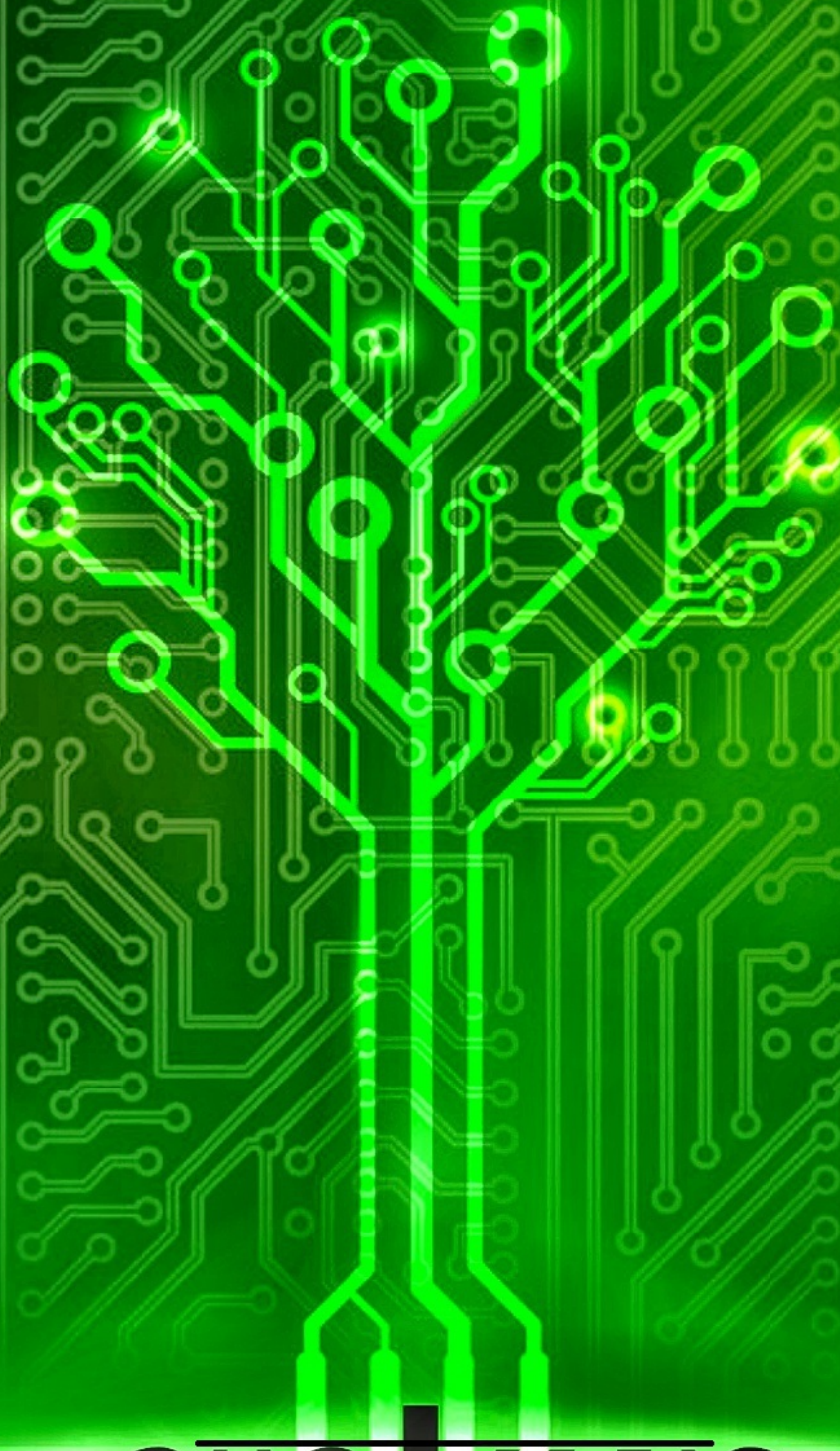




**DON BOSCO COLLEGE  
OF ENGINEERING**

**DEPARTMENT OF ELECTRONICS  
AND TELECOMMUNICATION  
ENGINEERING**



**ankur**

.....budding ideas

## From the HOD's Desk:

It gives me immense pleasure to pen a few words as prologue to our department project idea book **"ANKUR 2k20"**, exclusively a collection of the latest project ideas which bears immense potential of shaping into astounding startups in the fields of Biomedical, Robotics, Automation, VLSI, Signal processing, Image processing, Internet of Things, Machine Learning and many more.

The Electronics and Telecommunication Engineering is an erratically changing and ever evolving branch. Innovation, orientation and an ever expanding base serve as a firm foundation for the latest development in the department of Electronics and Telecommunication Engineering.

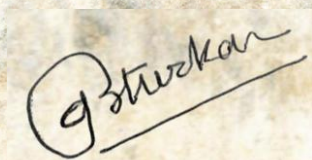
Our department is imparting the required technical and practical knowledge to the students. Electronics and Telecommunication department has always been a source of development may be its social, cultural or technical.

Launching **"ANKUR 2k20"**, a project idea book of Electronics & Telecommunication department is an attempt to be a part of global connection.

**"ANKUR 2k20"** would provide a platform for aspiring engineering to gain knowledge about the latest projects in the various upcoming domains of Electronics and Telecommunication Engineering.

The book contains project ideas, applications and student achievements in the field of research and publications and many more. We motivate and guide students to present/publish the research paper on successful completion of their projects in the reputed international conferences or journals.

We invite our readers to respond to the **"ANKUR 2k20"** with suggestions, criticisms and scope of improvement so that this book takes a genuine interactive shape.



**Dr. Varsha Turkar, PhD (IIT Bombay)**  
**IEEE Senior Member**  
**Professor and Head,**  
**Dept. of Electronics and Telecommunication Engineering**  
**Don Bosco College of Engineering, Fatorda-Goa**



# DON BOSCO COLLEGE OF ENGINEERING GOA

## DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING

2019 – 2020



### “Ankur 2k20”

.....budding ideas

Concept and Guidance by: Dr. Varsha Turkar  
Edited and Designed by: Prof. Priyanka Padiyar



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# Design of Human Arm Prosthesis



**Domain/Area of Interest:** Biomedical Engineering

**Project Members:**

**Mr. Pranav Khedekar**  
**Ms. Snehal Rane**  
**Ms. Mohini Phadte**  
**Ms. Riddhi Lotlikar**  
**Ms. Akshata Naik**

**Project Guides:**

**Prof. Anisha Cotta**  
**Prof. Michelle Araujo e Viegas**

## ***Brief Idea of project:***

The project aims at providing a low cost prosthetic arm with certain degrees of freedom. The EMG signal of the subject is picked and is used to drive the movement of the arm and the fingers. Overall, the objective is to provide more accurate, more precise and much lower cost arm than that presently available.

