (i.e., for users) and real time monitoring of patient's vital signs. The knowledge and tools exist to put the health system on the right course to achieve continuous improvement and better-quality care at a lower cost. This application is particularly designed for to avoid hospitalization cost and long waiting list for patient affected by chronic illness who need continuous and long-term monitoring of same vital parameter.

**Keywords:** Clinical, Health suite, Reactnative



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> EIS Core Insurance Software for individual and non-individual using Spring Boot	<b>Project ID:</b> MCA_12	
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**Project Category/Area:** Industry\_Project

**Abstract:** The project “EIS Core Insurance Software for individual and non- individual using Spring Boot” is an application of health insurance master plan. This software will provide the health insurance for the individual and non-individual customer. For the non-individual customers, insurance will be provided by the company in which they are working. This will help the employees to get the health insurance plans with lots of benefits and also with the cost reducible plans with trusted parties. These type of policies will be taken by the small business industries who are ready to control the cost expenditure. The idea behind the project is basically not new but here in this project we can check for the availability of better health insurance packages. Usually these are referred by the large corporate companies with lower cost of insurance policy for their employees. These type of non- individual customer policies which are given in the corporate level are also called as master policy. In this application, equal importance is given for the individual customer. Individual customer will be the one who will be interested for taking the health insurance policy for him individually without any contact with the company. These insurance policy plans will also contain the plans for the customer and his family. In these type of plans, same insured amount covers all the family members, whereas, the amount insured in an individual health insurance will cover only one person. However, one can buy an individual health insurance policy for each family member from the company, with separate money insured amount assigned to every person. In case, you have a family member who needs extra health coverage and chances that his/her medical expenses need to be exceed, it is always advisable to buy an individual health insurance policy for him/her from our application norms.

**Keywords:** Insurance, master plan, customer, application

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Car Care Service	<b>Project ID:</b> MCA_13	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** In this competitive business era, the most affordable way to reach out the customers are by using the mobile application which has the instant access for the application. There are thousands of mobile based applications launched every day in all the sectors of business. We take up a scenario of developing an application for Car Care Service using react native eco system. Car Care Service is one of the most affordable react native application to override the problems faced by the current manual system. This application is designed in such a way in order to carry out the operations in a smooth and an effective manner and with the minimal cost. The application is designed in such a way it works well on the website and on both the platforms, Android and IOS. This service helps to find the right dealers through an application in a convenient way. With the clients and occasions expanding at a bigger rate, it is hard to oversee customer framework but the application parallelly finds the nearest shop that might provide the service at the doorstep at the convenient time of the customer. This project is implemented by taking a case study of 15 customers online to satisfy the credibility of the application.

**Keywords:** carcare, ecosystem, Android

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Automation of Education Management System	<b>Project ID:</b> MCA_14	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Automation of the Education Management System is a cloud facilitated, Software as a Service platform with an exhaustive arrangement of highlights that helps managers in building up and running their instructive establishments. Utilizing the most recent technological coordinated turn of events, cloud-based computing, security, and versatility, this framework gives a solid, adaptable, and demonstrated arrangement at a reasonable expense to libraries for building and dealing with their online presence. With the assistance of most recent advancements, our online programming as a help Education Management System helps the instructive foundations to improve their efficiency and assist them with bettering use their time and assets for scholastic exercises which is their centre core interest. In the present manual framework to override this problem issues this task is being created. The difficulties faced by the existing system are supposed to be eliminated by this application. Particularly this application is designed for a company for smoothly and effectively carrying out the operations. Events the board is a solid and quickly developing calling with a fairly low degree of normalization. To decrease the challenges looked in the existing framework this application is bolstered to dispose of. To complete their tasks in a smooth and viable way this framework is especially intended for an organization. Occasions the board is strong and rapidly creating calling with a genuinely low level of standardization. The framework makes user results grouping quick as well as error-free. It likewise makes the pool of information conceivable and data promptly accessible and can make a decision faster. The framework gives a solution to the issues encountered in school executives. There are various difficulties and troubles faced by supervisors in ensuring they think of imperative choices and quality administrations and students .Automated Education Management System is created to improve and enhance the general organization

**Keywords:** Education , Automation , Workflow

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> SELF PROTECTABLE DATA SYSTEM		<b>Project ID:</b> MCA_15
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The self-protecting data system or the security system will be able to identify the vulnerability in the existing environment and this system concerns the harm to the system from the existing vulnerabilities. So, the system should have the capacity of identifying as well as protecting from the attacks or damages that are going to be caused by the external actors of the society. This system will be able to alert the user about the vulnerability of the networks and the open ports. So that user of this application will be aware of the vulnerabilities before using the application. The application is designed in such a way that the port scanning and the IP scanning will be done whenever the user logged-in to the application. It has the capacity that it can protect the sensitive information that is in the file without user intervention.

**Keywords:** SELF-PROTECTING, SECURITY, VULNERABILITY.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> B2B Aggregation of Chemical Industries	<b>Project ID:</b> MCA_16	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** B2B Aggregation of chemical industries is a project that developed to quash the problems which exist in the present system. The recently proposed system bolstered to dispense with the current legacy framework. This project is especially intended for chemical companies to complete their business online in a smooth and compelling way. This project refers to the sale and disposal of different inventory in the chemical company. The sale of the chemical process carried out online with secure transactions. The transaction status will update in each step until the end of the transaction. I have used some of the tools such as ReactJS, Bootstrap, CSS, jQuery, JavaScript, and HTML. This B2B cloud solution is to bring the chemical industry together for a win-win where the by-products, excess of inventory can trade.

**Keywords:** SALE, DISPOSAL, INVENTORY

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Data preserving and auditing of cloud files using Blockchain	<b>Project ID:</b> MCA_17	
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**Project Execution Time:** Industry


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Data preserving and auditing of cloud files using Blockchain is a project that is being developed to guarantee the integrity of outsourced information. This application is supported to eliminate the risks like corruption and manipulation of data in cloud storage. The attacks on cloud storage and cloud users is been increasing so we develop a protecting mechanism to provide security to cloud users data using Blockchain. When files are been stored in the cloud storage there might be manipulation or corruption in the owner's data. So to avoid these potential risks we are using Blockchain methodology, and writing smart contract to safe guard the data, stored by the owner. The contracts are written where, the hash value is generated for a particular users account. Keccak-256 is the hash function used in our application, to generate hash values for the owner's files. And therefore by applying smart contract concept with Blockchains technique, we can provide a trusted environment for data owner's information.

**Keywords:** Blockchain, Smart Contract, Hash values

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ITIGA (promotional banner events)	<b>Project ID:</b> MCA_18	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** ITIGA (promotional banner events) is in action of growth and run event from a management point of view. Mainly in all cases well-organized administration is required to make an event successful for all this purpose a successful implement of holding an event between an online solution helps a company to get a better end result and efficient way. The aim of these was to progress mobile application which allows easily event process and efforts of an event organizer and the customers. It creates events online manages, locations, and tickets it allows users to pay via different payment methods. The purpose of the solution is to provide event tracking. Promotional banner events are a well built and fast-growing career with a rather low level of regulation often we take occurrence as a segment of a project. The aim of this undertaking is to enlarge a smartphone application which gives absorbing events and data and furthermore customers will be able to see the event members such as save their place and numerous additional. There are various Event Managers providing a wide variety of Events on various categories like Upcoming Events, Ongoing Events, Completed Events. It gives the list of all the events, one can also edit the events, enable/disable the event.

**Keywords:** Events, Mobile Friendly, Payment, Event Tracking

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> APPLICATION PORTFOLIO ASSESSMENT TOOL	<b>Project ID:</b> MCA_19	
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**Project Execution Time:** Industry

**Project Category/Area:** Industry\_Project


**Abstract:** This Project “NextGen Intrusion Prevention System” helping us to address the issue of problem faced in legacy system. In an organization network security plays an important role in safeguarding the data centres. It adds value to the organisation. If an organization is capable of providing robust security the more will be the trust of clients hence more will be the business. With increasing in sophisticated malwares, it is hard for legacy systems to prevent the attacks. It is important to maintain the organization network secure from the breaches. Next Generation Intrusion Prevention System is a project that is being developed in order to provide robust network security to an organisation. The solution is being built to mitigate the existing challenges in manual framework and time constraints facing by security engineer. Using this solution, a security engineer can save time in mitigating the attacks easily, it will be easier for a security engineer to implement changes. The solution provides transparency to the network with granular controls. With right knowledge on network security a security engineer can successfully mitigate the attacks and secure the organization. The solution works on the basis of signature of the attacks. It is very important to have the solution which adds an additional layer to network security and avoid single point of failure of a network.

**Keywords:** Attacks, Network, Security, Intrusion, Prevention, System



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Femtocell Management Console	<b>Project ID:</b> MCA_20	
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** Femtocell Management Console: This project is a comprehension of the idea "Femtocell Management Console" ordinarily called femtocells. The existing system is particularly used in places with weak or less coverage by Macrocell, or cases with network congestion. As a result, the speed is often disturbed, and more delays are being incurred. To overcome this, this console is developed where Femtocell is a small cellular base station that increases the coverage of mobile network service providers. The femtocell management console which is designed will help to monitor and manage the devices connecting to the Femtocells. The software, management console i.e. the user interface will provide the admin or the operator with the details of the Femtocells and an option for each of the Femtocells to edit and delete. Dashboards will be providing a summary of the number of Femtocells, graphs for the workflows. This involves the usage of tools like React JS, CSS, CCFK(CSF client framework), MySQL workbench, and Git bash to perform this work. This results in enabling the admin to view the performance of the femtocells in the console that will ease his work for management.

**Keywords:** FEMTOCELLS , MACROCELL, MOBILE NETWORK.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Azure Performance Based Testing in Test-Prep Platform	<b>Project ID:</b> MCA_21
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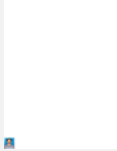
**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Azure Performance Based Testing in Test Prep Platform is a project that is being developed for the participants to take online Azure Hands-On labs. Here, the participant must perform the lab tasks and grades will be allocated according to the performance. These labs will help the participants to gain a Hands-On experience before taking the actual Azure certification exams, which builds the confidence to write the exam. The platform is built using Azure cloud services like Virtual Machines, Azure Active Directory, Azure Function App. The platform is designed in such a way that it is highly available and scalable. The project is being deployed in the Moodle platform. Moodle is free online course management system where it enables educators to customize their own dynamic courses. Here the system provides the courses for the labs where the participant can choose the course and perform the Hands-On labs where the tasks are evaluated according to the performance.

**Keywords:** Virtual Machines, Azure AD, Moodle, Hands-On.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Edge Computing Aided Process Tracking And Control Structure For Huge Scale Industrial Procedures	<b>Project ID:</b> MCA_22	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Already existed ventures presents the evolution of an edge computing automation, this venture, an ‘Edge Computing Aide Process Tracking and Control Structure for Huge Scale Industrial Procedures’ is introduced for huge scale industrial procedures, which permits for well founded and systematical online effected expansions in every edge computing module without changing the already existed structure. There could be no problem with changing the pre-formatted procedural limitations and utilization of operational system’s characteristics. This application is very practicable and productive also. There is much problem of maintaining mathematical related information and turnovers the huge amount of data in the fields of big industries procedures. So, this application updates, adds, modifies and removes the data through entering details by looking at the requirements and non-requirements of that particular information. And finally the information will be shown in the form of bar-chart, which can be designed by providing the minimum and maximum capacity for those particular and selected fields. It just adds a hierarchy of the information enumerating modules among the cloud and the systems used in proposed application. Admin, developers, engineers, consumers and clients are the end users of this particular application. Additionally, this application maintains the online implementation progress.

