

PUTLURU DESHIK REDDY

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AREAS OF INTEREST

Fluid Dynamics

EDUCATION

Bachelor of Technology with Honours Degree in Mechanical and Industrial Engineering

Indian Institute of Technology Roorkee, CGPA: 8.98/10 (or) 94.8% 2018-2022

Intermediate Education, BIEAP

Board of Intermediate Education Andhra Pradesh, Percentage: 97% 2016-2018

Class X, BSEAP

Board of Secondary Education Andhra Pradesh, GPA: 9.7 2015-2016

SKILLS

Computer Languages MATLAB: advanced. C++: basic. python: basic

Software Packages Matlab, Simulink, Simscape, SolidWorks, ANSYS (Fluent, Structural, Thermal, Fatigue), Siemens (CAD), MS Office, MSC ADAMS, Ultimaker-Cura, OpenFOAM, Comsol, IPG CarMaker

Additional skills 3d-Printing, Workshop skills, CNC, Mechatronics, Arduino, Data analysis, Machine Learning, Deep Learning (basic), Image Processing

WORK EXPERIENCE

Research Internship - Flow Physics Laboratory

IIT Kanpur

Supervised by Prof. Anikesh Pal

Jul 2021 to Dec 2021

- Title of the project: Numerical Simulation of film boiling around a hot sphere in a pool of liquid using OpenFOAM software.
- Designed a numerical solver (based on "interphasechange foam" application) to simulate nucleate and film boiling; The solver captures phase change phenomenon driven by temperature with interface tracking using the VOF method.
- Created a test case with appropriate boundary conditions, blockMesh utility and finite volume schemes for the problem.
- The solver is able to capture the vapor film's wavy behaviour at the interface, and is validated with the experiments in the literature.

PROJECTS

Numerical and Experimental Analysis of a Vertical Axis Savonius-style Wind Turbine operating at low wind speeds MIED IITR

Bachelor Thesis Project - Supervised by Prof. Sushanta Dutta

Aug 2021 to Apr 2022

- Designed and parametrized a Savonius-Style blade using Ansys design modeler and surface modeling techniques.
- Developed a new framework for shape optimizing the turbine blade and smoothening through manual optimization.
- Experimented the wind turbine in wind tunnel lab, obtained the drag force using the wake-rake method. The single turbine model generated a power of 45Watt, which can save a minimum of 2,300Rs per annum.

Numerical Simulation of shockwave propagation through a bifurcation (Y-Split)

MIED IITR

Advised by Prof. Ankit Bansal

Aug 2021 to Nov 2021

- Reviewed the literature on experimental investigation of shock wave when passed through Y-Splitted shock tube.
- Re-designed and discretized the geometry using the blockMesh utility, researched extensively about suitable boundary conditions and solvers. Performed the simulation in OpenFOAM software, and validated the results with experimental results.
- Developed and implemented a code in OpenFOAM for parametric study of overpressure with change in angle of bifurcation.

Hybrid Finite Element Method for Guided wave propagation in an 3-D Elbow Joint

MIED IITR

Supervised by Dr. Dhanashri M Joglekar

Feb 2021 to May 2021

- Re-designed and deployed mathematical models by integrating MATLAB and COMSOL interfaces and performed a parametric study for size characteristics.
- Implemented Semi Analytical Finite Element Method for guided lamb wave propagation in a 2D geometry (Y split) problem.

Optimization of braking system and vehicle Modelling

SAE BAJA INDIA

Team KNOX, Mechanical and Industrial Engineering Department

Aug 2019 to Jun 2020

- Performed transient thermal, and Structural analysis on brake discs using ANSYS and optimized the CAD designs.
- Designed the inboard caliper mount and optimized the CAD model using topology optimization in Ansys workbench. Studied the possibility of resonance condition through Modal Analysis.
- Modelled the vehicle in Simulink using Simscape library, this development helped in drastic improvement in accuracy of stopping distance value.

Failure testing of HAWT (Horizontal Axis Wind turbine) under critical conditions

MIED, IIT Roorkee

Dr. Shailesh Ganpule

Sept 2019 to Nov 2019

- Tested and analyzed a conventional Wind turbine blade at high wind speeds where chances of failure are high.
- Performed wind flow simulations on the blade using ANSYS Fluent, calculated the forces acting at high wind speeds. Implemented NLPQL optimization algorithm to find desired angle of flow for maximum axial wind load.
- Studied stress, deformation, and safety-factor contours on the blade and shaft for critical/failure conditions.

ACHIEVEMENTS

- 2020 - First Prize in HPV Design Event organized by American Society of Mechanical Engineers (ASME International).
- 2015 - Awarded with Certificate of Merit for topping the prestigious NSEJS conducted by Indian Association of Physics Teachers (IAPT).

EXTRACURRICULAR ACTIVITIES

Technical Head

The American Society of Mechanical Engineers, ASME IITR Chapter

- Served as a Technical Head in the year 2020. Vice-Captained the HPV team at e-Fest International 2021.
- Responsible for ensuring technical resources and knowledge transfer in the team. Organized few meetings with a SubjectMatter-Expert scientist at NTU Singapore for guidance on a project.
- Represented the student chapter in Srishti, Cognizance and 2020, 2021 ASME e-fest International events.

Braking and Vehicle Dynamics Head

Team KNOx | SAE BAJA IITR

- Spearheaded an 11-member team, aimed to inculcate innovation/advancing culture among peers.
- Responsible for identifying and rectify the problems in the braking department and improvise the subsystem by optimizing for performance and weight.