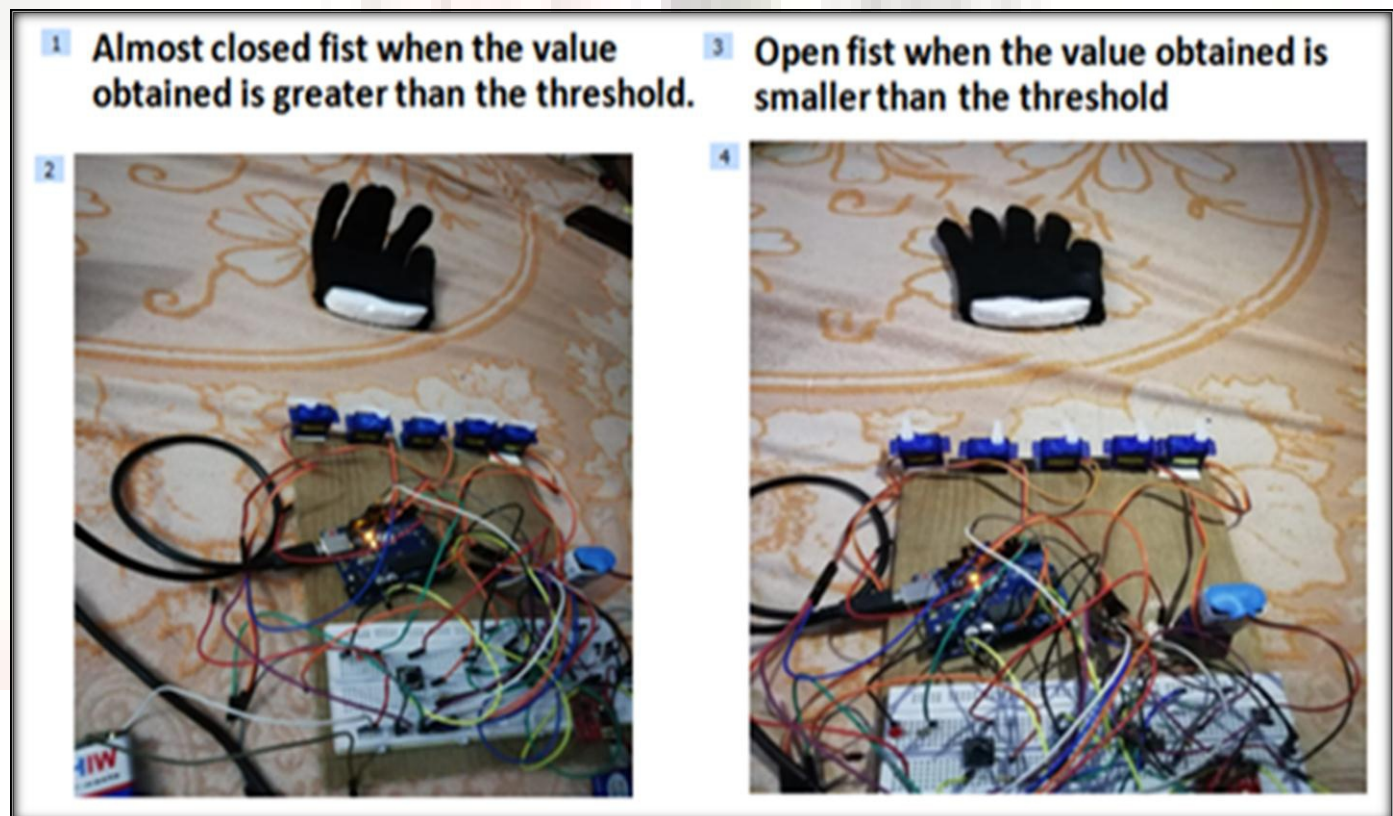
## ***Applications:***

1. The design of a prosthetic arm to mimic its human counterpart
2. Proper grasping capabilities

## ***Awards and Participation:***

Participated for project idea competition organised by GCCI and GSIC

## ***Working Model:***



# Mobile Healthcare



**Domain/Area of Interest:** Biomedical Engineering

**Project Members:**

**Mr. Ratish Pagui**  
**Mr. Sameer Velip**  
**Mr. Sankalp Velip**  
**Mr. Shanish Zaravnkar**

**Project Guides:**

**Prof. Michelle Araujo e Viegas**  
**Prof. Mohini Naik**

## **Brief Idea of project:**

To develop a mobile healthcare software application which provides assistance to patient, identifies and selects doctors based on their location and their medical needs. To design a navigation system which uses Google maps to provide the patient details about hospitals, pharmacy and clinics. This application also provides a communication between the patient and blood donor.

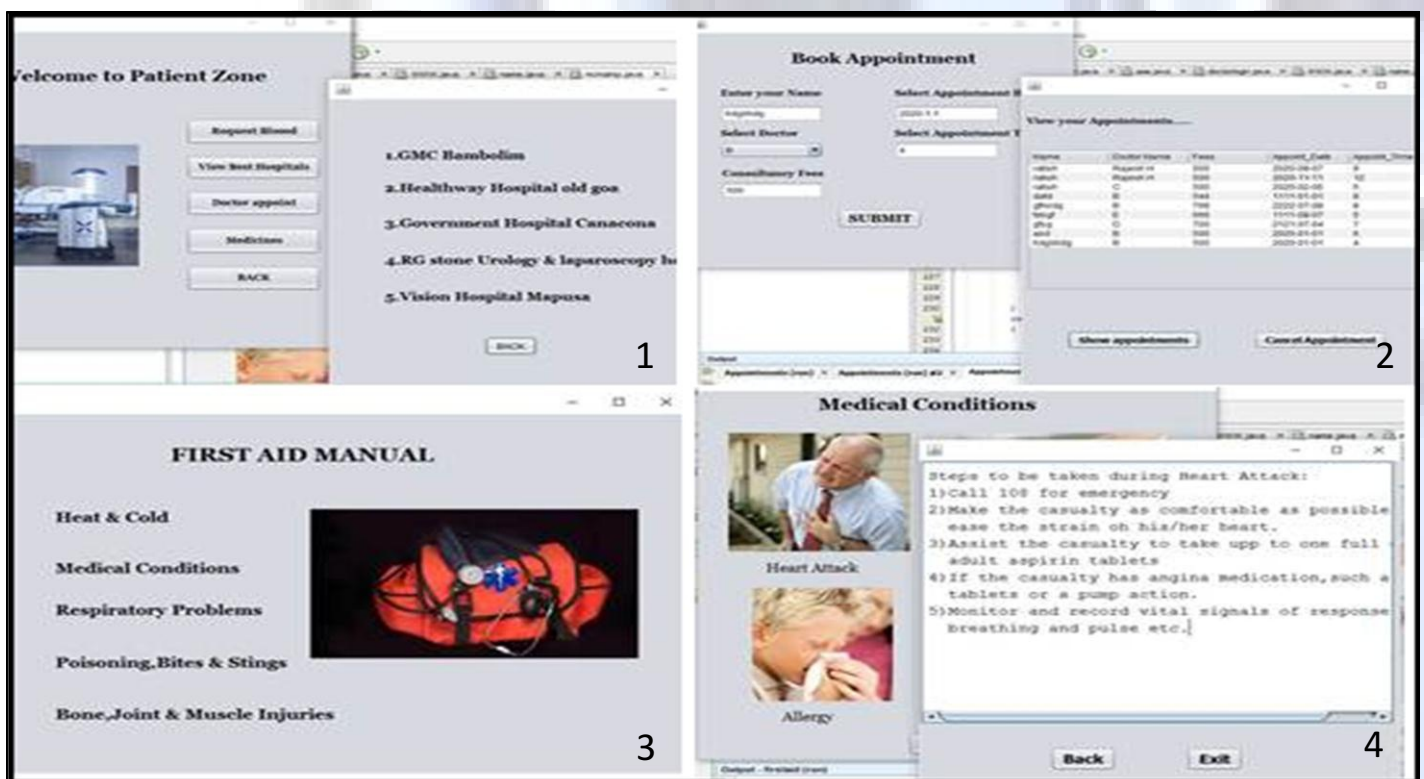
## **Applications:**

1. Online doctor appointment booking system
2. Online Blood bank management system
3. Information about facilities of hospitals and their locations