**Keywords:** Edge-Computing, aided process

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Customized Healthcare Services Application Development	<b>Project ID:</b> MCA_23	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** Customized Hospital Care Services Of Application Development using spring boot and Maven is a breakthrough technology that seamlessly integrates all the departments in a hospital. It has various modules like Patient Care Module, Doctors Module, and Admin Module. It has ability to communicate with other hospitals, nursing homes, and referring doctors . For this application, Spring, Spring Boot and Hibernate were selected because it is the best suited technology as this framework provides Spring MVC, security and good database connectivity using MySQL. Inversion of Control, Dependency Injection and Hibernate are needed to market good software coding practices and speed up development time.

**Keywords:** Doctors, Patients, Healthcare, Appointment, Services

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Benefit Augmentation for Viral Showcasing in Online Social Networks	<b>Project ID:</b> MCA_24	
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**Project Execution Time:** Industry


**Project Category/Area:** Reearch\_Oriented

**Abstract:** ‘Benefit augmentation for viral showcasing in online social networks’ is a task that is being created to abrogate the issues that exist in the present manual framework. This web application is developed to diminish the troubles looked in the current framework. This application is especially intended to increase the profit in viral marketing in which new items or business exercises are promoted by some seed clients in online social organizations like Facebook, Twitter etc. to different clients in a falling way. The determination of beginning seed clients yields an exchange off between the cost and award of viral promoting. Application also completes an extensive work on finding a lot of seed hubs to support the benefit of advertising. Based on the user’s activities the information is examined and graphs are plotted which helps to the owners for the growth of marketing.

**Keywords:** Social Networks, Benefit Augmentation

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Resilience Testcase Automation	<b>Project ID:</b> MCA_25	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Test automation, which involves the conversion of manual test cases to executable test scripts, is necessary to carry out efficient resilience testing of Gateways. This test automation takes significant investment of time and skilled effort. Moreover, it is not a one-time investment as the gateway or its environment evolves, test scripts demand continuous patching. Thus, its challenging to perform test automation in a cost-effective manner. This device developed, called femtocell which enables to effectively densify the network and deliver great customer experience in small indoor environments. It is checked to meet real world scenarios by resilience test cases. It's done by various manual testcases. This project automates the manual testcases.

**Keywords:** Long Term Evolution, Femtocell, Gateway, SAM Client, Wireless Provisioning System.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Learning of Advanced Telecommunication Computing Architecture (ATCA) based Femto Gateway Framework	<b>Project ID:</b> MCA_26	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** A Small Cell is a smaller than expected base station, explicitly intended to broaden the information capacity, speed and proficiency of a cell arrange. These low force radio access hubs can be sent inside or outside, and utilize authorized, shared or unlicensed range. They for the most part have a range from 10 meters to a few of kilometres. Small cells can be utilized to give in-building and open air remote help. Mobile operators use them to expand their service coverage and additionally increment network limit. Small Cells are downsized, low force, lightweight remote access base stations that are found regularly inside homes, workplaces and shopping centres. The Small Cell Solution is comprised of a cluster of Small Cells, the access points intended for in-building home or undertaking use, and a little arrangement of core system components for interconnection between the Small Cells cluster and the inheritance core system. The Small Cells Cluster depends on a level IP architecture that breakdown many elements of the traditional UMTS organize into a device. It gives both the NodeB and RNC functionalities. The Small Cell arrangement is comprised of one or a few cluster of Small Cells, in addition to a little arrangement of components shared between the groups. A "cluster" is characterized as the group of Small Cells (up to 64,000) associated with a "Small Cell Gateway" furnishing the interworking with the mobile packet core. The Small Cell Gateway is a required system component in the Small Cells group. The Small Cell Gateway is conveyed on Sun Netra X4250 and Advanced Telecommunication Computation Architecture (ATCA) hardware platforms. ATCA depicts a high data transfer capacity, high network, chassis-based architecture designed principally to appeal to the telecommunication industry. AdvancedTCA or ATCA is an open standard from the PCI Industrial computer manufacturers group (PICMG) that characterizes particulars for high-performance communication framework.

**Keywords:** Small cell, Universal Mobile Telecommunication System (UMTS), cluster, Sun Netra X4250, Advanced Telecommunication Computing Architecture (ATCA)

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> IMPRESSION SURVEY ANALYSIS FOR IPL	<b>Project ID:</b> MCA_27	
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**Project Execution Time:** Industry

**Project Category/Area:** Reaearch\_Oriented


**Abstract:** This project provides information about public perception of an event in the Indian Premier League. What audience think about Indian Premier League has always been important for Team Franchises and for IPL Organizers during every ipl season.As Twitter is a free of cost to use that allows audience to post their impressions or opinions on their favorite teams and other ipl teams either in a positive or negative way but due to huge volume of opinion tweets, Team Franchises and IPL Organizers can't go through all tweets. So to solve this problem we are using impression survey analysis. Impression analysis is a way of approach to classify the sentiments of audience tweets regarding Indian Premier League in terms of either positive or negative. In this project, I proposed a system that will analyze tweets about ipl in two groups, that are positive group and negative group and here the overall concept is to do opinion mining for the event as Indian Premier League effectively.

**Keywords:** Twitter, IPL, Impression Survey Analysis, Machine Learning



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Robust Malware Detection for Internet of things	<b>Project ID:</b> MCA_28
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Robust malware detection for internet of things (IOT) of devices' is a project that is being developed to detect the malware in IOT devices using junk code insertion method. Not only detecting it describes the name of malwares which are attacked to the network using deep Eigen space learning and it represents in graphical manner. This application is mainly implemented to work the internet of things work accurately according to the developer. Internet of Things (IOT) is currently in its underlying position however in future, it will impact pretty much consistently to-day things we use. The more it will be remembered for our way of life, more will be its danger being abused. There is a squeezing pressing need to make IOT devices secure from getting split. Very further IOT will grow the region for the digital assaults on homes and organizations by changing articles that were utilized to be disconnected into web framework. Present security advancements are sufficiently not to manage this issue. Block chain has risen as the conceivable answer for making increasingly secure IOT frameworks in the future time. In this paper, initial a review of the block chain innovation and its execution has been clarified.

**Keywords:** Internet of Things (IOT), Robust

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Mobile App for Accident Detection To Provide Medical Aid	<b>Project ID:</b> MCA_29	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** This application is used to provide immediate medical aid. The street mishaps rates are extremely high these days, particularly bikes. Convenient clinical guide can help in sparing lives. This framework means to make the close by clinical focus about the mishap aware of give quick clinical guide. The accelerometer in the android versatile faculties the tilt of the vehicle and in the event that it discovered it is a mishap, it brings the longitude and scope of vehicle utilizing Global Positioning Sensor (GPS) and forward the subtleties to web server utilizing web. Web server has framework that distinguish the closest emergency clinic and police headquarters utilizing the Euclidean separation computation, once the closest medical clinic and police headquarters is shortlisted, web server sends a mishap subtleties to the worry clinic and police headquarters. The Android application in the cell phone will sent instant message with respect to the mishap area to the guardian of the person in question. This framework spares the life of the mishap casualty by shares the specific area of the mishap. In this system we are using accident detect-system that provides an alert message to the authorized people with the help of accelerometer sensor through the help of using android application to get required needs.

**Keywords:** Accident Detection, Alert System, Accelerometer, Android Application

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Enhancement of UTF to Support Feature of ENDC for Nokia Femtocell Using LTE Technology	<b>Project ID:</b> MCA_30	
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**Project Execution Time:** Industry

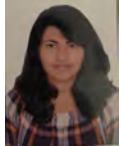
**Project Category/Area:** Application\_Oriented

**Abstract:** The important factors of the NR technology are mentioned inside the 3GPP with the intension that they fulfil the current needs of 5G era or give the solution to disadvantages of LTE technology. However, additionally the necessities that runs for a long period of time are being furnished by Networks to their clients. In this project the Dual connectivity (DC) is implemented which is a feature of 5G. The third Generation Partnership Project (3GPP) contains ENDC as an important character for a fifth generation (5G) NR technology. The goal of this characteristic is to give higher throughput, mobility and to increase an overall performance of a mobile network to end users. This can be achieved by enhancing the present LTE network architecture with the new 5G NR base stations. The LTE is deployed hugely all over the world so the transition from LTE to 5G is a little bit difficult, but 3GPP has introduced some network architectural designs with the help of those can easily transit from LTE to 5G. This new dual connectivity feature is implemented using Non-Standalone mechanism as it uses an existing core network of LTE technology. All these new features were incorporated into UTF which is as a host-based framework used for unit testing of network architecture. In a project we are enhancing the UTF to support ENDC feature and thus make sure that all the unit test cases related to ENDC are run successfully.

**Keywords:** NR Technology, 3GPP, Dual Connectivity, ENDC, throughput, latency, mobility, LTE, UTF.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> An insight on WB Paging Optimization and Integration of gateway specific alarms in E2E automation.	<b>Project ID:</b> MCA_31	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** As the popularity of smart phones increased, mobile communication has changed from 3GPP to Long Term Evolution (LTE). Mobile users move around in the zone that contains many cells. When there is a request to wake the UE from the idle mode paging messages are sent to multiple Tracking Area Code (TAC). Paging is a mechanism to initiate the services for UEs that are in idle mode. Sending paging messages to multiple TAC will reduce the paging success rate which is one of important factor in the paging area. This will also lead to traffic in the network. To avoid this paging optimization is a solution. This feature allows the Operator to reduce the processing load on the Femto Gateways (FGW) in case of Paging storms and prevent FGW from going into minimum and maximum overload conditions. Integration of Gateways specific alarm in E2E automation is to automate the test cases related to Gateway specific alarm. There are large numbers of test cases that are related to Gateways specific alarms which tested repeatedly. These test cases are manually tested at present. Main goal is to automate all these test cases which will reduce the time of execute and overload on the tester. The main reason behind this project is to learn in depth about the new feature and find the test scenarios to test the feature in all the aspects and to automate the large number of gateways specific alarm related test cases that will help in reducing problems faced in existing system.

**Keywords:** Long Term Evolution, Tracking Area Code, WB paging optimization, Femto Gateways

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Farmers Mart		<b>Project ID:</b> MCA_32
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**Project Execution Time:** In\_House


**Project Category/Area:** Environmental\_Societal

**Abstract:** Farmers Mart in agriculture aims at providing offerings better advertising and marketing publicity and better pricing for the crops, reduction of farming dangers and more suitable incomes, higher recognition of the product that the farmer sells and information, advanced networking and communicate, facility of online trading. However, those structures are commonly confined in scale and have not been efficaciously replicated past the neighborhood level. The government advice which are related to farming does not reach the farming community at the needed time. The country like India has the most valuable agricultural information and understanding. So this will be very helpful for the study of the agriculture. So this studies can make our farmers potential at providing the best crops. Although India has been one of the emerging excellent powers in IT, the benefits have been remarkably slow, specially in rural and far flung areas so we have decided to make an application which is very helpful to our farmers.

