

Project ID	Project title	Project description	Internship duration	No. of internship vacancies	Preference	Department	Faculty name
1	Development of system and ML algorithms for Life Detection Under Debris Environments	The project aims to develop low-cost, low-power, short and long range communication technologies to assist rescue personnel in locating life under debris	Two months	1	Pursuing Bachelors/Masters program in CSE, EE, ECE	Electrical and Computer Science Engineering	Dr. Ramnarayan Yadav
2	Properties of Materials based on ab-initio DFT calculations	This project introduces DFT calculations based on quantum mechanics and solid-state physics	Two Months	2	Any bachelors/masters student who has completed an introductory course on quantum mechanics and is ready to work in Linux OS.	Basic Sciences, Physics	Dr. Brajesh Tiwari
3	Drone Navigation in GPS Denied areas	Drone design and calibration, Autonomous drone	Two months	4	Pursuing Bachelors/Masters program in EE,CSE, ECS, I&C, Aerospace	Electrical and Computer Science Engineering	Dr. Abhishek Rawat
4	AI, Machine Learning, and IoT Based Automated Systems for Health, Defence.	ML/DL algorithms can analyze images and 1D signals and identify patterns and trends that may not be immediately visible to the eye. ML algorithms can learn from large datasets of signals and develop models that can accurately detect abnormal patterns and anomalies. The use of ML/DL algorithms in the automated detection of images and signals has several benefits. Firstly, ML algorithms can analyze large amounts of data quickly and accurately. Secondly, ML algorithms can identify patterns and trends that may not be immediately visible to the eye, which can lead to earlier detection of abnormalities and more timely intervention. Finally, ML algorithms can be trained to continuously improve their accuracy over time, which can lead to more reliable and accurate detection of abnormalities. Overall, the use of ML algorithms in the automated detection of physiological signals have the potential to revolutionize healthcare by enabling earlier detection and more timely intervention for a range of conditions. In this project, we aim to develop ML-based automated systems for health, defense application application to monitor health of soldiers remotely	Two months	4	Pursuing Bachelors/Masters program in CSE, IT, EC, EE, ML, Data Analytics	Electrical and Computer Science Engineering	Dr. Manish Sharma
5	Development of AI and ML based systems for Agriculture and stock market	The aim of the project is to develop IoT and AI based systems for detecting plant diseases and automated precision farming	Two months	1	Pursuing Bachelors/Masters program in CSE, AI, ME, CE, EE, ECE	electrical and Computer Science Engineering	Dr. Manish Sharma
6	CFD simulation of scramjet combustor incorporating kerosene combustion with turbulent chemistry interaction	In the context of scramjet combustors, the challenge lies in modeling multi-step multi-species combustion while considering turbulence chemistry interaction. This interaction is crucial for accurately simulating supersonic combustion. The focus of our modeling efforts is on suitable fuels for supersonic combustion, including kerosene, ethylene, and hydrogen. To achieve this, we employ various models to capture the intricate interplay between turbulence and chemistry. The models operate within the Reynolds-Averaged Navier-Stokes (RANS) framework, allowing us to explore the intricate effects of turbulence-chemistry interaction. The research aims to enhance our understanding and design capabilities for spacecraft applications involving scramjet engines	Two months	1	Pursuing Bachelors/Masters program in Mechanical Engg.	Mechanical and Aerospace	Dr. Ajit Kumar Parwani
7	Heat pump for heat rejection at elevated temperature	In the context of spacecraft applications, the heat rejection capacity of a space thermal radiator is inherently constrained by its operating temperature. Specifically, the radiator in a passive thermal control system is limited by the temperature of the equipment that supplies the heat. Consequently, the radiator's temperature remains lower than that of the heat source. To enhance the heat rejection capacity, a heat pump-enabled thermal control system comes into play. This system efficiently absorbs heat from the source region and then transfers it to a radiator operating at a higher temperature. However, this enhanced performance comes at the cost of additional operating power. Notably, this heat pump system offers a crucial advantage: it reduces the total radiator area requirement compared to a passive system. Depending on mission objectives and spacecraft configuration, the radiator can be either deployable or fixed. The focus of this research lies in the design and development of a heat pump system specifically tailored for spacecraft applications.	Two months	1	Pursuing Bachelors/Masters program in Mechanical	Mechanical and Aerospace	Dr. Ajit Kumar Parwani