## **Awards and Participation:**

Participated for project idea competition organised by GCCI and GSIC

## **Working Model:**



# Aquatic Waste Collecting System



***Domain/Area of Interest: Mechatronics***

***Project Members:***

**Ms. Sheetal Pharakate**

**Mr. Omkar Karapurkar**

**Mr. Saish Raut**

**Mr. Vallabh Sawant**

***Project Guides:***

**Prof. Melba D'Souza**

**Prof. Deron Rodrigues**

### ***Brief Idea of project:***

Development of an economically effective and environment friendly, mobile controlled system which is capable of collecting up to 5kg of waste including oil spills from water bodies at a time .The system is also capable of measuring various water parameters and cutting weed using a weed cutter.

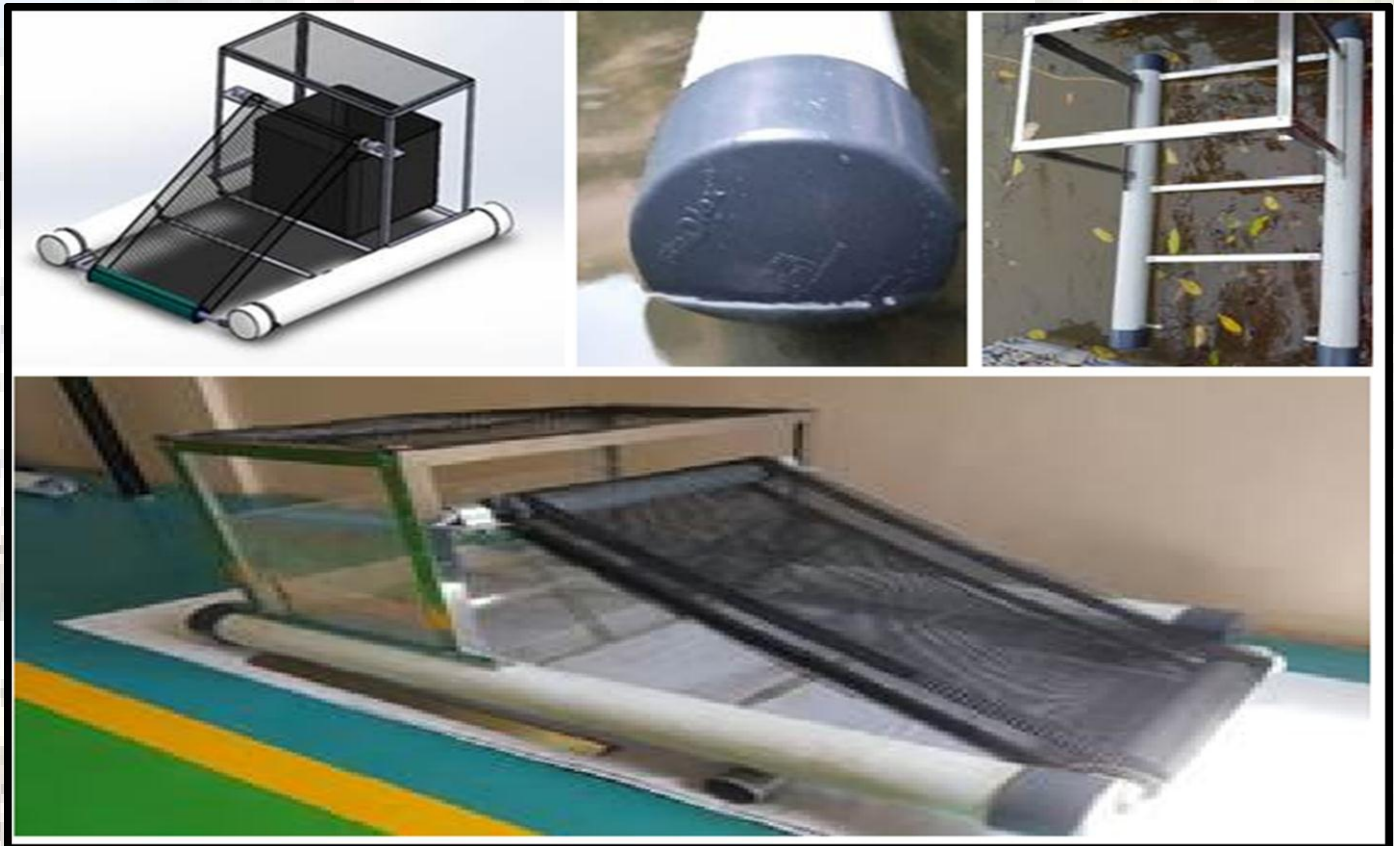
### ***Applications:***

1. Collection of waste from water bodies
2. Fisheries

### ***Awards and Participation:***

1. Goa waste management Hackathon 2020
2. Innovative projects competition, GCCI

### ***Working Model:***



# Automatic Shopping Mart using Fire Bird V Robot



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Mr. Saif Ahmed Sayed**

**Mr. Silvester Vaz**

**Mr. Vaishakh Sanjeevan**

**Ms. Sibga Shaikh**

***Project Guides:***

**Prof. Flavia Leitao**

**Prof. Yeshudas Muttu**

## **Brief Idea of project:**

Designing a standalone mart which will take customer orders, handle billing and manage inventories using a website and pick and place the products using Robot .This would help to have a business model which will require less human intervention, thereby making it more profitable.

## **Applications:**

1. This autonomous shopping system will provide its services at the customer's doorstep
2. The robot will automate the tasks carried out in a shopping centre thereby reducing manpower and cost

## **Awards and Participation:**

1. Paper selected for Equinox 2020 Conference
2. Idea selected for IEEE project exhibition "Hexagon"

## **Working Model:**



# Smart E-Bill Generation and Power Regulation



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Mr. Aditya Naik,  
Mr. Ravindra Nayak  
Mr. Ganadish Parab  
Mr. M. Manjunath**

***Project Guides:***

**Prof. Kimberly Morais  
Prof. Selvyn Fernandes**

### ***Brief Idea of project:***

Development of a effective system of automatic meter reading. The proposed system replaces traditional meter reading methods and enables remote access of existing energy meter to the energy provider. Also it enables the energy provider to monitor the monthly meter readings without the person visiting each house.

### ***Applications:***

Helps in Metering and billing process

### ***Working Model:***



# Integrated Waste Management System



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Ms. Shriya Nayak**  
**Ms. Sampada Nagvekar**  
**Ms. Prajacta Naik**  
**Ms. Bharati Warak**  
**Ms. Karenza Gracias**

***Project Guides:***

**Prof: Mathilda Colaco**  
**Prof. Anisha Cotta**

### ***Brief Idea of project:***

The aim to design an automated home composter system. The proposed system will take the necessary action to compost the wet waste in a more environmental friendly manner making it a completely efficient system This system can be implemented in every household to take care of their own waste.

