List of Project Ideas

Project No. : 13

Project Title	Radar tracking Algorithm
Faculty Mentor	Prof Jayanta Mukherjee (jayanta@ee)
Application	Tracking of objects using radar
Brief Description	Radar tracking algorithms are important for detecting objects in a radar. A radar consists of a radiating antenna and a receiver. The antenna beam is not a single scanning line but rather a broad pattern. Similarly there are uncertainties introduced in the receiver due to noise non linearity etc. Further uncertainties may be introduced due to terrain, weather etc. In this project we would like to develop the algorithms for efficient detection. It will be based on estimation theory using raw data. The project involves programming and also designing and building Transmit antennas.
Reference	https://ieeexplore.ieee.org/document/6836438
Status	

Project No. : 14

Project Title	Battery Management System
Faculty Mentor	Prof. Debraj Chakraborty (dc@ee)
Applications	Increasing the reliability of Li-Ion Li-PO battery packs
Brief Description	Design and develop a management system for a small pack of Li-Ion/Li-Po batteries capable of estimating and monitoring the voltage, temperature, SOC and SOH of the battery pack. Additional features such as over/under current, voltage protection as well as connections with loads would be welcome.
Reference	https://www.mpoweruk.com/bms.htm http://scholar.uwindsor.ca/cgi/viewcontent.cgi?article=6006&context=etd https://www.youtube.com/watch?v=59bJr-y04vs https://in.mathworks.com/solutions/power-electronics-control/battery-management-system.html
Status	

Project No. : 15

Project Title	Basic EEG System
Faculty Mentor	Prof. Debraj Chakraborty (dc@ee)
Applications	Control using EEG Signals
Brief Description	Build a basic EEG system capable of measuring brainwaves with a small number of electrodes. The recorded signals would be processed to perform basic motion control tasks.
Reference	https://www.instructables.com/id/DIY-EEG-and-ECG-Circuit/ https://www.youtube.com/watch?v=GN7FQdvUt_E
Status	

Project No. : 16

Project Title	Groundwater level measurement
Faculty Mentor	Prof. Debraj Chakraborty (dc@ee)
Applications	Measuring level of groundwater
Brief Description	Known methods such as vertical electrical sounding, are very expensive and don't work so well. Come up with an easy-to-use and low cost method to measure the depth of the water table.
Reference	https://www.researchgate.net/publication/268264434_Inexpensive_Geophysical_Instruments_Supporting_Groundwater_Exploration_in_Developing_Nations https://www.researchgate.net/publication/331352214_Low-cost_multi_electrode_resistivity_meter_based_on_microcontroller_for_electric_resistivity_tomogr https://sites.ualberta.ca/~unsworth/UA-classes/223/loke_course_notes.pdf
Status	