8	Machine Learning Approaches for Modeling and Predicting Boiling Phenomena	Boiling refers to the heat transfer process that occurs during the phase transition from liquid to vapor. Compared to single-phase heat transfer, boiling offers several advantages, including significantly higher rates of heat exchange even at lower temperature differences. Two-phase heat transfer, which involves both liquid and vapor phases, can be quite complex due to the multitude of parameters at play. To address this complexity, intelligent methods, such as artificial neural networks, can be valuable for modeling this type of heat transfer mechanism. In our current research, we aim to achieve accurate predictions for pool boiling heat transfer using these intelligent methods. Additionally, we will explore heat transfer predictions in scenarios involving nanofluids or porous media. By selecting an appropriate method and optimizing its parameter values, we can enhance the precision of our modeling efforts.	Two months	1	Pursuing Bachelors/Masters program in Mechanical	Mechanical and Aerospace	Dr. Ajit Kumar Parwani
9	Parametric Studies on Gas Turbine Engine Test Rig	Exploring parametric studies with a gas turbine engine test rig involves methodically adjusting operational factors like fuel flow rate, inlet temperature, and compressor pressure ratio. This analysis uncovers insights into engine performance, efficiency, and combustion behavior. These findings are important for refining turbine design, maximizing fuel efficiency, and addressing environmental concerns.	Two months	1	Pursuing Bachelors/Masters program in Mechanical	Mechanical and Aerospace	Dr. Sumit Tripathi
10	AI/ML based approaches for modelling core annular flow	AI/ML-based methodologies for modeling core annular flow (CAF) utilize algorithms to analyze complex fluid dynamics within pipe systems with an objective to predict and optimize the behavior of CAF patterns. The CAF parameters are crucial for understanding multiphase transport phenomena in various industrial applications such as oil and gas production, chemical processing, and transportation pipelines. By integrating datasets and modeling techniques, AI/ML facilitates the development of efficient flow management strategies.	Two months	1	Pursuing Bachelors/Masters program in Mechanical	Mechanical and Aerospace	Dr. Sumit Tripathi

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11	Numerical/ experimental estimation of scouring around bridge pier foundations	In this project, student(s) will get hands on training on ANSYS Fluent software, with which numerical simulation of the scouring around the bridge pier foundations will be determined. This will be verified experimentally by measuring scouring around the bridge pier foundations in the lab. Therefore, students will also get an exposure to work on open channel (Flume) with Acoustic Doppler Velocimeter (ADV) instrument.	Two months	1	Pursuing Bachelors/Masters program in Civil Engg. (Water Resources Engineering)	Civil Engineering	Dr. Manoj Langhi
12	Automatic Number Plate recognition using a smartphone	In this project, labelled image dataset will be provided to you using which, you have to train an AI/ML model that could be run in a smartphone to detect Vehicle license plates	Two months	1	Pursuing Bachelors/Masters program in CSE, EE, ECE	Electrical and Computer Science Engineering	Dr. Ravi Bhandari
13	AI-ML for power system applications	Differential protection relays are used to protect the transformer against winding faults. However, the existing relays are facing a problem of false tripping. Therefore, the project will be on developing an Artificial intelligence (AI)/Machine learning (ML)-based algorithm to avoid false tripping. The work includes acquiring real-time relay data from the Gujarat Energy Transmission Corporation Limited (GETCO), data filtration, algorithm training, and algorithm updation in regular intervals. The project gives insights into understanding the differential protection of the transformer and the application of AI/ML algorithms in real-time	Two months	1	Pursuing Bachelors/Masters program in CSE, AI, ME, CE,EE, ECE	Electrical and Computer Science Engineering	Dr. Krupa Shah