### ***Applications:***

1. Produces a natural fertilizer
2. Treats household wet waste

### ***Awards and Participation:***

Goa Waste Management Hackathon 2020 organised by Goa State Innovation Council

### ***Working Model:***



# Fire Fighting Robots Using Swarm Intelligence



**Domain/Area of Interest: Robotics & Automation**

**Project Members:**

**Ms. Siddhi Desai**  
**Mr. Nixon Coutinho**  
**Ms. Reecha Mahale**  
**Ms. Rochelle Pereira**  
**Ms. Pooja Gaonkar**

**Project Guides:**

**Prof. Mohini Naik**  
**Prof. Kimberly Morais**  
**Dr. Shreyas Simu**

### ***Brief Idea of project:***

To develop autonomous fire extinguishing robots, working together as a unit, using swarm intelligence. This project also aims to analyze the effect of different frequencies of sound waves on fire. The firefighting technique used by these robots will be sonic wave extinguisher.

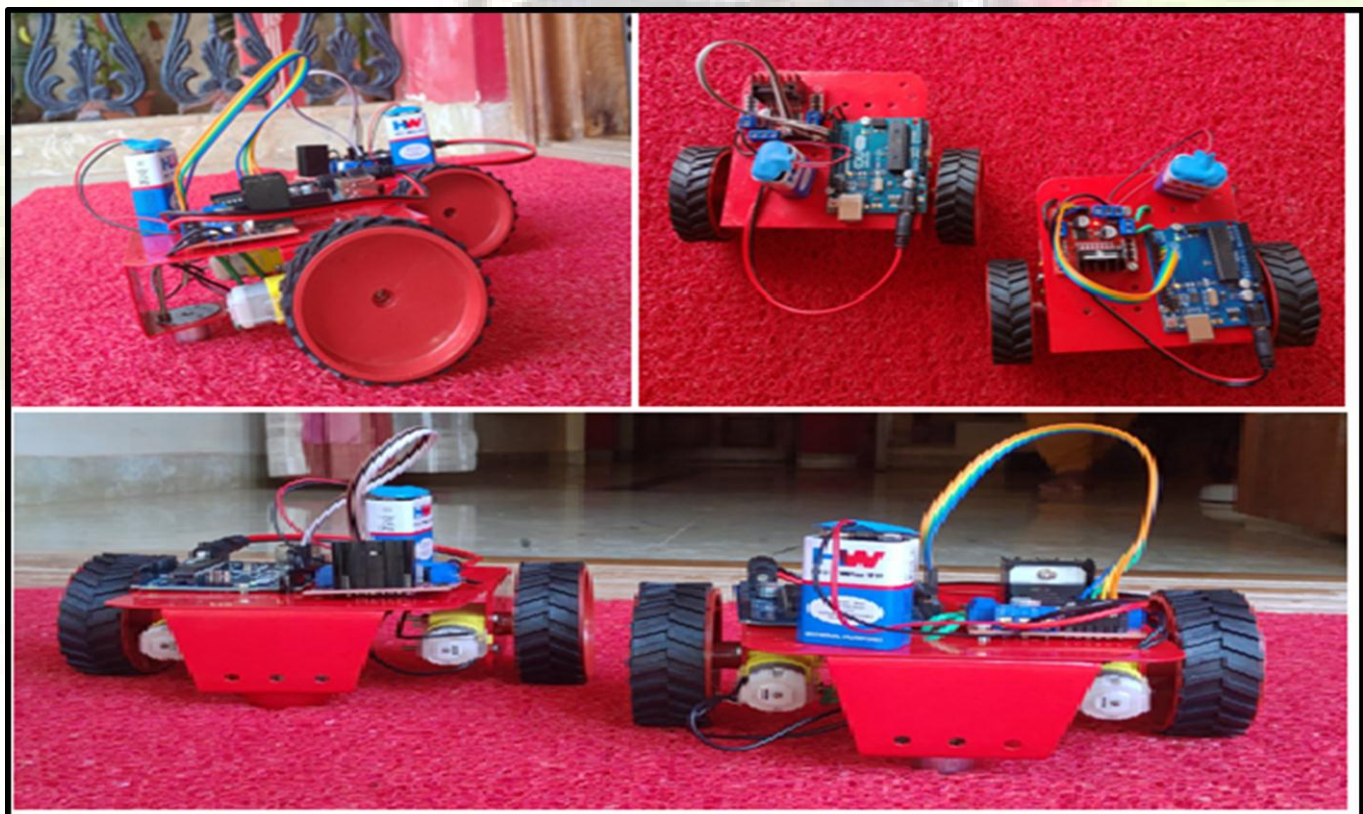
### ***Applications:***

Fire Extinguisher

### ***Awards and Participation:***

Selected for Phase II of Final year innovative projects competition (2019-2020) organized by Goa Chamber of Commerce & Industry (GCCCI) & Goa State Innovation Council (GSIC) for students of engineering colleges affiliated to Goa

### ***Working Model:***



# Automatic Fabric Pattern Cutter



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Mr. Schubert Fernandes**

**Mr. Lino Dias**

**Mr. Noah Gracias**

**Ms. Lasandra Fernandes**

***Project Guides:***

**Prof. Selvyn Fernandes**

**Prof. D.S. Vidhya**

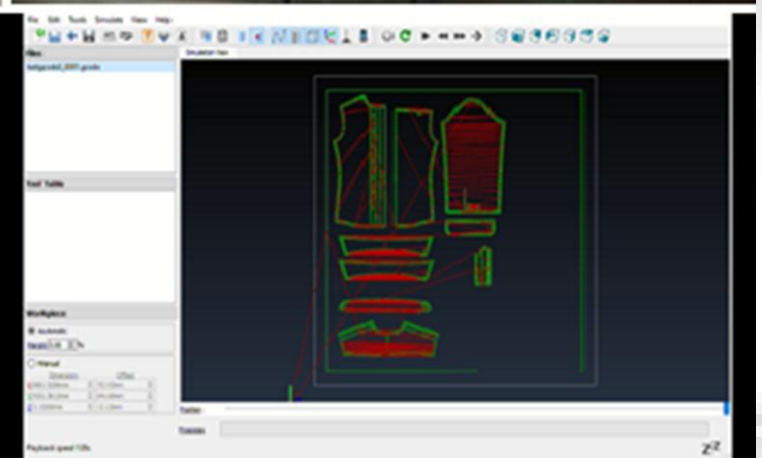
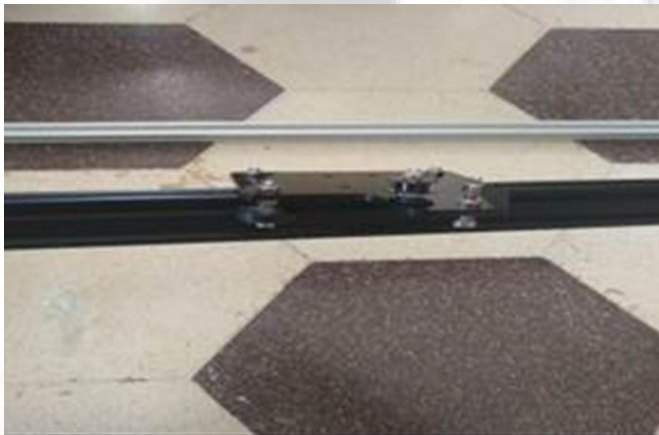
## **Brief Idea of project:**

To reduce the time taken in tracing and cutting of a fabric, this machine will prove useful. The user will have to provide input (measurements and pattern using GUI). The machine will cut the precise pattern on the fabric using a laser.

