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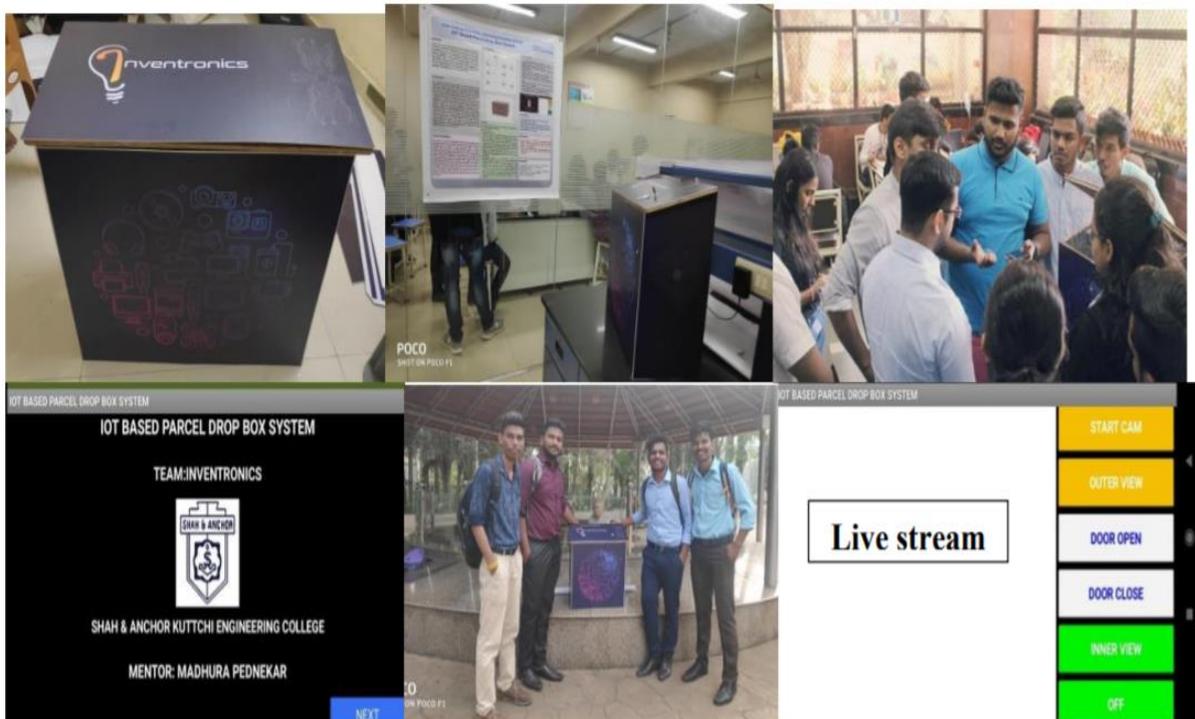
Outstanding projects done by Students.

1. Electronics Engineering:

Project 1:

Project Title:	IOT BASED PARCEL DROP BOX SYSTEM
Student/Students Name:	Rohan kadam, Kavish Jain, Kiran Lokare, Krishnakant Sinde
Class	TE
Under the guidance of:	Ms. Madhura Pednekar.
Academic Year	2019-2020

Introduction: In the modern era, everyone will prefer online shopping followed by delivery of the purchased product. Due to unavailability of the purchaser/customer, collection of the parcel/product becomes difficult. Buying online from any of your favourite websites without the anxiety of missing your deliveries. In the absence of persons, we propose a solution of IoT based parcel collection unit which will receive the parcel from courier person safely and provides acknowledgement. This smart system will save time as it avoids rescheduling of the parcel delivery. The automation of system will certainly lead to an easy and safe fulfilment for an online ordering. IoT based parcel box is a feature-rich, scalable, and robust hardware platform that provides most dynamic solution i.e., **Click** and receive parcel.





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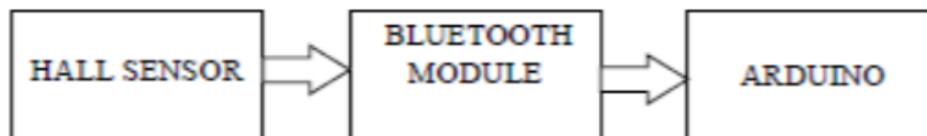




Project 2:

Project Title:	VIRTUAL REALITY USING ARDUINO & PROCESSING
Student/Students Name:	Pratik Kadam, Hrutuja Kurdhundkar, Ekta Lad, Shravani Karale
Class	BE
Under the guidance of:	Ms. Jayashree Bhole
Academic Year	2017-2018

Introduction: Virtual reality is an environment that is simulated by a computer. Most virtual reality environment are primarily visual experiences, displayed either on a computer screen or through special displays. The simulated environment can be similar to the real world for example, simulation for pilot or combat training or it can differ significantly from reality, as in VR games. In this project we are going to show how to implement virtual reality using Arduino and Processing. For most of us, the movie Iron man by Jon Favreau has always been an inspiration to build new things that will make our life easy and more fun.



Block Diagram

So, in this project we have tried to mimic the Virtual reality stuffs that happen in the movie, like we can simply wave our hand in front of the computer and move the pointer to the desired location and perform some tasks. We will also show you how you can toggle lights by virtually moving your hand and making clicks with your fingers in the air.