**Keywords:** Agriculture, Farming, Farmers Mart, Marketing

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Information Technology Rationalization Tool	<b>Project ID:</b> MCA_33	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Legacy application system modernization driven by an organization's desire to remain agile to changes, reduce operating costs and gain clearer understanding of their application system infrastructure. Data frameworks are basic resources for present day undertakings and consolidate key information obtained over the life of an association. The current frameworks become too delicate to even think about modifying and dispose of. Therefore, associations must consider modernizing these heritage frameworks to stay suitable. In the existing approaches (Huge explosion approach, first DB methodology) to rationalize the legacy systems there is a high possibility of business risk, which may lead organization to a bad stage or non-recoverable stage. This project has mainly three phases namely Recognize, Describe and Dispatch which are responsible for considering all the aspects and dimensions of the legacy system without missing any perspective towards the legacy system. Recognize phase involves gathering the required information about the legacy system and have the brief overview about the legacy system and suggest a strategy, whether modernize or decom or keep it as is. Describe stage, the point by point study is done of filtered heritage frameworks and plan is readied. In Dispatch phase, with the help of blueprint the actual execution is performed and reach to the proposed strategy. After the legacy system's rationalization company will be more flexible to adapt to the latest technologies and to the latest business trends. This will reduce the cost of maintaining the systems and boost the company economy.

**Keywords:** Modernization, Legacy systems, decommission, business trends.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Car Manufacturing Supply Chain Management System(CSCMS)	<b>Project ID:</b> MCA_34	
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**Project Execution Time:** Industry

**Project Category/Area:** Application\_Oriented

**Abstract:** Supply chain management system plays a vital role in the retail business sectors. The problems that would be encountered in supply chain management like tracing and tracking the main product as the product, in its life cycle, is passed through many hands by the time it reaches the end user. In the global business environment, a product manufacturing is dependent on other small or large manufacturing unit for its raw material and sometimes, services provide by the company for the development of the product. Tracking the product has become a very important aspect of any production industry for increasing the profit, optimizing the logistics, and decreasing the loss incurred. In this type of global scenario, manufacturing of a product requires a well maintained data related to the consumption and tracking of the main product itself along with its connected products. If proper measures are not taken for maintenance of the product details and dependent items, there might be a lot of hog-peg in the life cycle of the product from the development stage till it reached the end user. The current application will address the problems mentioned above by automating and integrating various modules to optimize the entire supply chain with respect to the business and involved transactions without the interference of the third party which in turn benefits the customers and retailers.

**Keywords:** Supply-chain, Manufacturing, Retailers, Product cycle, Optimization

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Framework for inventory management and customer aggregation	<b>Project ID:</b> MCA_35	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented


**Abstract:** Abstract is the detailed version of the report, which covers all the information of the project title is “Framework for inventory management and customer aggregation”. The overall introduction of the project is explained in this report with cleared description, this developed software is to set a true platform for chemical industries. Research of the existing system is covered in the literature survey with respective citations and the research paper description. The literature survey helps to know the problems in existing systems and to describe the problems. This project performs the sale and disposal of different inventories. To make secured interaction for sale communication services are used. In the detailed design explanation, all the modules working procedure is explained are understandable. This project is developed with the help of backend service Python Flask, Frontend service ReactJS, server-side service for search engine is Solr Apache Server, also used database service MySQL, and PyCharm IDE, VSCode IDE, Solr admin UI are the tools specified in tools and technologies. Some functional and non-functional requirements are also specified in software requirement specification. In every software development testing aspect plays very important role to give desired project to the customer or client, achieved testing in Functional testing, Unit testing, Integration testing, Regression testing, and White Box testing. After all the outcome of the project is specified in the result with project screenshots. This is the brief information about report on the project “Framework for inventory management and customer aggregation”.

**Keywords:** keywords: Python Flask, ReactJS, MySQL, Solr Apache Server, Testing, PyCharm, VSCode, Solr admin UI.



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Software Management for 5G Fronthaul Solution	<b>Project ID:</b> MCA_36	
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** Software Management for 5G Fronthaul Solutions is a project intended to quicken 5G organization in telecom. The network providers must have 3G hardware to provide a 3G network or 4G hardware to provide a 4G network. The older hardware is a waste of resources and never used. To make the reuse of older hardware rather than wasting to accelerate to work as 4G or 5G hardware. The resources are reused and cost for purchasing the hardware reduces. . In order to accelerate development and not to create something from scratch, the FG Platform team has chosen to reuse the NCIR CLI Framework. Since the Fronthaul Solutions will have its own CLI commands and will also have a customer documentation for MVP, it is proposed to rename the reused CLI to FGCLI, but reuse these commands as much as possible, to reduce the development effort for separate plug-ins. This project illustrates some of the specifications of the 5G network which are reusing of the older commands, writing a new command, upgrade, downgrade, rollback operations, commands which perform the upgrade from lower version to higher version, service/ini files for the upgrade specification, and automation of test cases etc.

**Keywords:** Upgrade, Downgrade, Service file, Rollback, Fronthaul

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> HALO IOT based SAAS	<b>Project ID:</b> MCA_37	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Supply chain management system plays a very vital role in all the retail business sectors. As managing the products is highly important for profitability of the company, RFID is basically a unique tag given to unique product and this tag is bounded with the Product physically hence by tracing this tag the product can be traced for monitoring purpose, As monitoring of the product plays a vital role in supply chain management system RFID-based monitoring system holds high potential for solving many problems in the Monitoring part of supply chain management system. RFID-based solution helps retailer to improve their inventory accuracy and On-shelf availability to provide great shopper experiences while maximizing their Capital investments. RFID-based solutions help retailers reduce errors, improve efficiencies and deliver seamless Omni-channel experiences for their customers (HALO) RFID Based Product Monitoring System For Vertically Integrated Supply Chain Management System , is Software as a service application deployed on azure cloud, Which operates based on the REST API calls for tracking of thee product through the data sent by the RFID devices

**Keywords:** HALO, RFID, Supply Chain Management, Gatling, Omni channel, SKU, EPC.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ON-DEMAND SERVICES (Cleanpro)	<b>Project ID:</b> MCA_38	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** "ON-DEMAND SERVICE'S (Cleanpro)" is an undertaking which is being developed to abrogate huge problems that is present in the manual framework. This sort of applications are said to remove the problems looked in present framework. This system is particularly expected for an association to finish their respective exercises in an incredible manner. Like all other on-Demands it is inbuilt with all the basic usefulness. Got a spillage issue at home, recruit a Serviceman close to your area who will fix it in a matter of moments. Got issues with your AC, call a cooling master who will fix your AC in simply an issue of few moments. Likewise, these applications help in fixing issues of carpentry, house tidiness, home apparatuses, and all other family unit issues. The home assistance showcasing specialty in India is still in the early stage. With Indian urban communities seeing a noteworthy development, "Local React Native Application for ON-Demand Services", is a portable application for their android clients that unite the customer and specialist organizations utilizing Internet as Intermediate. Client's interest for the home organizations and subject to the territory by getting the extension and longitude of the client (GPS), the nearest expert association is assigned to serve the client's needs. This application has an extension for incorporating location maps to permit intuitive to another area, and make this application accessible for other versatile working frameworks other than android. The client will get the total data about the administrations, sub-administrations and cost.

**Keywords:** Data, Portable, React Native Application, Client, Internet, Specialist Organization, Services

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> B2B Blockchain Network	<b>Project ID:</b> MCA_39	
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**Project Execution Time:** Industry


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** This proposed system provide the transparency of the data and clear pre- identification of the connected node in the network of parties and the system uses endorsement policies and chaincode for more clearance. Hence the performance will be improved and drawbacks of existing system will be reduced. To achieve the goals the latest suited tools and technologies are used. The architecture of the project is based on private permissioned block chain which provide greater availability of data and security. To provide interaction in between nodes the anchor peer of the organization is used and the anchor peer communicate with regular peer of the organization. To develop robust system golang and hyperledger fabric technologies, and in addition to develop the blockchain framework is used. For providing the best user experience a user interface is provided which is developed using Hyperledger explorer.

**Keywords:** Chaincode, Anchor peer, Hyperledger, Network, Nodes etc

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Cyberbullying Detection Based on Semantic – Enhanced Marginalized Denoising Auto - Encoder	<b>Project ID:</b> MCA_40	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Cyberbullying" is the point at which a tyke (small child), preteen or youth is tormented, bartered, bothering, embarrassed, mortified or generally focused by another youngster, preteen or pre-adult utilizing the Web, keen and incited redesigns or telephones. The cyber bullying has made the field ability to limited for examining the issues which encounter, the proposed proof that being a culprit of one is identified with being a culprit of the other, cyberbullying has made as a fundamental issue bouncing upon youngsters, teenagers and abundant grown-ups. Man-made reasoning structures make adjusted presentation of tormenting messages in online life conceivable. Nowadays youngsters make misuse of any coming app like passing vulgar msg, picture and vetc. With the help of bullying can detect these type of data need to prevent it.

**Keywords:** Cyberbullying, Web, tormenting messages

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Classification and analysis of Phishing site features using Machine learning algorithms	<b>Project ID:</b> MCA_41	
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**Project Execution Time:** Industry


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** ABSTRACT “Classification and analysis of Phishing site features using Machine learning algorithms” is a research project that is developed to classify and analysis the phishing site features which we obtained from Kaggle database. Phishing is a very common and major threat in cyber criminology.This research is targeted to measure the efficiency of various Machine Learning algorithmic approaches.We are considering six maroj algorithms here and measuring the efficiency of each one by applying it on to the given Kaggle databse. Among those six algorithms, eXtreme Gradient Boosting i.e, using XGBoost is resulted as more efficient compared to others.

**Keywords:** XGBoost,machine learning,algorithms,phishing,analysis.

# BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Visualization and Reporting on finance data		<b>Project ID:</b> MCA_42
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Visualization and reporting on finance data is the project that is being developed using qlik sense and SSRS (SQL server reporting system) tools to overcome the risks of finance data. This application report system is upheld to take out and lesson the challenges looked in existing framework. This system is particularly designed for company to handle finance data in smooth and effective manner. Qlik sense and SSRS gives the clean and perfect visualization of finance data. Data is usually cleansed before it is even transformed and analyzed .The data is necessary as input to the analysis one is undertaking which is usually based upon the requirements from customers/ clients who is asking for analysis. This gives results in the form of statistical graphics, plots and report tables of finance data.

**Keywords:** qlik sense, SQL server reporting system, finance data, framework

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Administration of super speciality hospital activities	<b>Project ID:</b> MCA_43	
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** “Administration of super specialty hospital activities” is an application developed to administer the competent and decisive services that facilitate to figure out the functions and services of the health care activities in an aspiration form. The aspects of operations such as administrative, medical, legal, and compliance are handled in an effective way with optimum approach. Resources are effectively used utilized by encountering the inconsistency of data. Data on health care activities is the most complex activities in this modern society that cannot be done in intuition. The data provided in an efficient manner implement valuable insights, quality of the facility, and functionality that give a vivid picture of top-notch hospital activities. The implementation of requirements and resources of data is stored and recorded that aims in a clear understanding of standardization.

**Keywords:** optimum, Administration, hospital activities



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> APPLICATION PORTFOLIO ASSESSMENT TOOL	<b>Project ID:</b> MCA_44	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** In any organization, there are many applications developed and used for various purposes. Some applications have redundant functions and might store redundant data. There might be the use of the legacy system in the organization that could be decommissioned to save money. Some applications can be modernized for increased efficiency. The Software product "APPLICATION PORTFOLIO ASSESSMENT TOOL" is developed to help in analysing the Application whether to Decommission or Modernize or To Retain the application as it is. The rationalization process in the project takes place in three phases, they are 1. Assessment of the application, 2. Study the Assessment & Strategize the execution and 3. Execution. This Tool is the result of phase one. The tool developed is going to present an array of questions to the App Manager that is to be answered and generates App ID Cards for each application. It has visualization graphs that will give a holistic view of overall applications under consideration. This Inhouse project is going to save cost, time, and human effort for the company. It also effectively utilizes the resources available in the organization. It accelerates the rationalization process, industrializes it, and standardize the setup.

