First Winner

- ***Project Title:*** **Impaired Vision Navigation Assistance**
- ***Prepared by:*** Aditya Vaishampayan, Jolly Mishra, Ishan Patel
- ***Guided by:*** Prof. (Dr.) R. C. Patel

Globally, there are 253 million visually impaired persons, of whom 36 million are blind. The technology has not advanced enough to cater to their needs. This implies that the state of art is neglecting an important section of our population. Our research aims to create a prototype which will encompass technologies such as Sound Navigation and Ranging (SONAR), Optical Character Recognition, and deep learning. This model will integrate sensing components like ultrasonic sensor and camera, and provide a haptic and speech feedback respectively, given to the user to ensure a safe and accurate navigation mechanism. Some of the sub-problems that we faced during the course of our research were deciding on cost- effective and interoperable solutions, making the system completely portable and implementing open source code and efficient coding techniques. An economically viable product which used open source was the key element to developing our prototype. Our system is a replacement to the conventional navigation tools like the cane and guide dog. Being independent and healthy are the primary needs for the disabled and this device can help them achieve that goal.

Second Winner

- ***Project Title:*** **Smart Transmitter for Advanced Automation System**
- ***Prepared by:*** Mrunal Hatwar, Nishant Mishra, RutvikVasava
- ***Guided by:*** Prof.V. P. Patel

The proposed idea will have microprocessor as their integral part along with signal conditioning. This will help for self-diagnostic abilities, nonlinear compensations, re engaging with less calibration and ability to communicate digitally over a network. It will also be flexible. Because their calibration curve is in the microprocessor memory, one can electronically change the zero and span of transmitter through keyboard of a portable terminal and microprocessor will automatically match the minimum and maximum output signals to the newly set measurement inputs without affecting system calibration. Configuration of the instrument can be easily done according to process at field or from distant location. For further expansion, we can connect our transmitter to DCS, form a closed loop and show its working.

We are using a simple RTD, MAX31856 IC as ADC which can be configured in 2 wire, 3 wire and 4 wire, AVR32 as our controller a keyboard and LCD as input and output devices and XIGBEE/BLUETOOTH for wireless communication. We are using ATMEL STUDIO, LABVIEW and PROTEOUS software for coding and stimulation.

Third Winner

- ***Project Title:*** **IOT based Remote Monitoring of Medical Signals**

- ***Prepared by:*** Marvie Mistry, Susmita Patel, Shivali Patel
- ***Guided by:*** Prof. (Dr.) R. C. Patel

It is a system that will enable live remote monitoring of medical signals such as ECG with the help of IOT (Internet Of Things) technology. It is going to enable the doctors to remotely address any emergency situation by detecting the symptoms of any threats on hisdevice that will display the medical signals of the patient admitted at the remote hospital,without having his presence mandatory at the hospital.

The main objective of our project is to ease and make the system of patient monitoring more efficient by enabling transmission of medical data to remote devices in a secureway as well as in real-time.

An ECG Sensor with disposable electrodes attaches directly to the chest to detect every heartbeat. Electrodes of ECG Sensor have 3 pins and connected by cable with 30 inches in length.It is make ECG sensor easy to connect with controller and placed at the waist or pocket. Afterestablishing a connection between AD 8233 module and Arduino using programme codeECG signals will be displayed on Arduino serial plotter. Data will be stored and sent to thecloud using ESP 8266 Wi-Fi module. We can obtain the data on remote devices using IoT.