PG dissertation list

Sr No	Title of the project	Year	Outcome of the project	What can be offered to society or industry
1	Machine learning algorithm for industrial process to define decision support system.	2019-20	Decision Support System based on data algorithm	data analytics for O&M and performance/efficiency improvement
2	PMSM Motor Control with CIPOS	2019-20	FOC Control of PMSM with CIPOS	
3	Control Algorithm Development for Bidirectional DC-DC Converter used in Hybrid/Electric Vehicle.	2019-20	Control algorithm which is responsible for maintaining voltage stable and regulated irrespective of variations in input voltage, load current etc.	Generalised algorithm in MATLAB model which can be used for all dc-dc projects.
4	Integration Of Pilot Plant	2019-20		How to integrate heterogeneous system
5	Robust controller design with experimental application of couple tank system	2019-20	I will be able to implement control on different processes.	In many process industries this will be good approach to maintain and control the level of the coupled tanks.
6	Semi-autonomous park assist system - path planning and path tracking	2019-20	Safe and collision free path generation and tracking	A safe reverse parking system
7	The Fault Prediction in Process Gas Analyzer	2019-20	The aim of this project is to suggest a predictive maintenance strategy for gas analyzer using latest techniques and failure detection based on their own collected measurements or data.	Fault detection is one of the critical components of predictive maintenance. It is very much needed for industries to detect faults early and accurately. In a industries like oil and gas , gas processing, refining, Air separation/liquefaction, Power and Alternative Energy, Metallurgical, Cement etc. to minimize the cost of maintenance early prediction is very much important .

8	Antilock braking system.	2019-20	Sleep control	Safety
9	Develop The GUI Test Automation Framework For Flowmeters	2019-20	Automation in Testing process of Flow meter	Increase the quality and Accuracy of testing for Flowmeters
10	Analysis of gastric emptying in diabetic patients using Electrogastrogram.	2019-20	Monitoring and analysis of gastric emptying in diabetic patient.	It can be use in Research Methodology and Hospital for stability of health.
11	Early Diagnosis of Diabetic retinopathy disease using Electrooculography and Video-oculography method	2019-20	Detects the diabetes with help of comparative results of EOG and VOG	Research mythology and in hospital
12	C-Arm automation framework for system design/development	2019-20	More reliable, stable functionality for C-Arm X Ray system	An improved technique which will save cost for the company and the operators
13	Fetal ECG extraction and classification using machine learning	2019-20	Extracting Fetal ECG by denoising sample and classify it into different diseases.	By doing this we diagnose the cardiac health of fetus.
14	Blindness detection using machine learning	2019-20	This process gives identification of diabetic patients blindness and help to prediction of blindness.	It is helpful for the Diabetic patients. By using this we can detect diabetic retinopathy to stop blindness before its too late.
15	Disease diagnosis from bowel sounds using machine learning	2019-20	Detects the disease from bowel sounds using machine learning.	It is used to diagnose diseases related to bowel sounds such as diarrhoea, excess gas etc.
16	Study and Analysis of application of Electrical Impedance plethysmography	2019-20	Effectiveness of Electrical Impedance plethysmography in detecting vital parameters and IPG data collection	If effectiveness of IPG method found good,it can be used in continuous monitoring of vital parameters such as blood pressure and respiration rate etc.
17	Detection of oral cancer using deep neural based adaptive fuzzy system	2019-20	We can predict oral cancer in less time	We can diagnose it in earlier stage
18	Non-invasive assessment of tissue oxygen using NIR spectroscopy	2019-20	1. Able to detect oxygen content in both arterial and venous blood 2. Real time measurement	It can be used to detect tissue oxygen saturation during surgery

			3. Point of care diagnosis	
19	A Memory Efficient Embedded Implementation of Model Predictive Control.	2019-20	The major problem of the excessive memory utilization in embedded application will be solved.	The improvement in memory footprints by retaining the system performance will be useful for all the industrial embedded applications as well as the embedded control systems which demands high computational complexity.
20	Model based Battery Management System (BMS)	2019-20	To develop a model based BMS.	Improvement of battery life can be used in automobile industry.
21	Development of sensor system to detect cadmium and lead in contaminated water for detecting osteoporosis fracture	2018-19	Developed the system which is detecting lead and cadmium in water that can cause osteoporosis fracture	It can be use in Organisations like Medical Research Industry and Clinical Laboratory.
22	Development of Electrical impedance sensor system for milk adulteration (A1 and A2).	2018-19	Sensor developed for the detection of adulterants in milk.	Food preservatives research industry and laboratory.
23	Cardiac Auscultation Monitoring System using Phonocardiograph	2018-19	Heart sound monitor and analysed using phonocardiograph sensor. Heart sound can be classified into normal and abnormal using support vector machine (SVM) algorithm.	It useful where advanced equipment is difficult to listen heart sound clearly and also useful for recording purpose.
24	Detection of presence of E. coli in drinking water by flow cytometry technique	2018-19	Detection of count of E. coli in drinking water to avoide supply of contaminated water	Bacteria free drinking water
25	Design of the fuel cell emulator	2018-19	Fuel cell emulator has been designed that can be used for experimentation purpose.	Designed emulator can be helpful for laboratory purpose for experimentation rather than using expensive, difficult to handle actual fuel cell.