**Keywords:** Assessment tool, Decommission, Modernize, Retain, App Manager, App ID Card, Visualization graphs, Save cost, Rationalization Process, Standardize, Industrialize

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Data Analytics Approach To Curb The Cybercrime Underground Economy		<b>Project ID:</b> MCA_45
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**Project Execution Time:** Industry

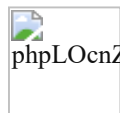
**Project Category/Area:** Application\_Oriented

**Abstract:** Despite the rapid escalation of cyber threats, there has still been little research into the foundations of the subject or methodologies that could serve to guide Information Systems researchers and practitioners who deal with cyber security. In addition, little is known about Crime-as-a-Service (CaaS), a criminal business model that underpins the cybercrime underground. This research gap and the practical cybercrime problems we face have motivated us to investigate the cybercrime underground economy by taking a data analytics approach from a design science perspective. To achieve this goal, we propose (1) a data analysis framework for analyzing the cybercrime underground, (2) CaaS and crime ware definitions, and (3) an associated classification model. In addition, we (4) develop an example application to demonstrate how the proposed framework and classification model could be implemented in practice. We then use this application to investigate the cybercrime underground economy by analyzing a large dataset obtained from the online hacking community. By taking a design science research approach, this study contributes to the design artifacts, foundations, and methodologies in this area. Moreover, it provides useful practical insights to practitioners by suggesting guidelines as to how governments and organizations in all industries can prepare for attacks by the cybercrime underground.

**Keywords:** Cyber crime, investigation, data analytics, application, underground economy.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Implementation of Secured Steganography Using PVD		<b>Project ID:</b> MCA_46
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Information concealing is the design of concealing information for different purpose which are to manage secret information, secure confidential data. To convert the information over the internet is a main problem. Because, to send the information securely to the particular user we need to provide security. To provide security to the data, there are many approaches among those approaches one of the best approach is steganography. In this project, we proposed a LSB and PVD depends steganographic technique for concealing the information utilizing Least-Significant bit (LSB) and Pixel-value-Differencing (PVD) algorithm for inserting the information into the picture which is developed through the Django framework utilizing Python. Implementation of secured steganography using PVD is a project that presents a high capacity information concealing technique utilizing modulus capacity of pixel-value-differencing (PVD) and least-significant-bit (LSB) replacement technique. This data concealing techniques are depends on LSB and PVD methods which provides large concealing capacity and invisible quality. There is little difference between two consecutive pixels which are included into flat region and a huge distinction is belonged to edge region. In our pruposed venture the mystery information is concealed on the flat region using LSB replacement technique and on the edge region using PVD method. From the test result, the presented technique continues an extreme limit and a decent character contrasted and other LSB and adjusted PVD strategies.

**Keywords:** Pixel value difference, List Significant Bit, Steganography.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> My City Advisor	<b>Project ID:</b> MCA_47	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** This project mainly include details of the city. After the registration process is done, The user can directly enter the dashboard that popup menu. He may choose the relevant menu and show the related information for the selected category. With OTP the user can reset the password. User can search entertainments like Events and Film Information. The film information include name of theatre, show timing, film name, film title, theatre address. In this application the main module identified are store, event, news, advertisement, location, emergency service etc. Emergency services contain details such as ambulance, electricity, fire department, helpline, police station, etc. Admin can add the details of the store, update information about places, movies, event etc. The project explains briefly about the store that include email address, contact details, store ratings etc. In the application all major operations are managed by the admin. The user can configure the district option, and he also gets a notification when the user's Global Positioning System moves from one city to the next. Payments can also be made to smart phones, water bills, electricity bills and landline transactions etc, through this process.

**Keywords:** Emergency service, City details, Payments.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Mining phenomena Induced Dimensionality Abstraction	<b>Project ID:</b> MCA_48	
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**Project Execution Time:** Industry

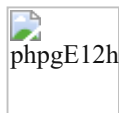
**Project Category/Area:** Application\_Oriented

**Abstract:** “Mining Phenomena induced dimensionality abstraction” is a project that is being developed to overcome the complications that exist in the current manual system. This System is supported to get rid of or to lower the difficulties which are there in existing system. Adoption of this system is that for making a proper reconstruction of the system a proper knowledge is also required and proper accessibility right is also required then only the system can be properly revised. The dependency of the system is that all types of sophisticated workability requirement that have to be acknowledged will be done by the users when they will log into the system and they will be using different types of features show a related working identities needed for conducting the operations. The scope of the system is to provide various types of prototypes which can be utilized from a single merchandise making it cost and making it potential for multiple types of organizations for the usability. The main aim of this project is to acknowledge multi associations working on a single system with all types of collective measures and all types of distributed workability stages so that considerations can be properly explained and can be defined.

**Keywords:** • Sql server • Oracle • Amazon S3 • C# • .Net Framework

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Facial Emotion Recognition Using CNN and Gabor Filter		<b>Project ID:</b> MCA_49
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** The emotions developed in human face have a great effect on resolution and arguments about various subjects. As the facial emotion conveys communicative hints, which plays an essential role in mutual relations. In psychological theory, emotional status of a person can be summed up into six main categories: happiness, sadness, disgust, anger, fear and surprise. Automatic abstraction of these emotions from the facial expression can help in human computer association as well as many other implementations. Machine learning algorithms and mainly deep neural network can study involved attribute and class the extracted patterns. This structure detained picture is equated with the instructed database convenient in dataset and the psychological status of the picture will be presented. The proposed substructure used the Gabor Filters for feature origin and then a Convolutional Neural Network (CNN) for grouping. The observed results show that the suggested activity increases both the speed training process of Convolutional Neural Network (CNN) and the identification validity. The analysed method is the JAFFE dataset. Experimental outcome reveal the ruthless classification accuracy of advanced method.

**Keywords:** Facial Emotions Recognition, Gabor Filters. Convolutional Neural Network (CNN).

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> E commerce Based Web Retail Shop	<b>Project ID:</b> MCA_50	
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** E commerce based web retail shop is an application that grant customer to purchase products for an existing shop. The web retail shop is to tackle the customer's ambiance by affording purchase of the products. Online retail shop facilitate consumer to search features for a distinct item or a brand. Typical online retail shop enables to browse substantial field of products and services by the glimpse of icon along with details about specification, features and costs. The application obtains the customer's purchase of order in a responsive time. Also further accessible windows services are presented for the customer chosen order and services on based on the preference. The cart contents can be altered and eliminated by the choice of the customer. Web based retail shop can examined at any point of time for the details. Purchaser should have proper internet connection to complete transaction through pay pals, debit or credit card. Retailer must increase the speed of website and provide ease of security to the purchaser. Core feature of the web retail shop is to build relationship with consumer and leave a clear impact. Sites with more advanced focal point on motivation, performance and productivity attracts the customers to purchase. The main factor is determine existence of user friendly features.

**Keywords:** retail shop,admin,customer,products,modules, my cart

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Distributed with Mediated Resources		<b>Project ID:</b> MCA_51
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented


**Abstract:** Business rule engine incorporated platform is provided to the users so that all types of complex workflow associations and process models can be defined in terms of different types of technological Ventures. The variations are provided with operational upholding and all types of systematic controlled acknowledgements are also associated to accomplish proper control. All references will be now designed in an organized and accomplished way with virtual associations in real time. Rapid extension of the technology will have multiple negative effects on the organization as they have to cope-up with all reflection to maintain the business activities and patterns so a required platform virtualization will provide a systematic organization of resources and the working patterns by simple initiations of integrated step. All the required high-level prospective workflow and the real time perception can be easily organized by the defined multi-functionality synchronization system to provide the companies with all structural work concepts with improved theories. To maintain a proper quality all the service provision will be regulated from a single access point which can be again redefined on the individual platform used by the client without any extensive requirement.

**Keywords:** multi-functionality synchronization, Mediated Resources



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Operational Intelligent Panel With Self Architecture		<b>Project ID:</b> MCA_52
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** Domain and protocol based consolidated statistical analysis is provided within the system. The system will include various types of settings which have to be accomplished by the administrative and in reference to which the provisional information acknowledgement with different types of compatibility in terms of domain and technological identity will be provided. The system is also associated with various types of integrated tracking at mostly the system will be utilized by the administrator and administrators which requires associated tracking. The design of the system is to provide flexibility and control in terms of Administrative tasks. Oversight utility that are required to be organized when the organizations are into various businesses so the organization of different aspects of security, analytics, management, structuring, data management, configuration, server environment etc. are required to be consolidated on prime panel which can be used for central monitoring and navigation.

**Keywords:** Security, Analytics, Management, Structuring, Data management, Configuration, Server environment

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> COST PREDICTION OF AGRICULTURE PRODUCTS USING MOBILE APP AND CLOUD TECHNOLOGY	<b>Project ID:</b> MCA_53	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** A major part of Indian economy is Agriculture it covers up to 75% of the economy of India. Even though it has so much impact on Indian economy many a farmers are still poor and not getting a fair price for their yields, because of the middle-men interference between farmers and the market and these men get rich by not giving farmers fair price for their product and getting a very big profit margin, and farmers taking their own life not able to pay his loans. So, to improve the state of agriculture in our country I decided to build the application “COST PREDICTION OF AGRICULTURE PRODUCTS USING MOBILE APP AND CLOUD TECHNOLOGY” or “Krishi price”. There are only 2 users in our application market employee/market expert and farmer so this removes all the middle-men between the market and farmer. From here market employee registers and logs in and updates the prices the crops are selling daily in his market and farmer can register and logs in using his phone number and can see the prices of crops by selecting the date he wants to see and he can also get prediction based on prices of crops 2 years prior Like an approximate average of those prices. Now the farmer can get all the details of prices he needs to know and can get the fair price for his yield.

**Keywords:** Farmer, Market Employee/Market Expert

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Cyber Attack Control and Monitoring System	<b>Project ID:</b> MCA_54	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** By analyzing cyber attacks and malwares we have performed some techniques to find whether the data is secure from the attacks or not. Firstly, user should log in by giving username and password to the application. By providing some basic information the user should submit the company details to check whether the data is secure or not. After conforming that the data is secured or not from the cyber attack, he can see all the malware and secured websites in this application and then the user can see the graphical analysis of the cyber attacks that are occurred in last 12 years (2005-2017). Also we have shown some qualitative and quantitative results for future knowledge. This application provides overall security of all the websites we enter it as data. 'Cyber Attack Control and Monitoring System' also proven that a hacking breach dataset is regarding to the incidents between the inter arrival times and the breach sizes, and this project also shows that all of them should be functioned by stochastic procedures as opposed to disseminations. Some of the statistical tests that are viewed are the technique proposed are best. Different end users of 'Cyber Attack Control and Monitoring System' are customers, clients and developers.

**Keywords:** Cyber attack, monitoring system, malware

## BMSIT&M | Techsaransh 2020

<b>Project Title: BIKE DOCTOR</b>		<b>Project ID: MCA_55</b>
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** Now a days, People wish to live a luxurious life with minimum physical work. Here we provide a mobile application for 'Bike-Doctor'. This application is an android app which can be run on any android compatible tablets and mobile phones. The app will enable any bike user to search and communicate with any bike service centre in your local places. The user can find the service centre, get its location and check and select any of the services provided by the respective service centre. The user can send request for pick and drop, appointment for servicing, test drive. Thus we are developing an application which reaches every people and characterizes user friendliness, in formativeness and time saving. The Objective of this investigation is to discover the various variables answerable for affecting the overhauling and support procedure of bike and to search for chances to diminish the required for it. we give an Android app to "Bike-Doctor". This app will empower any vehicle client to look and speak with any specialist in the region. The client can likewise send the demand to get administration.