Working:

Once the Hardware and software is ready, wear the gloves and get ready for some action. Now, simply power the Arduino and then launch the Application. The led on the Bluetooth module should go stable. Now it means that your System application has established a Bluetooth link with your Arduino. You will get the following screen where you must select the object to be tracked. This tracing can be simply done by clicking on the object. In this case the object is the Blue disc. Now you can move your object and notice that the pointer follows your object. Use a unique colour object and a bright room for best results. Now touch your thumb finger with index finger and you should see the message "Key 1 Pressed" and when you press your thumb with middle finger you should see "Key 2 Pressed" this indicates that everything works fine, and the calibration is over. Now click on the Done button. Once the Done button is pressed you will be directed to the main screen where you can paint on air or toggle the LED on the Arduino Board.



Application: • It can be replaced by mouse. • It can also change the gaming world.

Advantage: • No need to stick on one place to finish the work. • Easy to use. • Can help to build a luxurious life. • It is inexpensive.

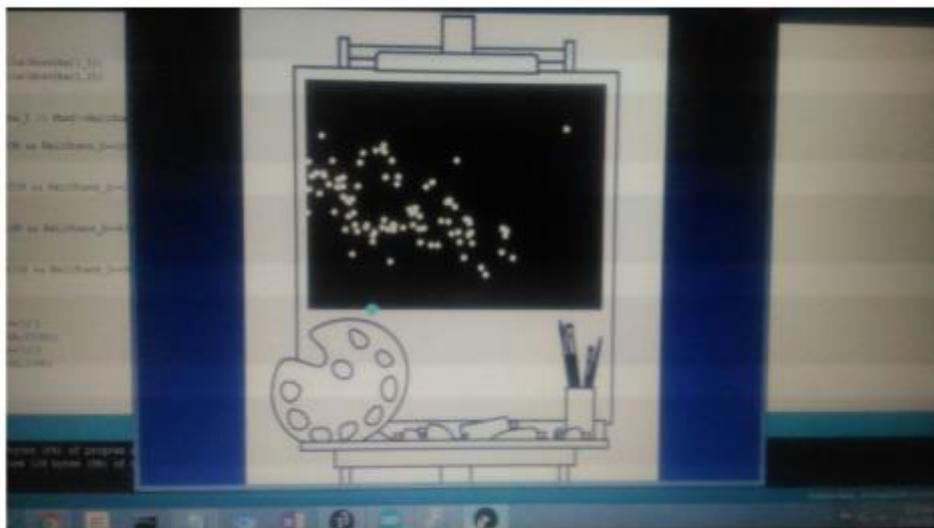
Limitations: • Need to be in the Bluetooth range. • If one goes beyond the range, connectivity problem might arise.

Future Scope: • By increasing the calibration accuracy and range of Bluetooth it can control many systems using only one gadget. • Also, can help to change gaming world.

Group Members:



Output:



2. Computer Engineering

Project 1:

Project Title:	Cassie: The Magic Mirror
Student/Students Name:	Mithil Jain, Deep Mehta, Preet Thakkar
Class	BE
Under the guidance of:	Mr. Atul Haribhau Kachare
Academic Year	2019-20

Introduction: It is a growing need for one to organize one's day in an efficient manner. One of the ways is to use a smartphone which is proving to be more destructive than productive. To reduce screen time on a smartphone, we can use a daily use object, a mirror, to help organize the day while not having to reach out to your smartphone for basic needs. The mirror can be used as a smart device that can offer services like displaying weather, date and time, latest updates of news headlines, user personalized daily tasks and reminders, some motivational quotes to get the day going positively with voice assistance. This use of the mirror can help the user save time and multitask by planning their day. The smart device uses Raspberry Pi as the central controller to dictate the actions to perform. When a user stands in front of this smart mirror, the controller recognizes the person, and it displays the tasks that a particular user must perform. It can also be used to drop messages for other users registered under the same smart system. The mirror allows to command the mirror using voice and choose what is to be done, e.g., Display the user tasks or display messages. The smart device comes with a mobile application that enables other users to check their tasks or messages when the mirror is unreachable.

System Diagram:

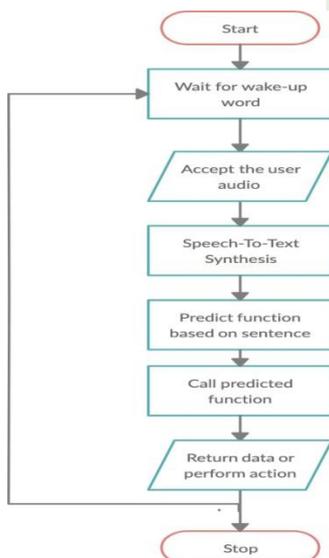


Figure 1: Flowchart for Smart Mirror

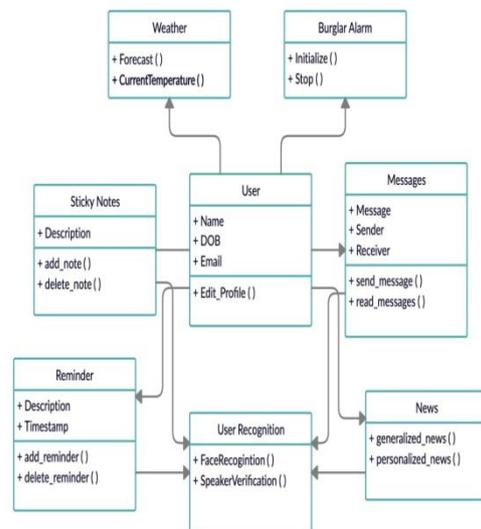


Figure 2: Class Diagram for Smart Mirror

System Output:

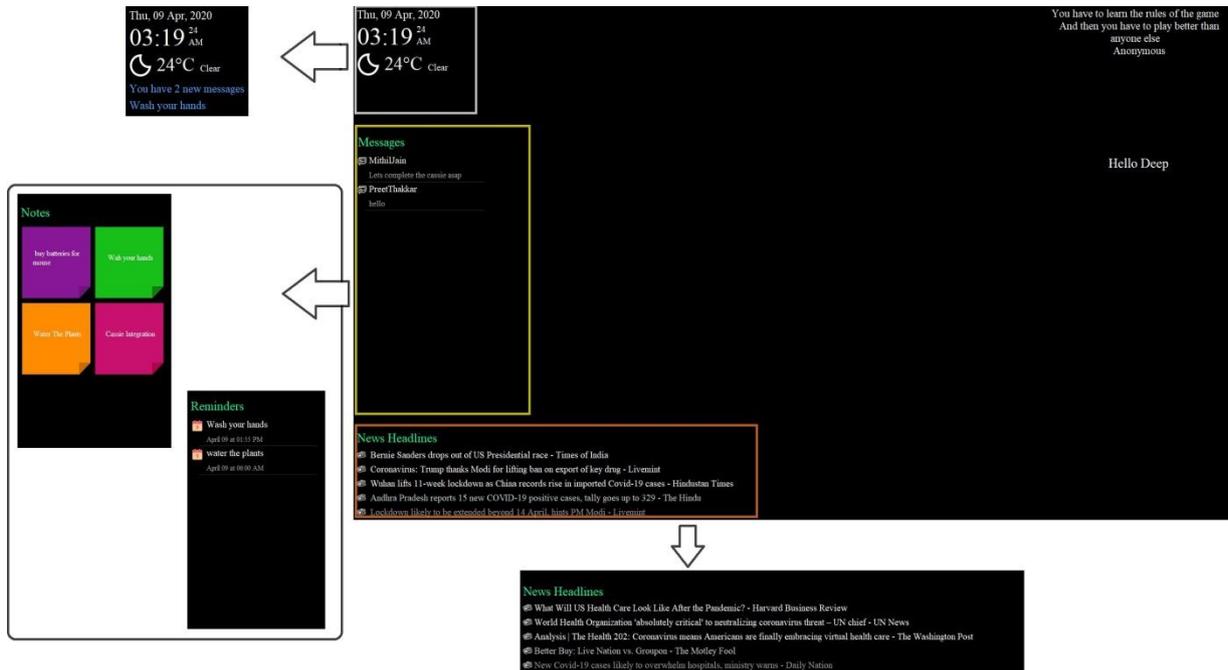


Figure 3: Smart Mirror GUI

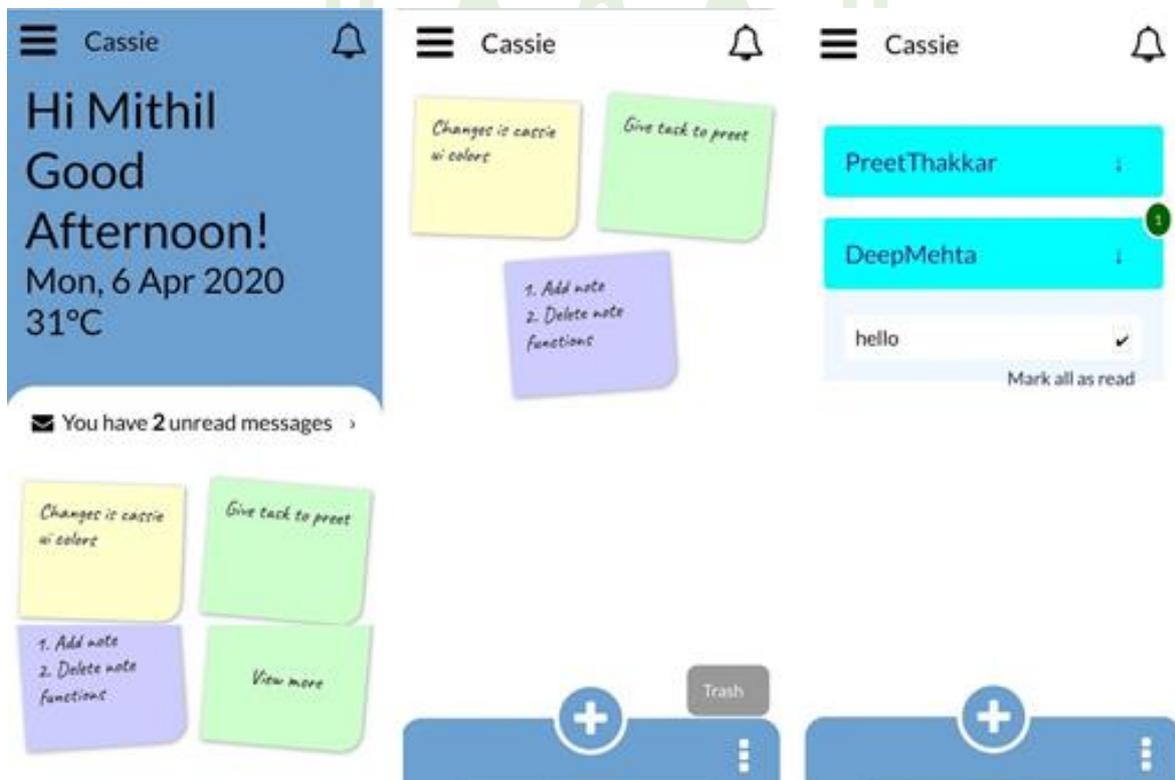


Figure 4: Mobile Application GUI

Project 2:

Project Title:	Enigma the machine
Student/Students Name:	Forum Patel, Aditya Sahan
Class	SE
Under the guidance of:	Mr. Milind Khairner (SAKEC) and Prof. Manish Jain (IIT Gandhinagar)
Academic Year	2018-19.

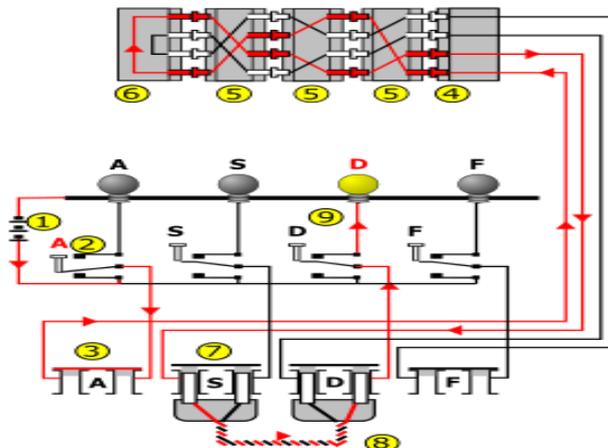
Introduction:

During the Summer Research Internship Program (SRIP) of IIT Gandhinagar we students from Shah and Anchor Kutchhi Engineering college were really pleased to be a few to be selected in the program. The program consisted of students from all over India come on campus at IIT Gandhinagar and build unique items. The students of SAKEC were interning at the Centre for Creative learning at IITGN. We were given to make the Enigma machine that was used during the World War 2 by the Germans to transmit messages.

Background about the Enigma Machine:

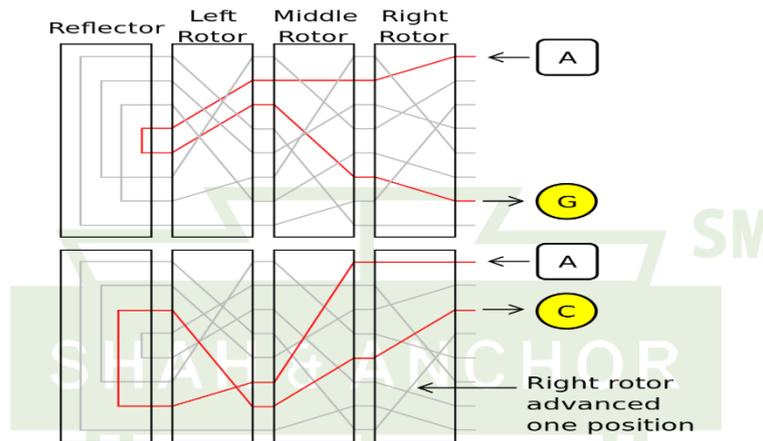
The **Enigma machine** is a cipher device developed and used in the early- to mid-20th century to protect commercial, diplomatic, and military communication. It was employed extensively by Nazi Germany during World War II, in all branches of the German military.

Enigma has an electromechanical rotor mechanism that scrambles the 26 letters of the alphabet. In typical use, one person enters text on the Enigma's keyboard and another person writes down which of 26 lights above the keyboard lights up at each key press. If plain text is entered, the lit-up letters are the encoded ciphertext. Entering ciphertext transforms it back into readable plaintext. The rotor mechanism changes the electrical connections between the keys and the lights with each keypress. The security of the system depends on a set of machine settings that were generally changed daily during the war, based on secret key lists distributed in advance, and on other settings that were changed for each message. The receiving station has to know and use the exact settings employed by the transmitting station to successfully decrypt a message.



Current flows from the battery (1) through a depressed bi-directional keyboard switch (2) to the plugboard (3). Next, it passes through the (unused in this instance, so shown closed) plug "A" (3) via the entry wheel (4), through the wiring of the three or four installed rotors (5), and enters the reflector (6). The reflector returns the current, via an entirely different path, back through the rotors (5) and entry wheel (4), proceeding through plug "S" (7) connected with a cable (8) to plug "D", and another bi-directional switch (9) to light the appropriate lamp.

Current Flow inside the Enigma



The scrambling action of Enigma's rotors is shown for two consecutive letters with the right-hand rotor moving one position between them

Task given to the Students.