26	Sleep apnea detection using single lead ECG	2018-19	Comparative analysis of different models using machine learning	It can be used for diagnosis, therapeutic and treatment purpose.
27	Modeling and Simulation of optimized MPPT control for TEG application	2018-19	It is a modified control strategy for MPPT which gives fast response and good results as compare to conventional algorithms.	This project uses Thermoelectric generator which converts waste heat energy into electrical energy, so it gives an alternative for recovery of energy. It comes under recovery of energy. This project can be implemented in the automobile industry for recovery of energy from exhaust.
28	Real Time Motion Detection for Search and Rescue Operation	2018-19	In this project it is found that the mars rover type robot i.e., robots with rocker bogie arrangements designed in two parts i.e., control end and robot end can be used for search rescue operations.	The robots designed same as mars rover can be used in search and rescue operations. And the real time motion detection system installed on robots will increase the operations procedure to locate the individuals at the disasters places. And locating individuals at such places will reduce the living casualties in disasters conditions.
29	Transmission of Biomedical Signal using VLC based system	2018-19	Biomedical signal can be transferred through Visible light communication and to avoid effect of Radio frequency.	Project has led to transfer biomedical signal and thus it has led a path for Future hospitals which will include Visible light communication as the base to transfer signal and thus Radio frequency will be reduced and indirectly human beings as well as other animals will not be affected.
30	Fractional Controller optimization for Liquid	2018-19	Fractional order fuzzy PI gives better response for level	It will give low cost robust system for the level Control. Which

	Level System using MATLAB		Control than PI, FOPI and FPI. It overcome all drawback of PI, FPI and FOPI.	help as to save time and cost.
31	Gait cycle analysis using IMU sensor	2018-19	A mathematical algorithm for gait parameters calculation. Developed gait cycle analysis system.	Cost effective and simple technique by considering person's comfort to walk, a gait parameters measurement system using gyro sensor is developed.
32	Estimation of Respiratory Rate using PPG and ECG Signal	2018-19	An algorithm to estimate the respiratory rate of the patients by using PPG signal	A method to estimate Respiratory Rate without causing any discomfort to the patient.
33	Calibration of an optical sensor for in vivo blood glucose measurement	2018-19	To estimate blood glucose level non-invasively.	It can be used in the hospitals or at home to diagnose diabetes without pain.
34	Li-ion Battery Management System	2018-19	Analysis of Battery Characteristics, State of charge estimation of Battery.	Battery operated vehicle can help to reduce carbon footprint and effective energy management.
35	Design and development of low-cost instrumentation for ecus	2018-19	Developed low cost, robust programmable current sink and pc-based data logger and function generator	Reduces dependency on other devices, reduces cost for testing.
36	X-ray tube and wireless detector alignment using Ultra-wideband and Inertial Motion Unit	2018-19	To design a technology for alignment of digital detector with X-ray tube using Ultra-wide band Sensor and Inertial Motion Sensor. To design a technology for determining the time instant of inflated or deflated lung condition and decide when to give	More accuracy and comfortable for patients.

			X-ray exposure using UWB radar.	
37	Machine Learning Based Model Predictive Control	2018-19		Based on observation study of the system and a learning theory.
38	Detection of presence of E coli in drinking water by flow cytometry technique	2018-19	Detection of count of E. Coli in water	Society can get filtered water for drinking in low cost
39	Prediction of faults in gas chromatograph	2018-19	1. Predicted 5 faults. 2. Tested on real time saved chromatogram 3. Filed an "Invention Disclosure" (Kind of POC document) for Emerson Innovation Center Pune (Associated organization) 4. Patent filing in progress	Gas Chromatograph would be intelligent so that it can predict its own faulty prediction behaviour
40	GPS & IMU integration on autonomous vehicle using kalman filter	2018-19	Accuracy increased in terms of position	Useful in autonomous vehicle for navigation
41	Boiler drum level controlled by Fuzzy self-adapting PID	2018-19	Boiler drum level controlled by fuzzy self-adapting PID gives better response such as small peak overshoot, fast response, less settling time, robust in nature than that of regular conventional PID Controller.	Instrumentation industries can make use of Fuzzy self-adapting PID instead of PID to control process parameters of plant.
42	GPS & IMU integration on autonomous vehicle using kalman filter	2018-19	Accuracy increased in terms of position	Useful in autonomous vehicle for navigation
43	DC load voltage measurement using resonant coupled coils	2018-19	The project helps for trending wireless battery charging technology in electric vehicles.	The pollution due to conventional fuel vehicles will be minimised by using this electric vehicle charging technology.
44	Machine Learning Based Model Predictive Control	2018-19		Based on observation study of the system and a learning theory.