## **Applications:**

1. Tailoring
2. Factory fabric cutter/designing

## **Working Model:**



# Design, Control and Analysis of Wheel Chair



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Mr. Harikrishnan  
Mr. Raushan Kumar  
Mr. Sahil Naik**

***Project Guides:***

**Prof. D.S. Vidhya  
Prof. Melba D'Souza**

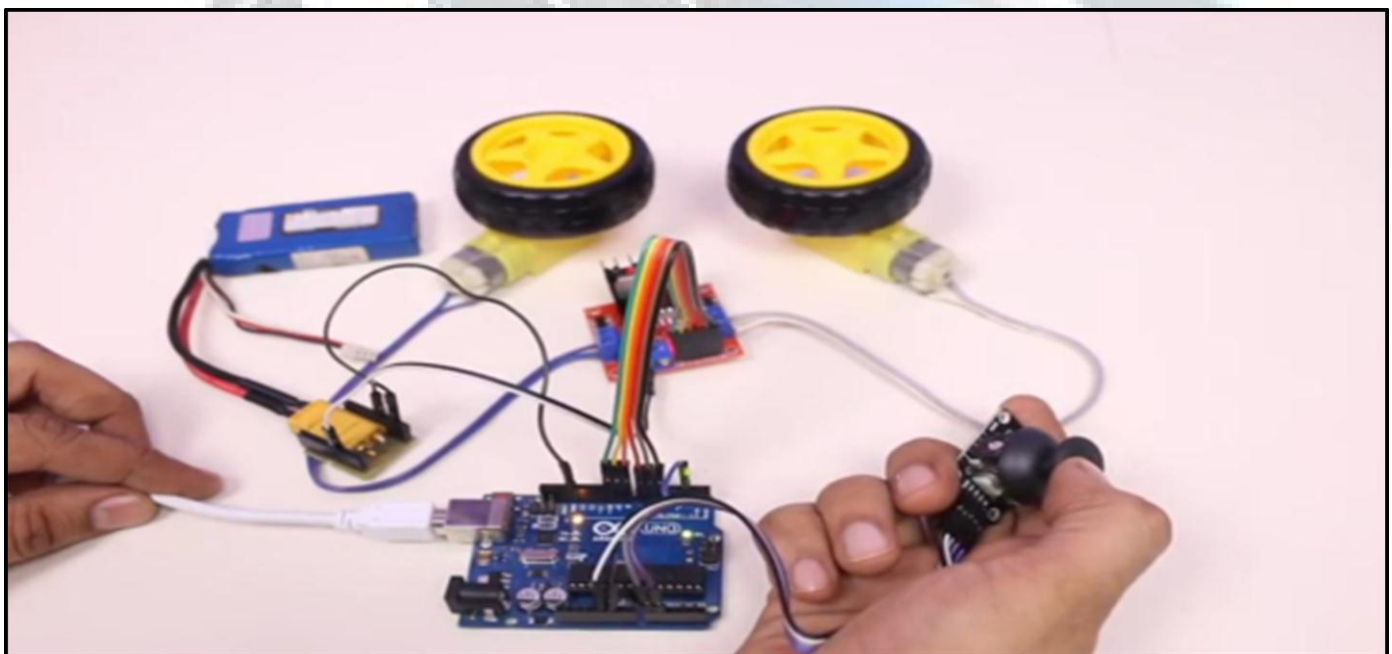
### ***Brief Idea of project:***

The project focuses on the development of an electric wheelchair, controlled by devices such as motion sensor, joystick through voice command. The main advantage of the system is that, it is user friendly and helpful for physically disabled people. It reduces the human activity and increases mobility, maneuverability and disabled people's ability to live independently. This designed wheelchair is also equipped with gyroscope which will not allow the patients or people to fall down while moving on slopes. To avoid collision with obstacles, ultrasonic sensor is also present.

### ***Applications:***

1. Helpful for different kinds of physically disabled patients or people
2. Electric wheelchair can be applied are hospitals, health care canters, home, and industries as machine to carry goods, automatic gaming device

### ***Working Model:***



# Automated Plant Monitoring Robot



***Domain/Area of Interest: Robotics and Automation***

***Project Members:***

**Mr. Kowshik Kolvekar**

**Mr. Mohit Naik**

**Mr. Sahil Lotlikar**

**Mr. Ashwin Faldesai**

***Project Guides:***

**Prof. Yeshudas Muttu**

**Prof. Mathilda Colaco**

## **Brief Idea of project:**

This project provides Automatic irrigation control and monitoring of the tomato field using IoT. Besides this, robot moves throughout the field clicking the images of the tomato plant leaves that helps to detect tomato leaf diseases.

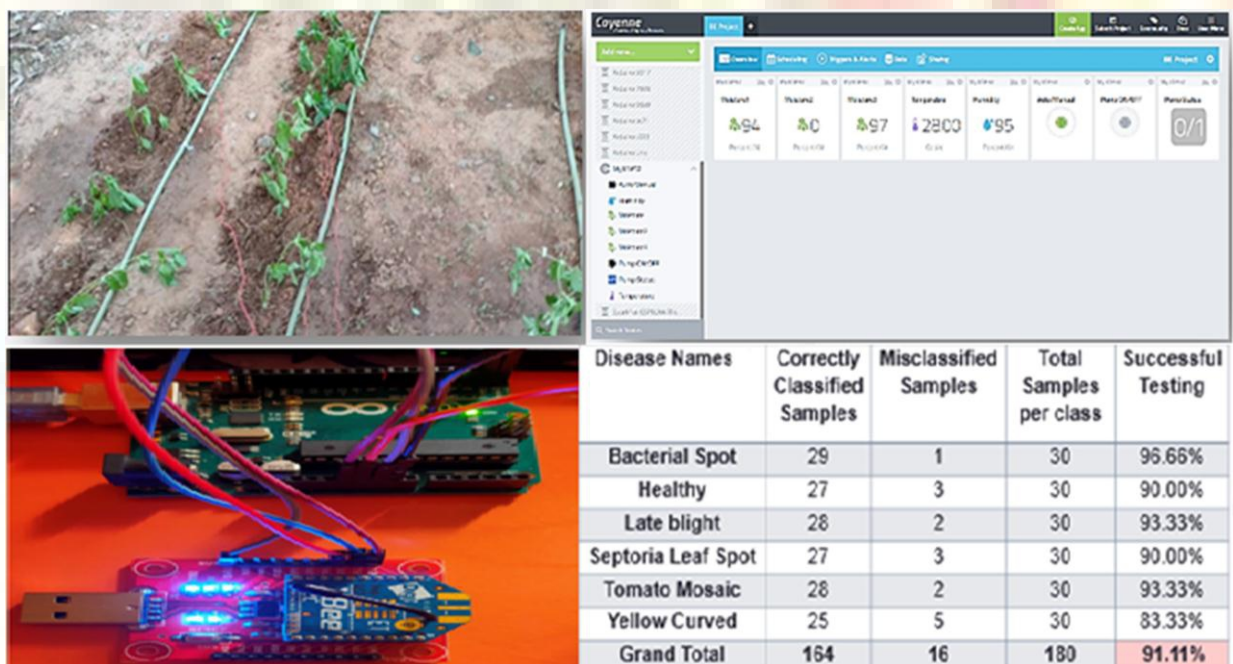
## **Applications:**

1. System will provide necessary help to the farmer by taking care of all field parameters such as watering, monitoring and disease classification autonomously/Manual mode
2. Same system can be used for other crops besides horticultural crops