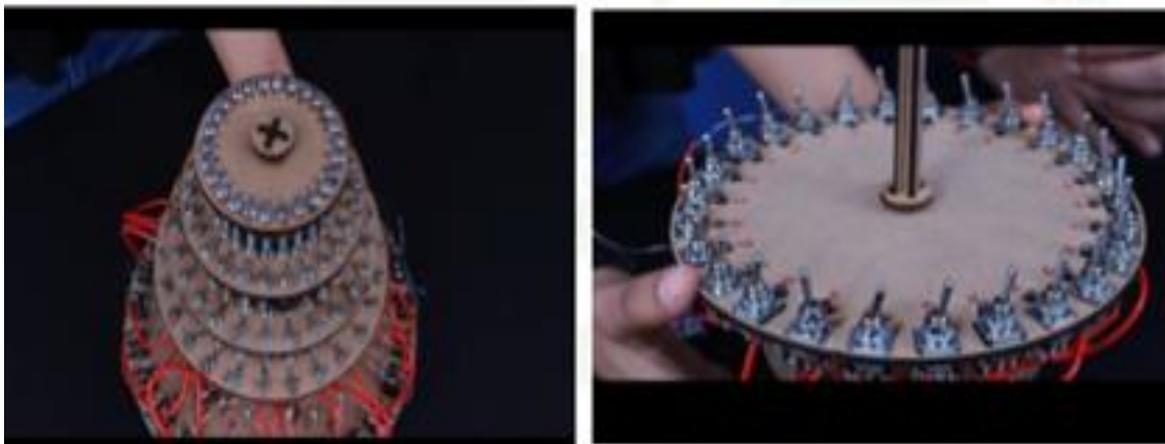
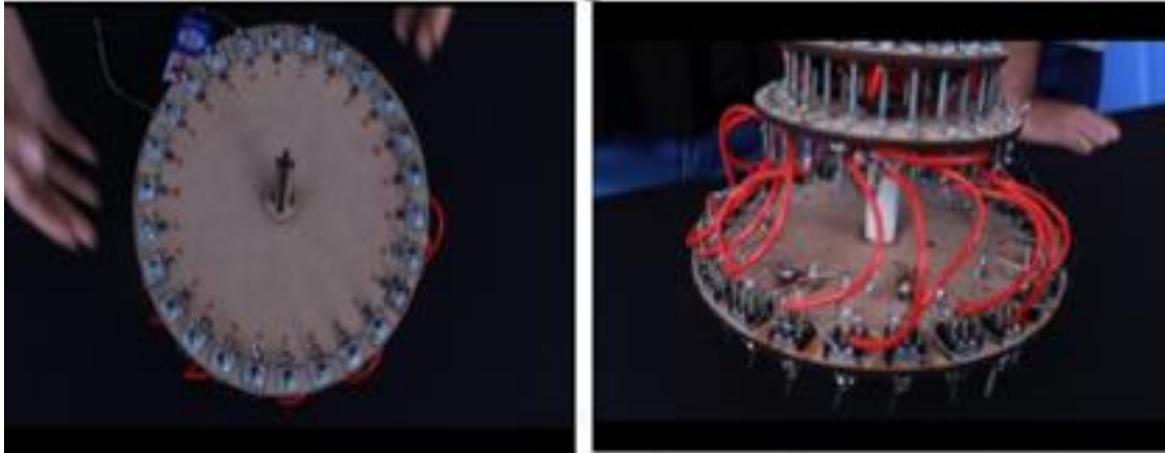
We were told to make the same enigma machine in less than 10 dollars. As the enigma machine was considered the first even cryptographic machine ever, there was a need to let everyone know the history of the machine and no one could afford the real one so we had to build one that could replicate the results of the original machine.

For this we used a 3D modelling software named as Solid Works wherein we created designs of the machine and tested on how will it look after the process. The material used to print the parts of the machine was MDF (medium density fibreboard) which is a type of material that can be used when using a laser cutter. A laser cutter was used which helped in cutting out the designs made on the software.

To make the rotors we used screws for testing purposes and later pogo pins were employed in the place of those screws due to their high conductivity. Each rotor had all the screws internally connected to another screw and all these connections were mapped out on a page to check the results.

Our enigma had a reflector and 3 rotors to perform this task. The keyboard encompassed 26 toggle switches that toggled between on and off. The switch board that consisted of these switches was connected to the first rotor and then with the help of screws the other rotors conducted the current. After the current was reflected by the reflector, it went back to the rotors and then an LED on the switchboard would light up. The signal itself changed 6 times before it reached the switchboard.

Images of the implementation of our Enigma



Final Output



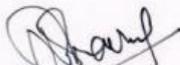
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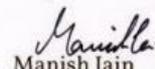


THIS CERTIFICATE IS AWARDED TO

Forum B. Patel

in appreciation of your successful efforts as an intern at
 CENTER FOR CREATIVE LEARNING, IIT GANDHINAGAR for
 2 months of summer 2019.