14	Field Oriented Control (FOC) based BLDC/Stepper Motor Drive Electronics	FOC Mode of Motor Control Algorithm is the most advanced form of algorithm in today's scenario. It allows motor to run more efficiently, smoothly with quick dynamic response. FOC mode feeds the winding currents via throttle/accelerator. It involves the use of Clarke and Park transforms which is computationally complex activity in real time and needs DSP/ Microcontrollers. It makes stator and rotor magnetic fields orthogonal to each other to maximize electromechanical torque. This method involves measuring motor phase currents and rotor position. FOC mode of motor control produces lowest audible noise, takes care dynamic load conditions and provides highest motor efficiency	Two months	1	Pursuing Bachelors/Masters program in EE, EC, IC (control system knowledge is required)	Electrical and Computer Science Engineering	Dr. Krupa Shah
15	Robotic hand / Prosthetics hand	Design and develop a robotic hand for biomedical instrumentation / prosthetics	Two months	1	Pursuing Bachelors/Masters program in Electrical, Electronics, Instrumentation, Mechantronics	Electrical and Computer Science Engineering	Dr. Raghavendra Bhalerao
16	Text Analysis and Digital Humanities	This project utilizes text analysis and digital humanities to explore the interaction between literature and dynamic visual interpretation, revealing insights into evolving storytelling and reader engagement in contemporary contexts	One month	1	Bachelors/Masters students with a background in literature and a foundational understanding of Digital Humanities tools	Humanities and Social Sciences	Dr. I Watitula Longkumer
17	Design of catalyst for Biofuel production	This project aims to design and prepare catalyst for bio diesel production. Structure property relationship will be established.	Two months	1	B.Sc., M.Sc., B. Tech., or M.Tech. students (with Science or Engineering background)	Basic Sciences, Chemistry	Dr. Mahuya Bandyopadhyay
18	Photocatalytic degradation of waste water	This project aims to design and prepare catalyst for degradation/adsorption of carcinogens from water	Two months	1	B.Sc., M.Sc., B. Tech., or M.Tech. students (with Science or Engineering background)	Basic Sciences, Chemistry	Dr. Mahuya Bandyopadhyay
19	Driver Behavior Analysis using various sensor data	This project aims to collect and analyze the Wearable devices and Mobile phone sensor data to infer the driver behavior under different scenarios.	Two months	1	Pursuing Bachelors/Masters program in CSE/EC/CT/EE	Electrical and Computer Science Engineering	Dr. Manish Chaturvedi
20	AI application in HVAC systems	To develop the smart and AI based condition monitoring system for HVAC	Two months	1	BE/B Tech (ME/EE/CS)	Mechanical and Aerospace	Dr. Dileep Kumar Gupta
21	Simulation of HVAC system (Condition Monitoring System)	To develop the smart and AI based condition monitoring system for HVAC	Two months	1	BE/B Tech (ME/EE/CS)	Mechanical and Aerospace	Dr. Dileep Kumar Gupta
22	Tool Wear Monitoring for Aerospace Grade Material using AI/ML	Development of an online tool wear monitoring system in milling	Two months	1	BE/ B.Tech in Mechanical Engg.	Mechanical and Aerospace	Dr. Mithilesh Kumar Dikshit
23	Nanometrial reinforced high performance polymer nanocomposites for defence applications	Development of h-BNNS reinforced Kevlar/DGEBA nanocomposites and its characterization	Two months	1	BE/ B.Tech in Mechanical Engg.	Mechanical and Aerospace	Dr. Mithilesh Kumar Dikshit
24	Autonomous Intersection Management using Machine Learning	The project focuses on developing model to decide the crossing order at the intersection without traditional traffic light. We aim to utilize machine learning to improve the traffic efficiency for intersection	Two months	1	Pursuing Bachelors/Masters program in CSE, EE, ECE students	Electrical and Computer Science Engineering	Dr. Ramnarayan Yadav
25	Flow Measurements of outfalls into Sabarmati river	In this project, students will get the field experiments to measure the flow through pipe or open channel using the Cup-type current meter and pigmy type current meter	Two months	6	Pursuing Bachelors/Masters program in Civil Engg. (Water Resources Engineering)	Civil Engineering	Dr. Manoj Langhi
26	RF based drone detection and hacking using Machine Learning	The idea is to monitor Drone RF Signatures and detect it. Also transmit signals and perform hacking/spoofing	Two months	2	BE/B Tech (EE/CS/EC)	Mechanical and Aerospace	Dr. Jagat Jyoti Rath