## **Awards and Participation:**

1. Idea selected for second round of IEEE Hexagon 2020, Nationwide Hardware & Software based Hackathon
2. Paper acceptance awaited for IEEE Humanitarian Conference organized by IEEE Bangalore Section

## **Working Model:**



# IOT based Agricultural field monitoring and control using BLE Mesh technology



***Domain/Area of Interest: IoT and Machine Learning***

***Project Members:***

**Ms. Neha Shanbagh**  
**Mr. Sairaj Tamboskar**  
**Mr. Vishant Gaonkar**  
**Mr. Raviraj Bhagat**

***Project Guides:***

**Prof. Deron Rodrigues**  
**Prof. Flavia Leitao**

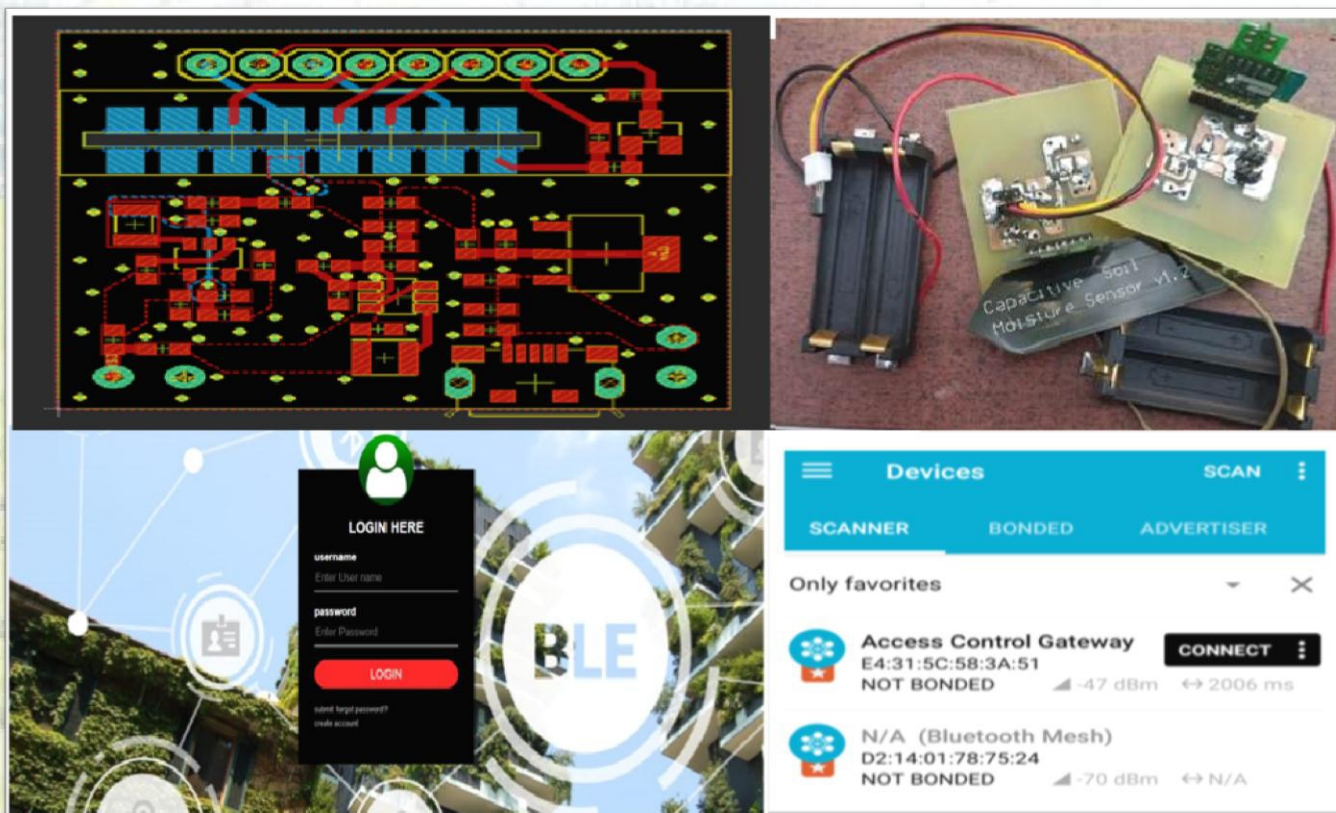
### **Brief Idea of project:**

A smart agricultural system was designed by using BLE Mesh Technology and Internet of Things. The system will automatically monitor the field using sensors placed at different nodes in the field forming BLE mesh network. The sensor data from various nodes in the field is made available to the farmer using IoT and Cloud on a website, so that the farmer can monitor and control the environmental changes as required for the crops.

### **Applications:**

1. Increases productivity and quality of farming without observing it for all the time manually
2. Continuous field monitoring in all types of weather
3. Can be used in external environment as well as in vertical farming

