Prem Kumar L

Master of Technology
in Mechanical Engineering
Indian Institute Of Technology, Ropar

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Education

Degree	Institute/Board	CGPA/Percentage	Year
Master of Technology	Indian Institute Of Technology, Ropar	7.5(till 3rd sem)	2022-2024
Bachelor of Technology	Madras Institute of Technology, Chennai	7.17	2017-2021
Higher Secondary	Sri Chaitanya Institutions, Raman Bhavan 3, Vijayawada	97.8%	2017
Secondary School	The Velammal Bodhi Campus, Ponneri (CBSE)	9.8	2015

Projects

- **Analysis of Subsonic Circular Nozzle with Co-flow** *Jan 2021 – May 2021*
  Dr. Ilakkya.
  – Using three convergent nozzle models for different Mach numbers until sonic and comparing the mixing and decay characteristics of these different nozzle models using Ansys. The varied nozzle exits with different openings as without Co-flow, Co-flow, and Co-flow with vanes. Designing the convergent nozzle model, creating structured meshing using ICEM software, simulating and analyzing using CFX and Comparing the three models, and optimizing the best design which has the lower potential core region.
- **Analyzing 2D rectangular Beam with Fixed Ends Subjected to Uniform Loading** *Mar 2022 – Apr 2022*
  Dr. Rajendra Munnian.
  – Developed a MATLAB code for creating mesh for the 2D rectangular beam and worked on the mesh convergence as the number of elements with comparison to the analytical solution and Euler-Bernoulli approximations, Timoshenko beam approximations. Obtained the stress, strain contour plots, and shear stress variation along the thickness of the beam.
- **Using deep neural network with small dataset to predict material defects** *Mar 2022 – Apr 2022*
  Dr. Manish Agarwal.
  – Predicting the solidification cracking susceptibility of stainless steel using deep neural network model.Using stacked auto-encoder for pre-training the deep neural network for optimizing the initial weights with small datasets. Compare the shallow neural network models with the deep neural network model which has been pre-trained.
- **Numerical Simulation of Thunniform Mode of Fish Swimming Using Discrete Vortex Method (Ongoing)** *Dec 2022 –*
  Dr. Devranjan Samanta.
  – Conducted a numerical simulation of the swimming dynamics of a two-dimensional cambered airfoil with assumptions of potential flows using the Discrete Vortex Method(DVM) by creating the Matlab Code to solve this numerical technique. The airfoil geometry model has been simulated and analyzed by discretizing the model and find the velocity field. The strength of the vortex has been calculated numerically on the influence locations and the geometry of the airfoil model is varied for different models and validated with the existing research papers.

Technical Skills

–**Programming Languages**: MATLAB, Python, SQL
–**Analytical Packages**: NumPy, Matplotlib, SymPy, TensorFlow
–**Simulation Software**: Ansys with CFX and Fluent.
–**Design Software**: NX Cad.
–**Software**: Power Point, Excel, and Word, Power BI

Key courses taken

–**Mehanical and Computational**: Mathematics for Engineers, Applied Numerical Methods, Advanced solid Mechanics, Advanced Fluid Mechanics, Wave Propagation, Finite Element Methods, Computational Fluid Dynamics, Deep Learning for Physical Systems, Thermal Management of Electronics. Fundamental and Modelling of Turbulent Flows*(Ongoing)
–**Computer Science**: Data Structures with Python.

Positions of Responsibility

- **Chairman**,MIT VARIETY TEAM, Dramatics Club of MIT Chennai. *Apr 2020- Apr 2021*
- **Student Coordinator**,Career Development and Placement Cell *Aug 2023 - May 2024*

Miscellaneous

–**Achievement 1**: Essentials for NX Designers and Synchronous Modelling and Parametric Design: Techniques related modelling a solid body and reshaping the designs according to required parametric using edge blend, drafting, label chamfering, Mirror and pattern face and Optimize face tools conducted by Siemens Centre of Excellence at MIT Campus, Chennai.
–**Achievement 2**: Industrial Robotics Basics KUKA: creating trajectories by memorizing Cartesian Coordinates, determines robotics working and passing positions, which is performed by a control box called the smart Pad.
–**Achievement 3**: Rallying on Roller skates for 3 km for International Peace Day under the quote “Spreading awareness is the first step to change the society”.