**Keywords:** Android,BIke-Doctor

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Rule Based Probe Stat Generator with Multiple Environment Support	<b>Project ID:</b> MCA_56	
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**Project Execution Time:** Industry


**Project Category/Area:** Application\_Oriented

**Abstract:** This project contributes in security monitoring, network monitoring, tracing the data of an organization or company having several branches even in remote area. Cyclic redundancy check is required for understanding the anomaly that have present in a network so the system is referenced with different types of involvement intrusion and tabulation requirements. Detailed scalability of the tabulation can be set so that in real the users can have perfect understanding of different matrix that have provided. The system is also incorporated with various types of apprehension visualization mechanism that will help to associate the work reference in real time. System can be acknowledged with multiple types of intelligence and automation also. State-full Analysis will help to understand the observation in a comparative way which will be defined prior to provide the users with definition for the understanding. Statistical anomaly will help the companies to establish the baseline for the implementation of the needed solution. The system will have all analytical methods to provide the accurate understanding for all simulations and behaviors that are required to be discussed and viewed for the system related on a particular environment or with respect to multiple integrated environments.

**Keywords:** • Operating System: Windows • Visual studio 2019: To handle C# code

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> ISite	<b>Project ID:</b> MCA_57	
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**Project Execution Time:** Industry


**Project Category/Area:** Industry\_Project

**Abstract:** site is a web application developed using Laravel Framework. Isite is also known as Information Site , as the name itself tells the main of the project is to share information to the Students without any delay. This web application not only shares info but also enables us to take part such as Registration, Login, Log out. The user can even edit profile, choose profile pictures, and follow other users on this site.

**Keywords:** the site, Registration, Laravel Framework, the application developed

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Smart Farmer Forum		<b>Project ID:</b> MCA_58
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented

**Abstract:** In India agriculture is the main occupation of Indians and Indian economy. The 75% of the Indian economy depends on agriculture. Even though this is the case India stands 32nd country in growing profitable agricultural products. Many farmers are living in below poverty line in India. To improve the agriculture and living standards of our farmers we have prepared our project "SMART FARMER FORUM ANDROID APP". In our project we are having 3 modules like farmer, expert and banker. In this project there will be 3 actors i.e. farmers, agricultural experts and banker respectively. All the three actors must register in our app with mobile number confirming with OTP. Based on soil testing and infected plants uploaded by the farmers, the suggestion to fertilize the soil, which agricultural crop to grow and how pest control treatment can be given, details will be given back or uploaded by the agricultural experts. The farmers can also avail loan for his growing crops by giving details of the crop to Banker in Banker module. The banks nearby farmers land will sanction loan based on requirement and approval by the government.

**Keywords:** Farmer, Expert, Banker, Smart app

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Baggage Identification Using RFID		<b>Project ID:</b> MCA_59
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**Project Execution Time:** In\_House


**Project Category/Area:** Application\_Oriented


**Abstract:** Recently, Radio Frequency Identification (RFID) has received considerable a great attention and is considered to be the next form of information technology revolution. The number of RFID applications in different industries is increasing continuously and are in great demand. Cumulative sales of RFID tag are up in 2006 which shows RFID adoption trend in industries to improve their efficiency of operations and to gain a competitive advantage. In the aviation industry, major airports, airlines have been also planning the RFID adoption in baggage handling and customer services areas for a long time. Many pilot tests have been performed at various airports and RFID tags were found to be far more precise to perform and along with better performance than bar codes or the other means. RFID systems, associated technology, advantages, limitations and applications in various fields and the received comments on this technology is also positive. The preliminary review of state of RFID adoption planning, architecture and implementation plan in a major airline, focusing on improved baggage handling, increased airport/airline security and customer services. And gaining the positive response in this will make the aviation industry much more utilized mode of transport.

**Keywords:** RFID, Baggage, Airport



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Recognition of Traffic Specific Scene based on Supervised Learning	<b>Project ID:</b> MCA_60	
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**Project Execution Time:** Industry

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Accidents and traffic issues are especially intense at night time, rainy season, and foggy day without street lighting a person cannot travel safely in such conditions. Several other occasions with poor visibility conditions are especially extreme. Classification is a technique for identifying the form of digital features used in algorithms For enhancing sight to make it more useful. Specific visual highlights are removed from number of co-traffic scene images to begin with, and thus the component was subsequently communicated as eight measurements include lattice. Firstly, several traffic pictures are extracted from the basic visual features, and then the function is exposed. This process is done with the aid of digital image processing, where the image is captured that will help to pre-process it and to give at any time a better view with clear traffic and weather information. Secondly, five supervision was made learning methods are used to train instructors. Analyze the extracted features indicate that the image describes accurately the highest recognition of etymology and classmates is the accuracy rate and adaptive skills. Gives the premise to the proposed technique front vehicle advancement expands innovation night time light changes, just as builds view of driving field on an ice day. Image highlight extraction is the most significant procedure in design acknowledgment. And disentangling high-dimensional image information is the most productive approach. Due to this, it is difficult to obtain some data from the 3-dimensional image networks of the  $M * N$ . Hence, the main data must be segregated from the picture, infer able from seeing multi-traffic scene. Help Vector Machine is a classification algorithm used for this SVM that could be used for controversy over classifying as well as normalization. It's primarily used during the multiclass classification, however. The data element in the SVM classifier is depicted as an  $n$  - dimensional space (in which  $n$  is the number of characteristics you have) with each characteristic being the value of another.


**Keywords:** Support Vector Machine, Digital Image Processing, Python, Django and Machine learning algorithms


# **MECHANICAL ENGINEERING**

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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Fabrication of Aircraft Based on Magnus Effect	<b>Project ID:</b> ME_1	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** In the future, air travel and transport are expected to grow by a huge margin as more and more people travel and goods are transported by flight. The time has arrived to look into new possibilities which can overcome the limitations of the conventional airplanes such as incapability to perform low speed cruise, longer runways for take-offs and landings, and higher noise levels. One such technology worthy of looking into is the Magnus effect. Magnus Effect is the force exerted on a rotating body travelling through the air or any other fluid. In this study, an attempt has been made to utilize the already known Magnus Effect to provide lift force for an aircraft. This can replace the static airfoils with rotating cylinder for the purpose of generating the required lift force to the aircraft. The co-efficient of lift (CL) and co-efficient of drag (CD) were calculated with the help of analytical calculation and MATLAB programming for a range of values of aspect ratio (AR) and velocity ratio ( $\Omega$ ) at different values of rotational speed and weights. The obtained values were then verified and visualized with the help of Computational Fluid Dynamics (CFD) analysis by plotting pressure and velocity distribution of the rotating cylinder. The results show an upward lift force is generated due to the rotation of cylinder in the air due to pressure difference in the above and below regions of the cylinder. Based on the obtained result a complete model aircraft was designed using AUTODESK FUSION 360 software. This concept aims at solving the issues with the conventional airplane such as low speed cruise, high payload capacity and no stalling.

**Keywords:** Magnus effect, Lift force, Drag force, Vortex Strength

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Performance Testing of Vaporized Petrol Fuel Engine	<b>Project ID:</b> ME_2
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**Project Execution Time:** In\_House




**Project Category/Area:** Environmental\_Societal

**Abstract:** Petroleum-based fuels are gradually depleting and burning of these fuels have destructive impacts on the environment. There is a need for an intensive search for alternative fuels for IC engines. According to BP (British Petroleum), drivers whose vehicles rely on burning oil have a little more than a half-century to find alternate sources of energy or walk. BP's annual report on proved global oil reserves says that as of the end of 2013, Earth has nearly 1.688 trillion barrels of crude, which will last 53.3 years at current rates of extraction. This figure is 1.1 percent higher than that of the previous year. In fact, during the past 10 years proven reserves have risen by 27 percent, or more than 350 billion barrels. Petrol engines are very popular from the time of their invention; most of the automobiles are run by these engines. Mainly because of its simplicity and easy operations they are the choices for a number of researches but due to lack of crude oil reserves and increasing price of petrol alternative fuels are coming to picture. Today Most of the alternative fuels are biomass derived and easily available. Many alternative fuels blends has been introduce in past and they gave very satisfying results. The aim of this project is to obtain vapor from petrol and use this vapor to ignite the engine. Here bubble creation method is used to obtain the vapor from petrol and then this vapor is passed through water tank so that it reduces peak temperatures by taking up the latent heat of vaporization. It helps in controlling emission by complete combustion of fuel vapor air mixture inside the combustion chamber. The fuel vapor produced is much better than the fuel mist. The vaporized fuel passing through water is designed to attain and sustain required high temperature so as to initiate and accomplish the process of more efficient combustion. It results in reduced exhaust emissions of high boiling unburnt hydrocarbons. The result of this study will compare fuel vapor and the vaporized petrol passing through water. The results showed that the level of fuel vapor consumption was more than vaporized petrol fuel passing through water. Since the automobile industry mainly focuses on decreasing the fuel consumption and increasing the mileage, it can be said that this is the best alternative fuel.

**Keywords:** Engine, Vapour, Petrol

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Automatic Railway Track Fracture Detection and Monitoring Systems	<b>Project ID:</b> ME_3	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** The Indian Railways has one of the largest railway networks in the world. Global standards haven't been achieved reliability and passenger safety in Indian Railways is not up to global standards. Among other factors, cracks and fractures developed on the rails due to absence of timely detection and the associated maintenance pose serious questions on the security of operation of rail transport. A recent study revealed that over 25% of the track length needs replacement due to the development of cracks on it. Manual detection of cracks or fractures in tracks is cumbersome and not fully effective owing to much time consumption and requirement of skilled technicians. This project work is aimed towards addressing the issue by developing an automatic railway track fracture detection system integrating an infrared red (IR) fracture sensing module enabling the immediate attention and intervention of maintenance personals. The sensors are used to detect fractures and cracks in the railway track automatically. The vehicle draws power from the battery. The optical sensor is used to detect the crack, fracture or discontinuity in the railway track. When a crack is detected in the track, the vehicle automatically stops, and the solenoid valve opens to mark using paint. The camera is used to capture the photo of the crack and location of the crack. This system is simple in operation and advantageous over both day and night crack detection. There are several different techniques to detect the cracks but this technique of crack detection has less costing and gives more accurate result. This is a very efficient method of checking the cracks and fractures in the railway track and this is to be used in modern engineering industries. The manual efforts can be completely avoided by using this equipment.

**Keywords:** Crack, Fracture, Railway track.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Fabrication of E-Bicycle Wheel	<b>Project ID:</b> ME_4	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** In recent decades attention has recently focused on the use of electric vehicles as means of reducing the pollution, which has long been a challenge in most parts of the world due to various reasons. Under the present infrastructure the use of electric vehicle is an economical challenge though it is predicted that electric vehicles will be the future of mobility. Coming up with a universal way to convert any conventional vehicle to electric will reduce the cost of owning an electric vehicle and this may be the future. This project also focuses on the same, any conventional bicycle can be converted to electric by just changing the front wheel and also a rechargeable as well as portable battery add up to the stress-free ownership. The ultimate aim of this project is to provide a economical e-bicycle to the masses and in turn help reduce the pollution. The main advantages of this project may be that it can be a replacement for the CI motorbikes if short distance travel is a priority, this will work with a reasonable speed with less fatigue to the rider. Another major advantage is that it will be cheaper than most of the other conventional CI bikes or e-bikes out there in the market. This project can be upgraded with just minimal changes to charge the battery using pedal assist. The battery can be charged even during riding the bike. This ensures continuous energy input to the bike without any additional cost and also increases the range of the bike as it can be considered for long distance rides as well.

**Keywords:** e-bicycle,electric vehicles,rim and wheel,throttle

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design, Analysis and Development of 5 in 1 Multipurpose Agricultural Vehicle	<b>Project ID:</b> ME_5	
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**Project Execution Time:** In\_House


**Project Category/Area:** Product\_Development



**Abstract:** The main aim of agricultural automation is to apply the latest mechanization technologies in the field of agriculture as well as to overcome the agricultural challenges to develop new techniques. Nowadays, no one can end up the day without using any kind of embedded system products. It makes our human life very robust and makes work comfortable. Automation in agricultural robotics system has been developed to implement a number of agricultural productions in many countries. Such as picking, harvesting monitoring, weeding, seeding, fertilizer, irrigation. But in this project functions included are soil based applications of Seeding, leveling, harvesting, watering, and ploughing. The purpose of this project is to analyse and develop a farm vehicle, minimize the labor of farmers in addition to increasing the speed of the work as well as increase the yield of agriculture. In this project, it is shown that the farm cultivation process can be made highly efficient and how effectively it can be done by using both solar and manual power to do various operations. Even now, in our country 98% of the contemporary machines use the power by burning of fossil fuels to run IC engines or external combustion engines. This evident has led to widespread air, water and noise pollution and most importantly has led to a realistic energy crisis in the near future. In this project solar panel is used to capture solar energy. Today the environmental impact of agricultural production is very much in focus and the demands to the industry is increasing. In this project an attempt is made to make the electric and mechanical systems share their powers in an efficient way.

**Keywords:** automation,multipurpose farm vehicle , solar energy,agriculture



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Study on Microstructure and Mechanical Properties of Zn-Al Based Hybrid Composites	<b>Project ID:</b> ME_6	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reearch\_Oriented

**Abstract:** During the past few decades, zinc-aluminum family of alloys has increasingly been used as a result of the good combinations of their mechanical, physical, tribological and low production costs. However, among the zinc-aluminum family, ZA-27 alloy has the highest strength, low density, excellent bearings, and wear properties. In order to improve these good properties possessed by this alloy, ZA-27-based composites became a new generation of metal matrix composites that possess the potentials of meeting the recent needs of advanced engineering in bearing and bushing applications. The optimum display of behaviors of this material is a function of the processing parameters and reinforcing phases. This project work is an attempt to review the recent developments on synthesis, combination of reinforcing materials used in processing of ZA-27-matrix-based composites and how it influences the microstructure and mechanical behavior of the composites.

**Keywords:** Zinc-aluminium alloys, silicon carbide, reinforcement

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Development of Compressed Air Engine for Soil Tilling	<b>Project ID:</b> ME_7	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Today fossil fuels are widely used as a source of energy in various different fields like power plants, internal & external combustion engines, as heat source in manufacturing industries, etc. But its stock is very limited and due to this tremendous use, fossil fuels are depleting at a faster rate. So, in this world of energy crisis, it is inevitable to develop alternative technologies to use renewable energy sources, so that fossil fuels can be conserved. One of the major fields in which fossil fuels are used is Internal Combustion Engine. An alternative of IC Engine is "AIR POWERED ENGINE". It is an engine which uses compressed air to run the engine. It is cheap as it uses air as fuel, which is available abundantly in atmosphere. Here air is compressed using a compressor which in turn uses electricity, to run which is cheaper and widely used. This adds value to its economic benefits. Soil Tilling has been mechanized since a few decades now by using IC engines to till the soil and reduce labor time and increase productivity of farmers. The tiller machine is one of the most used agricultural equipment to plough land. Currently it uses a petrol IC engine to run, but with this project the aim is to use compressed air to obtain an identical output. Also the components used in this are: conventional SI engine, air vessel to store compressed air, and tiller frame work and digging blades, these economical and readily available components which make the technology easily adaptable.

**Keywords:** IC engine, compressed air, soil tilling

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Simulation and Fabrication of Regenerative Braking System	<b>Project ID:</b> ME_8
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** We are reaching the age of high demand in electric vehicles. The era of electric vehicles began in 1996 introduced by General Motors. In today's date, the annual sales of electric vehicles have reached around \$120 billion dollars and will reach about \$912 billion dollars in 2026. This figure shows the increasing demand of electric vehicles in the automobile market and electric vehicle manufacturers are increasing day by day. As the vehicles are increasing, they require a large number of charging stations and high power to charge. The major issue behind the mass use of electric vehicles is the battery charging time and lack of charging stations. So here we propose a regenerative braking system. We implement to improve the efficiency by 30-35% by adding piezoelectric actuators on the brake pedal and a gear mechanism connected to the wheel and the generator. This system allows a vehicle to generate energy each time brakes are applied. The stronger the brakes, the more power is generated. As soon as brakes are applied, the lining of the brake touches the drum from inside and moves the motors connected to lining in same direction, thus generating electricity using motors as dynamo. The piezoelectric generator connected to the brake pedal also converts the pressure applied on the brake pedal to electric energy and stores it into the battery through the bridge circuit. Thus, this system allows charging the car battery each time brakes are applied, thus providing a regenerative braking system. It moves us another step ahead towards a pollution free transportation system.

**Keywords:** Regenerative breaking system; gear mechanism; efficiency; Eco friendly; Fuel consumption;

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Fabrication of Air Brake System through Exhaust Gas	<b>Project ID:</b> ME_9
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** The aim is to design and fabricate an air brake system based on exhaust gas which can be called “Fabrication of air brake system using engine exhaust gas”. The main aim of this project is to reduce the workloads of the engine drive to operate the air compressor, because here the compressor is not operated by the engine drive. Here we are placing a turbine in the path of exhaust from the engine. The turbine is connected to a dynamo by means of coupling, which is used to generate power. Depending upon the airflow the turbine will start rotating, and then the dynamo will also starts to rotate. A dynamo is a device which is used to convert the kinetic energy into electrical energy. The generated power can be stored in the battery and then this electric power has loaded to the D.C compressor. The pneumatic valve acts as a link between DC compressor and pneumatic cylinder. The pneumatic actuator is a double acting cylinder which converts hydraulic energy into linear motion.

**Keywords:** Dynamo, DC compressor and pneumatic valve

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design Fabrication And Performance of Solar Parabolic Trough Collector Using Nano Fluids	<b>Project ID:</b> ME_10	
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**Project Execution Time:** In\_House




**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Solar energy has becoming most important energy in present world due to depletion of non-renewable source of energy. At present solar energy is used solely in domestic and industrial water heating. There are many possible ways which can convert solar energy into usable energy; concentric trough solar water heater is one the best way to covert solar energy into water heating. A parabolic trough is a type of solar thermal collector that is straight in one dimension and curved as a parabola in the other two, lined with a polished metal mirror. The energy of sunlight which enters the mirror parallel to its plane of symmetry is focused along the focal line, where objects are positioned that is intended to be heated. The tube runs along the length of the trough at its focal line. The mirror is oriented so that sunlight which it reflects is concentrated on the tube, which contains a fluid which is heated to a high temperature by the energy of the sunlight. The hot fluid can be used for many purposes. Often, it is piped to a heat engine, which uses the heat energy to drive machinery or to generate electricity. This solar energy collector is the most common and best known type of parabolic trough. The parabolic trough solar collector is designed for component testing and development in a solar energy research programme. Test was performed by using nano fluids as the working fluids basically and the aluminum tube painted black surrounded by glass tube was used on receiver side. Following nano fluids such as copper oxide with glycol, aluminum oxide with water and glycol are used in the study.

**Keywords:** Parabolic trough collector, nanofluid, efficiency,

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Development of Portable Cross Flow Hydro Turbine	<b>Project ID:</b> ME_11	
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**Project Execution Time:** In\_House




**Project Category/Area:** Environmental\_Societal

**Abstract:** Efficiency is a critical consideration in the design of hydro turbines. The crossflow turbine is the cheapest and easiest hydro turbine to manufacture and so is commonly used in remote power systems for developing countries. A longstanding problem for practical cross flow turbines is their lower maximum efficiency compared to their more advanced counter parts such as Pelton and Francis turbines. This paper reviews the experimental and computational studies relevant to the design of high efficiency crossflow turbines. We concentrate on the studies that have contributed to designs with efficiencies in the range of 88–90%. Many recent studies have been conducted on turbines of low maximum efficiency, which we believe is due to misunderstanding of design principles for achieving high efficiencies. We synthesize the key results of experimental and computational fluid dynamics studies to highlight the key fundamental design principles for achieving efficiencies of about 90%, as well as future research and development areas to further improve the maximum efficiency. The main finding of this review is that the total conversion of head into kinetic energy in the nozzle and the matching of nozzle and runner designs are the two main design requirements for the design of high efficiency turbines. Myanmar is a developing country; the annual consumption of electricity has been increasing rapidly throughout the country. The main source of energy for generating electricity is hydropower because of her hilly regions with rivers and water-falls. Myanmar, where 75% of the populations live in rural area, has a low level of access to electricity. Small-scale hydropower production may be the most cost-effective way to supply electricity to remote villages that are not near transmission lines. The objectives of this research is to design low cost with high efficient cross-flow turbine especially for low head, to analyse the blade structural and modal of the turbine runner by using ANSYS 14.5 software, to construct the designed cross-flow turbine and test the performance of constructed cross-flow turbine in selected site location.

**Keywords:** Hydro Turbine Cross flow portable

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Development Of Autonomous Navigation Wheelchair	<b>Project ID:</b> ME_12
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** A head-motion and voice controlled automatic wheelchair serves the mobility requirements of quadriplegics. It detects head motion using data obtained from ADXL 335, a triple axis accelerometer. The data is processed using two microcontrollers, ATmega-2560, and Genuino-Uno, programmed to work with the open-source platform, Arduino. The wheelchair moves in three directions, i.e., front, right, and left, based on the user's head motions. The Arduino controls motors in the desired direction. An ultrasonic sensor prevents collisions with obstacles and enhances user safety. Data is transferred from the accelerometer placed on the user's head to the receiver for data processing using RF technology. We also implement Voice control technology on RaspberryPi3 which uses an offline voice recognition platform called Snowboy that detects hotwords such as "forward, left" and actuates the wheelchair according to the signals received. We also explore the advantages of autonomous navigation.

**Keywords:** Navigation, wheel chair, Head control, Aurdino

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<b>Project Title:</b> Design and Development of Hydraulically Actuated Autonomous Nurse (HyAAN)	<b>Project ID:</b> ME_13	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The general shortage of nursing staff worldwide is an aspect which is beginning to have a detrimental impact on hospitals, nursing professionals and the patients. Musculoskeletal injuries are predominant among nursing staff due to labour intensive physical tasks like lifting and repositioning patients multiple times on a daily basis. In some hospitals where there is a severe shortage of nursing staff, a nurse may need to do this process of turning patients up to 60 times a day, which exert a great deal of physical stress on the nursing staff. Furthermore, lifting a patient cannot be done by a single nurse and requires at least two nurses. Consequently, another set of patients are left unattended. It is estimated that India is at a shortage of 2.5 million nurses and by 2030, India will need an estimated 6 million nurses. Therefore, there is a need to develop a lifting and turning mechanism which increases nurses' efficiency, reduces their occupancy-related injuries, reduces patient rehabilitation time, ubiquitous for the entire ward, offers autonomous mobility and intelligence while being cost efficient. Hydraulically actuated autonomous nurse (HyAAN) is a semi-autonomous robot which can lift and turn patients using a hydraulically actuated mechanism. It has powered locomotion for it to navigate to any part of the hospital on the nurses' command. In addition, an intelligent posture detection deep learning model is used to ensure that the posture of the patients is safe before any lifting or turning operations can be performed. This robot ensures that nurses do not get fatigued as a result of unnecessary and monotonous laborious tasks, thus reducing the risks of occupation related injuries for nurses and also greatly enhancing patient safety.