### **Working Model:**



# Air Pollution Detection and Prediction



***Domain/Area of Interest: IOT and Machine Learning***

***Project Members:***

**Mr. Rohit Martires**  
**Ms. Swizel Monteiro**  
**Ms. Vrunda Asolkar**  
**Mr. Vaylon Fernandes**

***Project Guides:***

**Dr. Shreyas Simu**  
**Dr. Varsha Turkar**

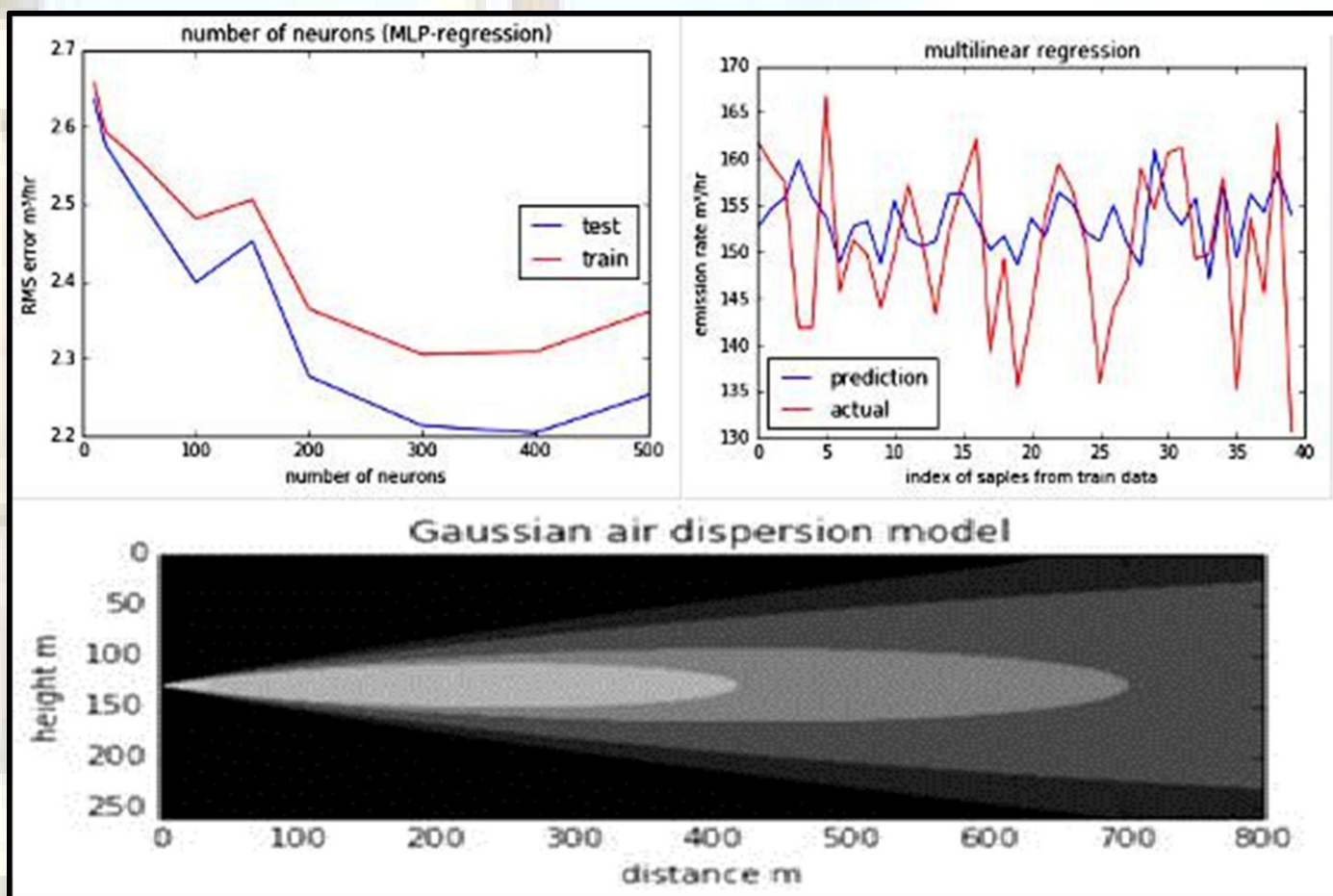
## Brief Idea of project:

The project aims to monitor the pollutants emitted from an industry/factory and predict the future dispersion of these pollutants and output these results in the form of reports for industries/factories.

## Applications:

1. To predict the air pollution and its dispersion
2. Helps industries and concerned department to take preventive measures

## Working Model:



# Development of an effective classification technique to classify the settlement into various land-cover features



***Domain/Area of Interest: Satellite Image Processing***

***Project Members:***

**Mr. Sherwyn Colaco**

**Mr. Shivam Bale**

**Mr. Keith Pinto**

***Project Guides:***

**Dr. Varsha Turkar**

**Dr. Shreyas Simu**

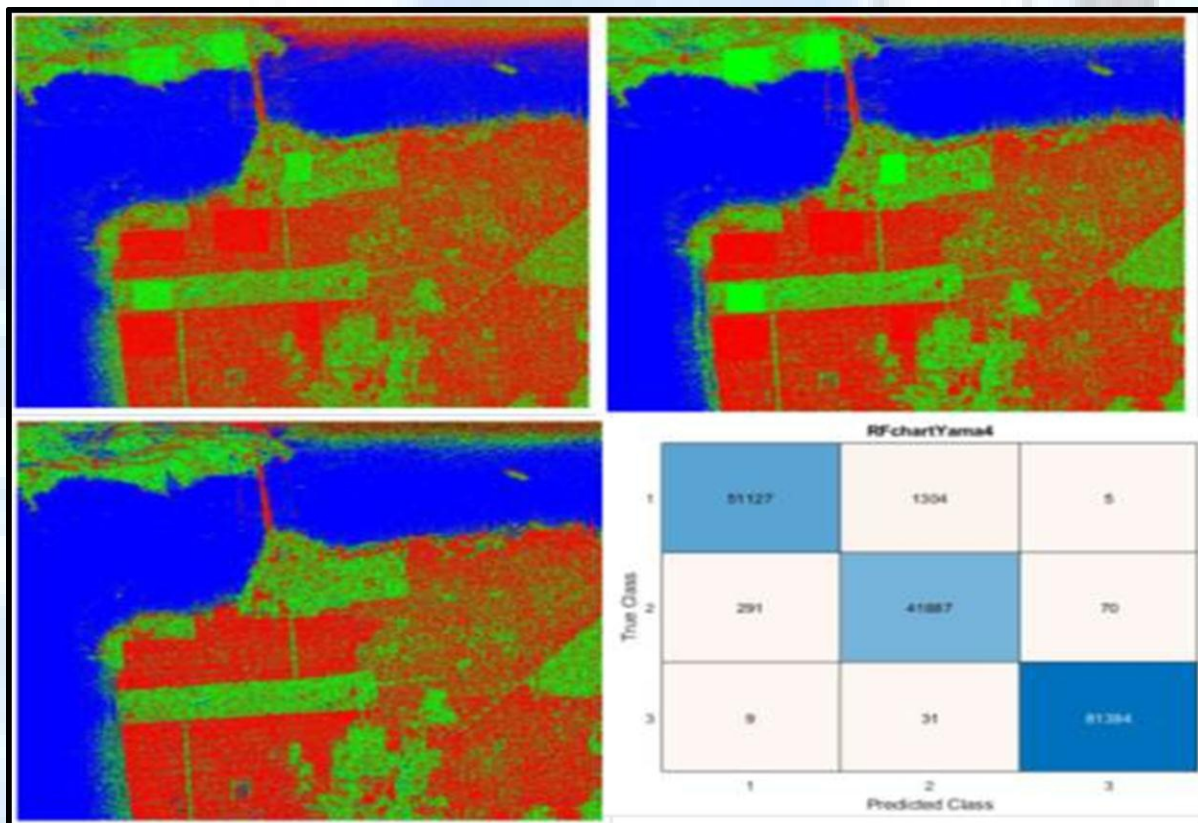
### **Brief Idea of project:**

Although India is one of the less urbanized countries of the world with only 27.78% of the population living in urban agglomerations, the country is facing a serious crisis of urban growth at the present time. Remote sensing uses satellites to capture images and can survey large areas at a time in a matter of seconds which would normally take months of manual surveying for a field professional. In this project we aim to develop an effective classification technique to classify microwave images into classes like Water, Settlement and Forest. The settlement can be further classified into various land-cover features such as slums, residential areas, open spaces, forest, lakes, etc. which will help in the urban planning process.