 Neeraj Sharma
 MENTOR


 Manish Jain
 ASSOCIATE TEACHING PROFESSOR



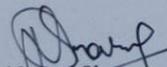
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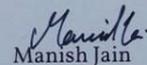


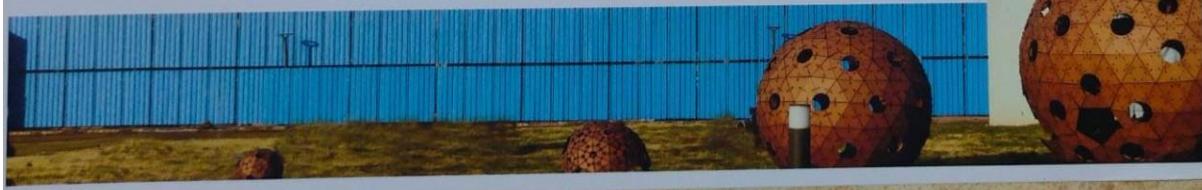
THIS CERTIFICATE IS AWARDED TO

Aditya Sahani

in appreciation of your successful efforts as an intern at
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 Neeraj Sharma
 MENTOR


 Manish Jain
 ASSOCIATE TEACHING PROFESSOR



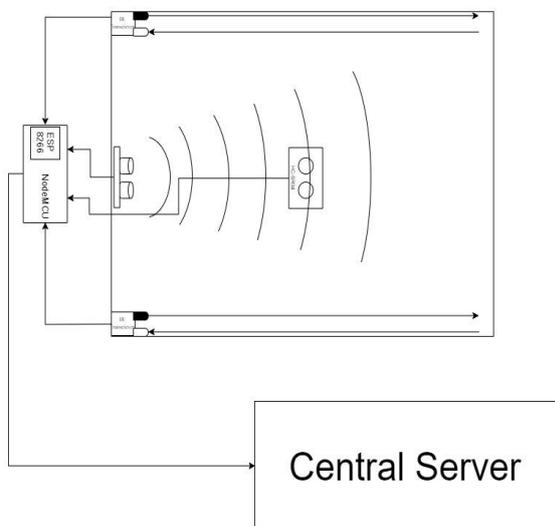
3. Information Technology

Project 1:

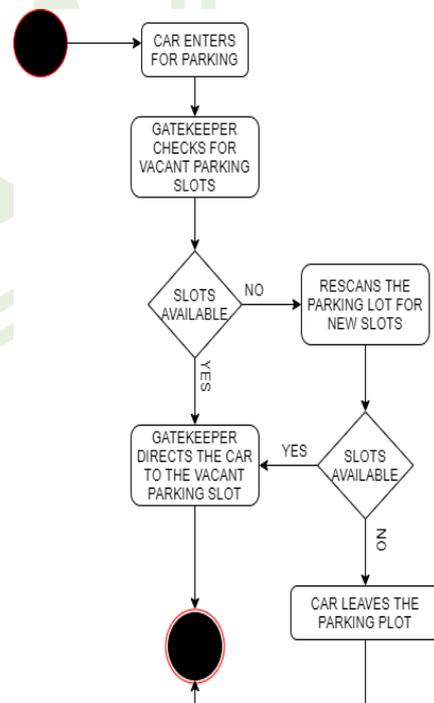
Project Title:	IOT ENABLED SMART PARKING SYSTEM
Student/Students Name:	Rohit Misra, Shekhar Jain, Mihir Bonde
Class	TE
Under the guidance of:	Mr. Harish Motekar
Academic Year	2019-20

Introduction: Nowadays, an increase in population and as its direct result an increase in pollution is one of the major concerns of modern society. One such inevitable aspect of population explosion is that of increased vehicular traffic. As more and more people acquire vehicles, the need for available parking spaces increases drastically as well. Due to this, in urban areas, people end up burning a huge amount of un-renewable fossil fuels in search of parking spaces in designated parking lots (i.e. for malls, expos, carnivals, fairs, etc.) sometimes even driving around a parking lot for a while until they find a vacant parking spot. Using IoT we can easily target and tackle this issue. Using a combination of obstruction detecting IR sensors and Distance measuring Ultrasonic sensors (SONAR), we can design a Smart Parking System that lets users know about vacant spots in parking lots and display a visually represented data of the same for instant monitoring.

System Diagram:



block diagram of the proposed system





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Result:

Multiple steps have been taken to curb the nuisance of pollution and our system is one of them. Using this system, we can help reduce pollution by eradicating the need for roaming around a parking lot in search of an empty parking space.

This system makes use of IoT technology for real-time parking space monitoring. This system can greatly increase end user satisfaction and contribute to reduction in wastage in fossil fuels and time. This system is highly efficient and scalable. Since efficient sensors and a low powered NodeMCU are used, it uses less energy. This system can automate the current manual Parking System.




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4. Class and description of the work : LITERARY/ DRAMATIC WORK THE WORK IS RESEARCH PUBLICATION FOR SMART PARKING SYSTEM. SMART PARKING SYSTEM USED IOT TOOL TO MANAGE PARKING

5. Title of the work : IOT ENABLED SMART PARKING SYSTEM

6. Language of the work : ENGLISH

7. Name, address and nationality of the author and if the author is deceased, date of his decease :

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Date of Receipt : 11/02/2020