**Keywords:** Autonomous nurse, robot, Musculoskeletal injuries, monotonous laborious tasks, lifting and turning mechanism.



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Study of Variable Sweep Canard Deployment on Fighter Aircraft & The Effects on Handling Characteristics	<b>Project ID:</b> ME_14	
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**Project Execution Time:** In\_House




**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Abstract: A CANARD is an aeronautical arrangement wherein a small forewing or fore plane is placed forward of the main wing of a fixed-wing aircraft. Modern-day fighters utilize canards to achieve pitch control at high  $\alpha$  flight regimes. With advanced fly-by-wire control & departure redundant systems, fighter aircraft agility can be fine-tuned. Our study will solely focus on said usage of canards. We propose to test the practicality & feasibility of a variable sweep canard using the Rafale aircraft as a test bed for CFD simulations. This sweep mechanism allows the canard system to minimise penalty drag at supersonic or high-speed flight. It would also allow better handling at landing & take-off to reduce runway usage.

**Keywords:** Canard, Rafale aircraft, CFD simulations, supersonic.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Fabrication of Multifunction War Tanker	<b>Project ID:</b> ME_15	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** The future combat scenario will undergo a sea change as compared to the conventional and unconventional warfare employed by the traditional armies and non-state actors. In such a scenario, the main battle tank which serves as a game changer during these conflicts has to face the dilemma whether its design should be either evolutionary or revolutionary. To determine the basis of selecting the right type of design based on the above, the broad parameters that define the configuration namely number of crew, weight, armament system, survivability, operating range, transportability, tactical mobility, traffic ability, intelligence - surveillance - target acquisition - reconnaissance (ISTAR), system modularity and theatre of operation have been considered. Taking these parameters into account, this study evaluates both the evolutionary and revolutionary design configurations for a generation next main battle tank.

**Keywords:** war tanker, fire extinguisher

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design & Fabrication of Archimedean Screw Turbine to be Used for Compact Energy Generation	<b>Project ID:</b> ME_16	
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Electric power is so essential in today's world that it's impossible to imagine life without it. Electricity shortage is one of the main problems faced in India. In recent years, distributed renewable energy-generation technologies, such as wind and solar, have developed rapidly. India amongst other countries, depend heavily on electricity through Hydro-Power. To generate Hydro-Power, lots of investments are needed to construct dams, etc. Nevertheless, the utilization of ultra-low-head (ULH) water energy (i.e., situations where the hydraulic head is less than 3 m or the water flow is more than 0.5 m/s with zero head) has received little attention. We believe that, through technological innovations and cost reductions, ULH hydropower has the potential to become an attractive, renewable, and sustainable resource. This project provides a method to generate electricity in a safe and eco-friendly way using a compact electricity generator accommodating an Archimedean screw turbine placed in various waterways. These generators can help light up street lights and other low load electrical appliances that can be used for daily applications. The aim of this project is to harness the untapped potential energy present in storm drains, streams, narrow river, trickle and generate electricity from it.

**Keywords:** Hydro Power, Archimedean Screw Turbine, Electric Power.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Fabrication of Agriculture Farm Vehicle	<b>Project ID:</b> ME_17
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**Project Execution Time:** In\_House

**Project Category/Area:** Environmental\_Societal

**Abstract:** Presently, small land holding farmers use work bulls mostly for land preparation. Their use can be increased and made more economical by using them for other farm operations such as ploughing, harrowing, fertilizer application, sowing and weeding. Improved hand tools will also facilitate farm work. Oxen can be used to pull a cart throughout the year which keep them in training. Ploughs, riders, seeders and weeders are all seasonal implements. Manual method of seed planting, results in low seed placement, low crop yield and serious back ache for the farmer which limits the size of field that can be planted. The cost price of imported planters has gone beyond the purchasing power of most of our farmers. Farmers can do much to increase crop production especially grains if drudgery can be reduced or totally removed from their planting operations. Generally cultivation of any crop involves various steps like seed selection, field preparation, fertilizing, sowing, irrigation, germination, thinning and filling, weed removal, vegetative stage, flowering stage, pesticide spraying, fruit or pod formation stage, harvesting and threshing. Farmer has to use various agricultural equipment and labours for caring out those steps, our purpose is to combine all the individual tools to provide farmers with multipurpose equipment which implements all the scientific farming techniques and specifications and suitable for all type of seed to seed cultivation with as minimum cost as possible. This project work is focused on the design and fabrication of multipurpose equipment which is used for land preparation, sowing, fertilizing, levelling and weed removal process. The farm vehicle consist of the main frame, adjustable handle, drive wheels, ploughing tool, leveller, tiller, water pump, was designed. The multipurpose agricultural equipment is very simple to use, the various adjustments are made with ease, and it is maintenance free.

**Keywords:** Automated Farming , Agribot

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Solar Operated Automatic Pesticides Sprayer	<b>Project ID:</b> ME_18	
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**Project Execution Time:** In\_House

**Project Category/Area:** Application\_Oriented

**Abstract:** A sprayer is a device used to spray a liquid, where sprayers are commonly used for projection of water, weed killers, crop performance materials, chemicals, as well as manufacturing and protection line ingredients. In agriculture, a sprayer is piece of equipment that is used to apply herbicides, pesticides, and fertilizers on agricultural crop. A automatic sprayer comprises a detection system and a chemical spraying system. In this study, the development status and challenges of the detection systems of automatic sprayers are discussed along with perspectives on these technologies. The detection system of a automatic sprayer is used to collect information on target areas and make spraying decisions. The spraying system controls sprayer operation. Various sensing technologies, such as machine vision, spectral analysis, and remote sensing, are used in target detection.

**Keywords:** Automatic Sprayer, Crop, Fertilizers.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Design and Fabrication of Mechanical Prototype of Integrated Four Wheel Drive and Four Wheel Steering System	<b>Project ID:</b> ME_19	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** A Four-wheel steering system also known as Quadra steering system. Nowadays, every vehicle existed mostly still using the two wheel steering system and two-wheel drive system to control the movement of the vehicle and to give drive input whether it is front wheel drive, rear wheel drive or all-wheel drive. This paper is about integrating and make both four-wheel steering system and four-wheel drive system to work together. Two wheel steering with front wheel drive as in conventional vehicles run around the world which are of limited manoeuvrability with low efficiency and not very stable but due to the awareness of safety, four wheel steering and four-wheel drive vehicles are being used increasingly due to high performance and stability that they bring to the vehicles. In this report, the performance of four-wheel drive and four wheel steered vehicle model is considered. The main aim of this project is to turn the rear wheels out of phase to the front wheels as much as possible and to design efficient four-wheel drive system to support at all turning radius. Such design was created in software and analysed for various properties where rear wheels were made out of phase with respect to front wheel by maximum of 180 degrees while transferring equal power to all the wheels with maximum constant efficiency. Hence it is shown that our design is more manoeuvrable efficient and stable than existing models

**Keywords:** Drive system, Steering system, Turning radius

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Experimental Investigation of Performance and Emission Characteristics of Mixture of Simarouba and Blackseed Oil Bio-Diesel Blends on CI Engine	<b>Project ID:</b> ME_20	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The immense usage of fossil-fuels has greatly decreased the dependence of mankind on its usage during recent times. This has eventually caused a pollution exposing a profuse amount of greenhouse gases into the environment leading to hazardous effects on the atmosphere. The issue has raised urgent concerns globally to discover alternative sources of energy and fuel that can comparatively be more reliable in usage and emit less harmful gases into the atmosphere. Modern research in response has revealed Bio-fuel to be a reliable source of energy for habitual usage. It has by far proven to be less harmful in comparison with conventional fossil-fuels with respect to emission. It has also proven to be very promising in terms of automobile performance as well as the diesel requirement. Considering this a research was initiated on the experimentation and study of Bio-fuel using a distinct composition. This study is based on the synthesis of Bio-fuel extracted from simarouba seed and black seed by the single-step direct transesterification process using an acid- base catalyst. These seeds are obtained from non-edilble feedstocks which have also proven to be additionally economical. The final produce extracted is a hybrid fuel composed of a blend of both black seed and simarouba seed oil's further blended with a percentage of diesel. Tests were then conducted on the fuel to learn it's properties giving favourable results.

**Keywords:** Bio-fuel, Performance, Black seed, Simarouba seed, Fuel Properties


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## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Trace File Analysis To Obtain Congestion Window, Throughput And PDR	<b>Project ID:</b> ETE_1	
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**Project Execution Time:** In\_House

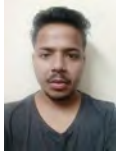


**Project Category/Area:** Environmental\_Societal

**Abstract:** The use of wireless networks have led to a recognizable evolution in the area of wireless Body Area Networks (WBANs).With the help of WBAN a patient's state of health can be repeatedly monitored without affecting his day to day activities. A wide range of technologies have played a significant role in supporting WBAN applications which includes telemedicine, remote monitoring and ambient assisted living by focusing on particular quality of service requirements. In this project, the QOS parameters like delay and throughput will be improved compared to existing protocols with the help of a simulator(NS2).We will collect values from the present database and transmit it via the internet such that it will have minimum delay and throughput, so that the packet without any loss of data can be collected at the hospitals.

**Keywords:** Throughput;PDR;Trace-files;Congestion window;WBAN.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Sensor Fault Detection and Reconfiguration System using Neural Networks	<b>Project ID:</b> ETE_2	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** The project aims to deals with detection and reconfiguration of sensor faults of f8 aircraft model: The detection of sensor fault is done with the help of Knowledge Based Neural Network Fault Detection (KBNNFD)and a Model Based Approach of The Neural Network (MBNN) is developed for the reconfiguration of the failed sensor. A Model Based Neural Network (MBNN) uses the radial basis function of the neural network. MBNN is providing Analytical Redundancy for the aircraft sensor. Both the detection and reconfiguration of a fault sensor is done using Neural Networks (KBNN & MBNN). An F8 aircraft model and C-star controller which improves its handling quality are used for validation of the method involved. Model of F8 aircraft, C-star controller, KBNNFD and MBNN were developed using MATLAB/Simulink.

**Keywords:** C-star, Neural Network, Aircraft, Sensor fault, stuck fault, knowledge base neural network, model base neural network

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Development of Sensors based Compost Machine using Electronic Control Unit and IOT	<b>Project ID:</b> ETE_3	
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**Project Execution Time:** In\_House

**Project Category/Area:** Product\_Development

**Abstract:** Organic waste, which is a significant part of municipal solid waste, has raised several environmental concerns. It is estimated that a large portion of the waste collected at homes can be composted thus contributing towards environmental conservation. This compost produced is used as fertilizers and help conserve resources. Existing compost machines have various challenges that needed to be addressed such as foul-smelling compost, infestation by insects, slow and tedious process and release of harmful gases. They are also not completely automated and are therefore very labor-intensive. The aim is to design a fully automated composting machine for household kitchens that is simple to operate, odour-free, compact, and efficient. The Compost machine consists of a hopper for shredding the waste, a composting chamber fixed with rotating blades that rotate with the aid of a motor, an ECU module that controls the compost parameters and performs acts to hold parameters.

