## FACULTY MENTOR
Bharadia, Dinesh

## PROJECT TITLE
Wireless Virtual Reality tracking with standard glasses
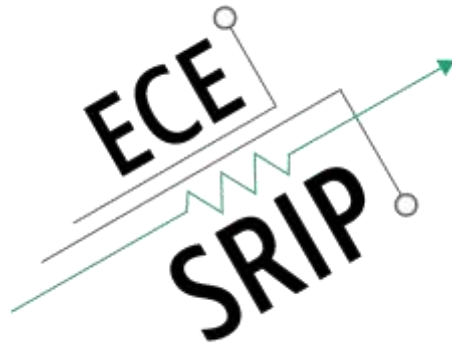
## PROJECT DESCRIPTION
We have developed VR tracking algorithm which provide mm level tracking for VR glasses using low power communication and localization chip. The goal of the project is to build a flexible PCB, which can stick to existing glasses and provide with VR tracking in augmented reality.

## INTERNS NEEDED
1 BS student and 2 MS students

## PREREQUISITES
Flexible PCB design, RF design, antenna design, embedded systems, Python

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## PROJECT TITLE
BLE localization and communication platform
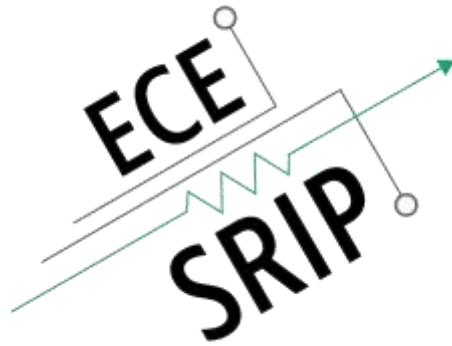
## PROJECT DESCRIPTION
Bluetooth is low power system and is widely used technology for sensors. Today, these sensors are deployment almost everywhere in the indoor environments -- smart watches, asset tracking, and so on. Sensors are deployed everywhere, however there is no way to know the location of the sensors, other than book keeping the location of each sensor. The book keeping makes deployment process painful and is not scalable to mobile sensors. In this project, we will develop an algorithm and system using ubertooth (Bluetooth SDR) to localize the sensor and get data from the sensor. We will use ubertooth to extract wireless channel from Bluetooth, and use the wireless channel to localize the low power sensors. We would use multiple access point as the anchor point to localize the low power sensors.

## INTERNS NEEDED
2 BS students and 1 MS student

## PREREQUISITES
C, C++, Python, Firmware and App development

## FACULTY MENTOR
Bharadia, Dinesh

## PROJECT TITLE
Helping Disaster zone using drones to identify human under the rubble

## PROJECT DESCRIPTION
Today, Drones (UAV) are become very common and useful in disaster zone. In almost all disaster zones, drones are sent to survey the area. However, drones sent are generally to survey can monitor surface level rubble, objects and alive entities. In this project, the goal would be to build a sensing unit to find alive human beings stuck below the rubble. We would use wireless signals which could penetrate the rubble to measure breathing or heartrate. Wireless signals can penetrate through walls and measure human activity. We would exploit this ability to build sensing unit, however the challenges are on two front. First is
designing signals and measuring the reflections which specifically captures the breathing. The second challenge would be compensating for the vibration and movement of drone while sensing, because these movements can be confused as breathing. The project require programming and machine learning skills.

## INTERNS NEEDED
2 BS students and 2 MS students

## PREREQUISITES
Drone programming, Matlab, Python, C or C++ programming.