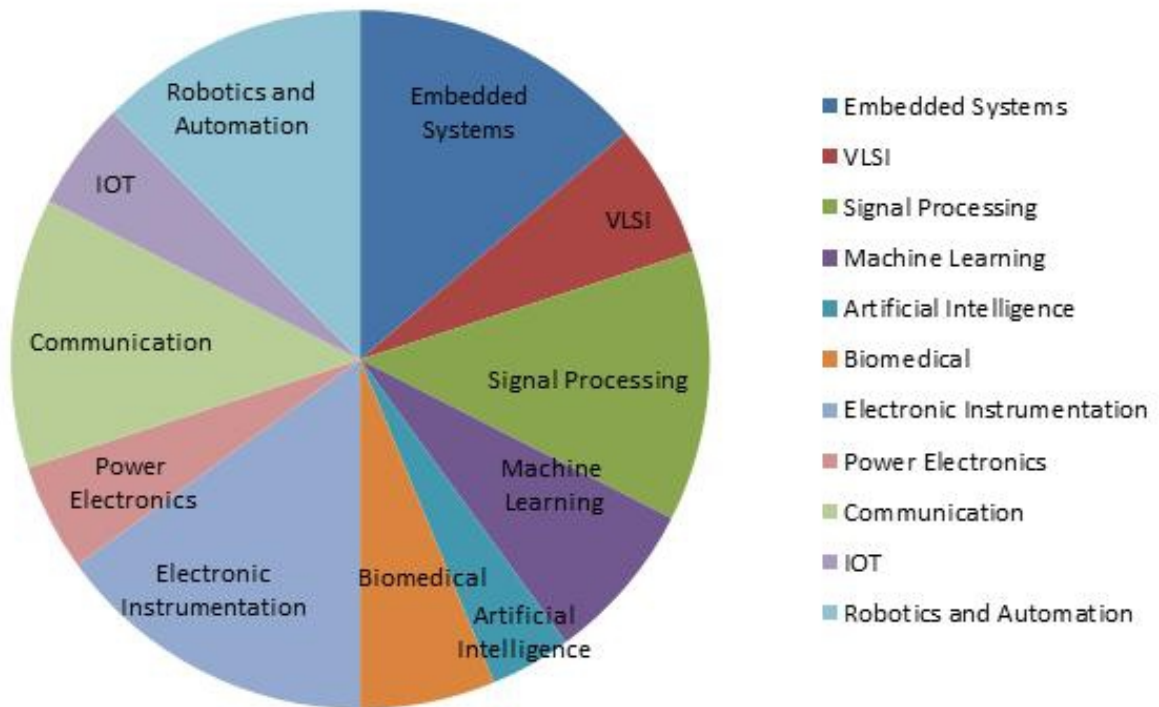
### **Applications:**

1. To find out illegal settlement
2. Helpful for urban planning

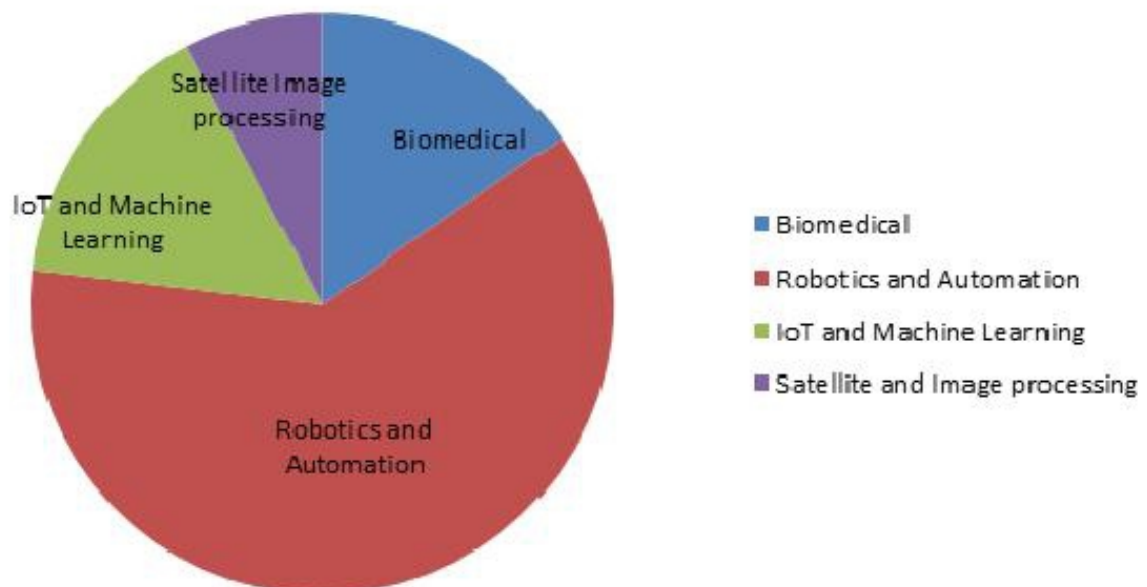
### **Working Model:**



## Faculty Specialisation



## Project Domains



**BATCH: 2016-2020**

**DEPARTMENT OF ELECTRONICS  
AND TELECOMMUNICATION  
ENGINEERING**

# *Get a Glimpse*



We are pleased to present to you the first edition of “Ankur” -2k20. Technology is accelerating all around us and innovation in education is the need of the hour. Ankur provides a platform to our students to exhibit their novel ideas and will serve as a benchmark for aspiring engineers to gain an insight into the latest developments in engineering and technology.

I would like to extend my heartfelt gratitude to our Director, Rev. Fr. Kinley D’Cruz for his unflinching support and motivation in all our endeavors. Special thanks to our Principal, Dr. Neena Panandiker for her continual encouragement. My gratitude goes out to our HOD, Dr. Varsha Turkar for conceptualizing Ankur and her constant support. I feel proud to acknowledge the effort of all the faculty members of ETC Department who have painstakingly ensured the unsurpassed quality of every project.

“It takes a dream to get started, desire to keep going and determination to finish”- Eddie Harris Jr. As we release the project idea book- Ankur 2020, I wish all the readers an enjoyable and an enlightened experience.

**Dept. Project Co-ordinator:**

**Prof. Anisha Cotta**

**Assistant Professor**

**Dept. of Electronics and Telecommunication Engineering**



It gives me immense pleasure to introduce the first edition of “Ankur 2k20”, a collection of innovative project ideas implemented by the Final year students of Electronics and Telecommunication engineering Department.

“Ankur 2k20” comprises not only of some spectacular projects undertaken by our final year students, but also highlights their work in research, publications and their participation in conferences and national level competitions.

It was an overwhelming experience to design and edit this project idea book.

Particularly grateful to Dr. Varsha Turkar, HOD of the ETC department to give me this esteemed opportunity to bring out this book. I would like to acknowledge the role of the Director Rev. Fr. Kinley D’Cruz, Principal Dr. Neena Panandiker, Faculty members of ETC dept., well-wishers and critics in the growth of this book.

I would like to appreciate and congratulate the students and their guides who have put tremendous effort in these projects throughout the year and I do hope that next academic year also gets a plethora of more astounding project ideas.

**Edited and Designed by:**

**Prof. Priyanka Padiyar**

**Assistant Professor**

**Dept. of Electronics and Telecommunication Engineering**



**DEPARTMENT OF ELECTRONICS AND TELECOMMUNICATION ENGINEERING  
DON BOSCO COLLEGE OF ENGINEERING, FATORDA\_GOA**

**VISION**

To evolve into a Holistic Learning Hub, that moulds technologically proficient engineers in the field of Electronics and Telecommunication; enhancing the global industry and society with Integrity, Ethics and Professionalism as envisaged by Don Bosco.

**MISSION**

To impart education abreast with the advances in technology and transform students into globally accepted professionals.

To foster networking with all stakeholders for promoting technical innovation, research and entrepreneurship.

To encourage extra-curricular activities and instill high levels of work ethics and responsibility for a better society.