**Keywords:** Composting, Instrumentation, Automated Compost Machine, sensors, electronic control unit

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> EARLY WARNING EFFICIENT WIRELESS SENSOR NETWORK USING NS-2 FOR LANDSLIDE DETECTION	<b>Project ID:</b> ETE_4	
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**Project Execution Time:** In\_House





**Project Category/Area:** Environmental\_Societal

**Abstract:** Landslide is the catastrophic movement of soil and rock in a downward slope. It is usually an after-effect of earthquakes, heavy rains, volcanic eruptions, or soil erosion. It might lead to injury, death, or damage of property ultimately resulting in financial loss. In order to reduce colossal destruction, it is important to detect landslides before they occur. A wireless sensor network (WSN) consists of distributed sensor nodes that monitor specific environmental events such as temperature, sound, vibration, pressure, or motion. Since sensor nodes have limited resources such as power and sense, they need to be used in an efficient manner in order to improve a network's lifetime. In this project, we use the LEACH protocol for clustering and the AODV protocol for routing. NS2 is a software that predicts the behavior of computer networks to provide accurate analysis of system performance. The project aims to evaluate performance through a network simulator for the existing system. The simulation results show that the enhanced version of the system has improved energy efficiency, throughput, packet delivery ratio, overhead, and delay. Additionally, features like fault tolerance, faster data processing rate, and higher transmission range have been incorporated in the system. In this project, the enhanced wireless sensor network is designed using NS-2 simulation for landslide detection

**Keywords:** Landslide, wireless sensor network (WSN), NS2

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> DESING AND IMPLEMENTING OF EFFICIENT ROUTING PROTOCOL FOR WIRELESS SENSOR NETWORK	<b>Project ID:</b> ETE_5	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Recent advancement and innovation in Micro-Electro-Mechanical Systems (MEMS) in conjunction with significant developments in digital signal processing (DSP) has led to the great development of micro-sensors. In contrast to the wired sensors that were implemented in limited applications in industries, wireless sensor nodes are more widely deployed in various fields. In the past decade, there has been increased research regarding the great potential capabilities of wireless sensor networks (WSNs). Wireless sensor networks, also called wireless sensor and actuator networks (WSAN), are spatially distributed autonomous sensors designed to monitor physical or environmental conditions, such as temperature, sound, pressure, etc and to collectively pass their data through the network to a main location. A critical regard with respect to applications of wireless sensor networks is its network lifetime. Battery-powered sensors are employable as long as they can communicate captured data to a processing node. Sensing and communication processes consume energy; therefore sophisticated power management and scheduling can successfully extend the operational time. Sensors that are more distant from base station deplete greater energy. Hence the cluster head is deployed for processing and sending the information while other energy nodes can be used to achieve sensing in the proximity of the target. Transmission of data from cluster head to base station consumes more energy than the sensor node transmission, especially if the base station is distant from source head. This causes the cluster head to deplete their energy much faster. Hence the objective of our project is to design an Hybrid approach to increase energy efficiency in Wireless Sensor Networks and thusenhance the lifetime of the wireless sensor network

**Keywords:** WSN,Base Station,Routing Protocols

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Performance Evaluation of PSO algorithm for Spectrum Allocation in Cognitive Radio Networks	<b>Project ID:</b> ETE_6	
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**Project Execution Time:** In\_House





**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Due to rapid growth of new wireless devices and application there is a demand for radio spectrum. Cognitive radio provides efficient solution over bottleneck condition which arrived due to fixed spectrum assignment policy. Dynamic spectrum management is promising technique of cognitive radio to fulfil these demands with due consideration of parameters, like power consumption, fair distribution and minimal error. After sensing the vacant space in spectrum cognitive radio allocates vacant space spectrum to secondary users dynamically. By using the allocated vacant spectrum cognitive radio devices provide high throughput. This is a promising technique to overcome the problem of spectrum scarcity. We consider a Particle Swarm Optimization-based approach, popularly used for solving large problems involving complex solution spaces to reach an optimal solution within feasible time. The mentioned spectrum allocation problem has been solved using PSO with a view to maximize the total transfer rate of the system, within specified constraints of maximum error rate, maximum power consumption and minimum transfer rate per user.

**Keywords:** Cognitive radio, Spectrum allocation, Particle Swarm Optimization.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Development of microstrip array antenna for Automotive RADAR at 24GHz	<b>Project ID:</b> ETE_7	
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**Project Execution Time:** In\_House


**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Automotive RADARs are used to distinguish the speed and scope of targets that is near the vehicle. A24GHz array antenna is widely used for automotive applications. A 1 x 4 patch array antenna for automotive RADAR is presented in this article. The antenna dimension is 30 x 60 x 1.6mm<sup>3</sup>. The antenna produces a frequency of 24GHz. FR4-epoxy is the substrate used which bears a permittivity of 4.4. The proposed antenna has reflection co-efficient of -23.81dB and a gain of 9.7dB. This antenna delivers a VSWR of 1.38 in the working frequency

**Keywords:** RADAR, Automotive, 24GHz



## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Bone conduction Helmet	<b>Project ID:</b> ETE_8	
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**Project Execution Time:** In\_House





**Project Category/Area:** Environmental\_Societal

**Abstract:** A bone conduction microphone assembly with a transducer mounted in a transducer mount supported from a surrounding support member by spring means which yield able urges the transducer mount against the user head with predetermined pressure. Bone conduction allows us to hear sound through the vibration of the bones of our face. This means that the sound waves are bypassing the outer and middle ear and directly stimulating to inner ear. There can be found, major applications of bone conduction in major industries like Military, Hearing aids. The Bone Conduction Headphones provides significant improvement to field communication because it allowed the user to retain full awareness of ambient sounds. This is not only helpful for the people who are deaf but also to normal people who have normal hearing. And if an accident occurs it will detect fall and inactivity for 2 minutes and inform nearby emergency services using mobile app. The safety helmet with the bone conduction headset function can also be used as an assistant communication component to be used in cooperation with any inter-phone communication product.

**Keywords:** Product Design, Bone Conduction, Transducer

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Secure Key Management Scheme for Hierarchical Network using Combinatorial Design	<b>Project ID:</b> ETE_9	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reearch\_Oriented

**Abstract:** This project aims at developing a Secure Key Management Scheme in WSN. The main objective is to provide security during communication between nodes, to make the network attack resistant, to provide better connectivity, to increase key strength and throughput. Establish communication between the nodes using keys and establishing a secure connection helps in securing the network. To establish secure communication, combinatorial based key distribution scheme is used to distribute keys. The keys distributed by the base station to cluster head are generated using UBIBD. The keys distributed by cluster head to its member nodes are generated using SBIBD and Keys are refreshed periodically.

**Keywords:** Wireless sensor networks, Combinatorial design, Key management, Key refreshment.

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Development of Compact Dipole printed antenna for 4G/5G applications	<b>Project ID:</b> ETE_10	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** We in our project have designed microstrip antennas for 4G and 5G applications incorporating different techniques to improve antenna parameters. Two compact dipole printed antennas for 5G applications with 160mm<sup>3</sup> and 45mm<sup>3</sup> was developed. An antenna with a metamaterial that helped us get a better gain and another antenna with E shaped patch was developed which realizes frequencies for 4G usage. A reconfigurable antenna for switching the frequencies keeping the actual physical structure unchanged was designed. A compact monopole antenna whose final result was obtained after a series of variations done to the feed was developed. A compact array antenna with size 9321mm<sup>3</sup> for achieving high directivity of radio waves was developed

**Keywords:** HFSS, 5G, 4G, Slots, DGS, Metamaterial, Reconfigurability

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> A Compact Reconfigurable Uwb Antenna For Short-Range Wireless Applications	<b>Project ID:</b> ETE_11	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Accurate estimation of rice yield with remotely sensed data plays a role in ensuring food security at local or national scales. In this study, an estimation scheme integrating a rice canopy scattering model (RCSM) and a genetic algorithm optimization tool (GAOT) was proposed on a basis of radar remote sensing technology. A C-band Radarsat-2 synthetic aperture radar (SAR) image acquired at rice maturity stage in Northeast, China was tested to simulate three yield-related rice parameters via an integrated RCSM-GAOT scheme, with a parallel computing environment. Rice yield was then estimated via a regression analysis by linking the simulated parameters to rice ear weights. Results showed that three parameters, ear length, ear diameter and ear density, can be simulated by the RCSM-GAOT scheme with a simulation error of 1.2 cm, 0.11 cm and 29 ears/m<sup>2</sup>, respectively. Rice yield is estimated with an average error of 0.28 kg/m<sup>2</sup> and 0.22 kg/m<sup>2</sup> for fresh ear weight and dry ear weight, respectively. In comparison with the need of multiple SAR data acquisitions in past studies, this study demonstrates the capability of one time Radarsat-2 quad polarized SAR image in regional rice yield estimation. At the same time, it also indicates that the proposed RCSM-GAOT scheme has a potential in future precision agriculture applications.

**Keywords:** Keywords— Rice ear Yield estimation, Radarsat-2, Synthetic aperture radar (SAR) ,Rice canopy scattering model (RCSM) ,Genetic algorithm optimization tool(GAOT).

## BMSIT&M | Techsaransh 2020

<b>Project Title:</b> Synthesis and Characterization of functionalized graphene for batteryless electrical vehicles	<b>Project ID:</b> ETE_12	
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**Project Execution Time:** In\_House

**Project Category/Area:** Reaearch\_Oriented

**Abstract:** Graphene is an allotrope of carbon in the form of a single layer of atoms in a two-dimensional hexagonal lattice and firmly bound in a hexagonal honeycomb lattice. It has an atomic bond length of 0.142 nanometers. Considering the enormous benefits offered by graphene in terms on mechanical and electrical stability, graphene is a promising candidate for application in batteryless electrical vehicles. Based on the literature survey and theoretical research carried out on different techniques of synthesis and characterization of Graphene oxide, graphene was successfully synthesized from graphene powder by using Hummer's Method which includes the use of Potassium permanganate (KMnO<sub>4</sub>), Sodium nitrate (NaNO<sub>3</sub>) and Sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) in an ice bath followed by magnetic stirring, filtration and sonication. Measuring a material's properties allows experimental improvement in the properties and making unique measurements allows differentiation by improvement in unique areas. An insight into compositional and structural origins of material properties enables rationally designed improvement. Thus, the resultant material was characterized using two characterization techniques — FT-IR (Fourier-transform infrared spectroscopy) and Raman Spectroscopy. Three peaks were obtained at wave number 1037.8 cm<sup>-1</sup>, 1613.3 cm<sup>-1</sup> and 1729.9 cm<sup>-1</sup> indicating the presence of C-O, C=O and C=C respectively. On the Raman Spectra, peaks at 1345 cm<sup>-1</sup> and 1588.9 cm<sup>-1</sup> corresponding to the D-band and G-band respectively.

**Keywords:** Graphene Oxide (GO), Hummer's method, FTIR, Raman spectroscopy.

# Courses Offered : -

## Post Graduate

- Masters of Computer Applications (MCA)
- M.Tech in Computer Science and Engineering
- M.Tech in Machine Design

## Under Graduate

- Artificial Intelligence and Machine Learning
- Civil Engineering
- Computer Science and Engineering
- Electrical and Electronics Engineering
- Electronics and Communication Engineering
- Electronics and Telecommunication Engineering
- Information Science and Engineering
- Mechanical Engineering

## Research Centers

- Artificial Intelligence and Machine Learning
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- Electronics and Telecommunication Engineering
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- Masters of Computer Applications (MCA)
- Mechanical Engineering



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