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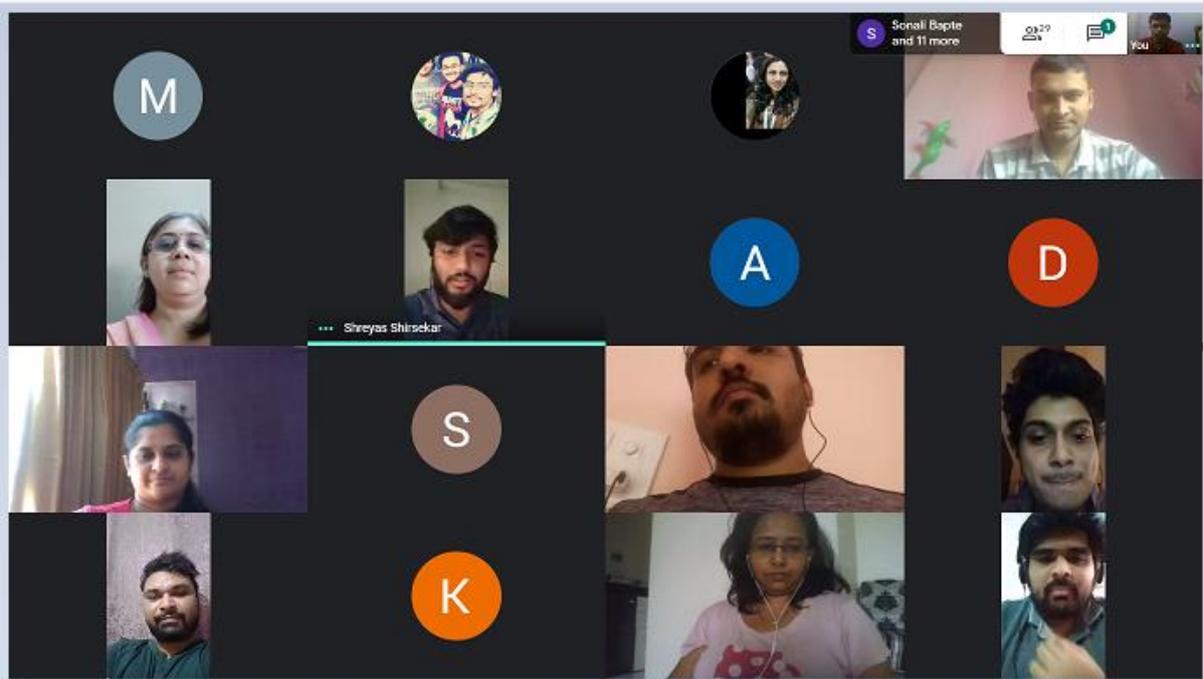
Project 2:

Project Title:	TRAVEASE
Student/Students Name:	Sheshadri Lokapur, Gaurav Shikhare
Class	BE
Under the guidance of:	Mr. Manish Bhelande
Academic Year	2019-20

Introduction:

The aim of the project is to develop an Android application that lets its users to send notifications in case of an emergency or a panic situation. The users can send multiple text messages and emails on the press of a single button. The phone numbers, email ids and the contents of the text and email messages can be set from within the application. The text messages and emails sent, along with the content, also have the last known location of the user. This is very helpful in tracking the whereabouts of the person. The user can also call 911 directly from within the application if the nature of the situation demands it. Additionally, the user of the application may allow the app to track their location. If this option is selected; the application fetches the device's location at about every 15minutes and stores it in a database. This information is very useful and can be used in a variety of ways. One such use of the location data is from within the Android app where the user can view a map that shows their location history over a period for a particular day.

Online Project Competition Images



Appreciation of Team **Travease** during online valedictory of **online Project Competition**



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Certificate of Achievement

This certificate is proudly awarded to

Sheshadri lokapur

for achieving **3rd place** in **“Online Project Competition”**
 organized by Information Technology Department
 in collaboration with SAKEC ACM Student Chapter
 & SAKEC IIC 2.0
 on 17th April, 2020.

Mr. Manish Bhelande
 Event Coordinator
 IT Dept.

Mr. Panjab Mane
 Event Coordinator
 IT Dept.

Ms. Swati Nadkarni
 President
 SAKEC IIC 2.0

Dr. Bhavesh Patel
 Principal
 SAKEC



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Gaurav shikhare

for achieving **3rd place** in **“Online Project Competition”**
 organized by Information Technology Department
 in collaboration with SAKEC ACM Student Chapter
 & SAKEC IIC 2.0
 on 17th April, 2020.

Mr. Manish Bhelande
 Event Coordinator
 IT Dept.

Mr. Panjab Mane
 Event Coordinator
 IT Dept.

Ms. Swati Nadkarni
 President
 SAKEC IIC 2.0

Dr. Bhavesh Patel
 Principal
 SAKEC



4. Electronics & Telecommunication Engineering.

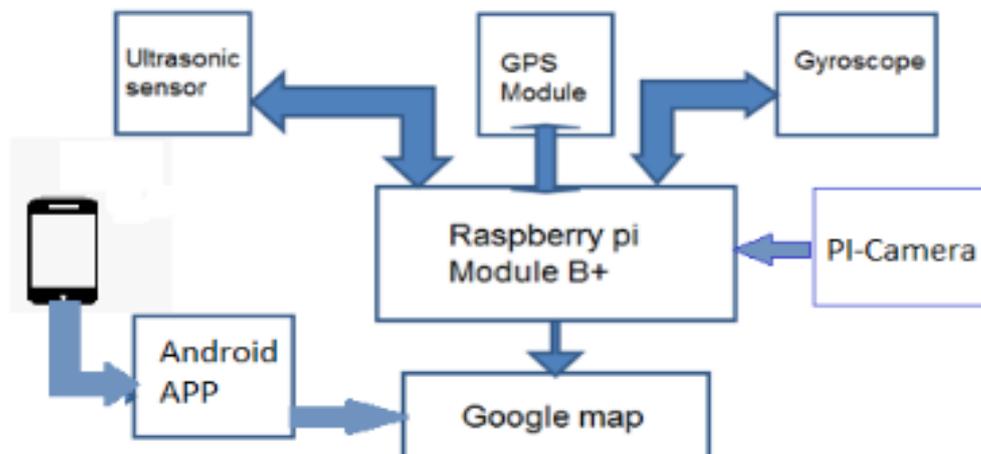
Project 1:

Project Title:	Smart Pothole detection System using IoT
Student Details:	Shashank Chavan, VidyeshBondre, . Kiran Yadav
Class	BE
Under the guidance of:	Mr. Rohan Borgalli
Academic Year	2019-20

Introduction:

Abstract: As one of the pavement distresses, a hollow is outlined as a depression within the pavement surface and minimum arrange dimension is a hundred and fifty millimeters. Potholes will generate injurys like pneumatic tyre and wheel damage, impact, and injury on the lower part of a vehicle, sudden braking and steering wheel operation, and vehicle collision and major accidents. Potholes have become a major havoc and are the leading reason for the damage of road transportation vehicles. Therefore, this paper was made to verify and understand whether a feasible commercial product can be made using the current algorithms to detect potholes, which can aid the driver of the vehicle. The topic selected uses different algorithms to test whether it can identify all types of potholes based on the intensity of the image and the shape of the pothole in any given condition. Potholes have been a major problem in Mumbai road in recent times. In this project we are trying to study potholes and and their distribution on the roads of Mumbai. With the help of accelerometers and GPS modules, we shall collect data on potholes (their location, their severity, etc.). And look for a probability density function of potholes dependent on distance between two potholes. With statistical tools, we would like to generalize our result to the entire city. Potholes are often linked to accidents and such data analysis from a basic set of variables to a wider set of variables will be useful in many ways for the public in Mumbai.

Block Diagram:





Output:



SHAH & ANCHOR



Project 2:

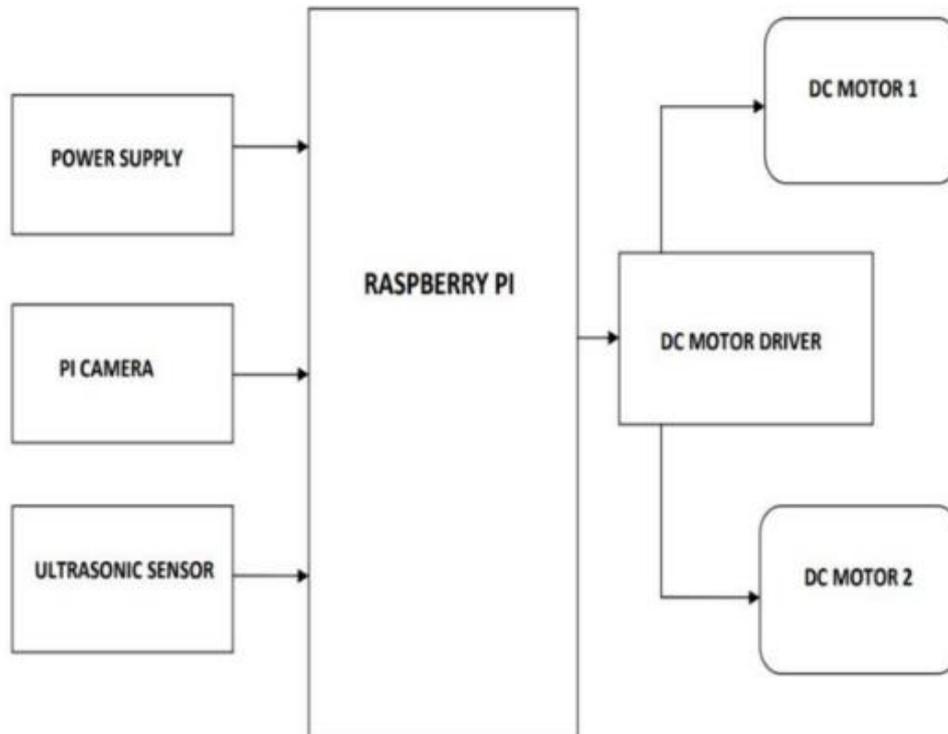
Project Title:	EYE CONTROLLED WHEELCHAIR USING RASPBERRY PI
Student Details:	Rohit Gupta, Rajesh Kori, Swapnil Hambir, Ajit Upadhyay
Class	BE
Under the guidance of:	Mr. Shridhar Sahu
Academic Year	2019-20

This project is one of the projects selected in NIC competition.

Introduction:

Abstract: The purpose of this eye-controlled wheelchair is to eliminate the need for support for people with disabilities. The proposed wheelchair control technique depends on eye movements. The camera is mounted on the user's head to take eye photos and track eye pupil movements using face landmarks recognition technology. Based on eye pupil movements, the wheelchair motor moves left, right, and forward. For security, an ultrasonic sensor is introduced at the front of the wheelchair to identify obstruction and consequently stop the wheelchair. The complete system is controlled by Raspberry Pi.

Block diagram:





Output:

