# DEERAJKUMAR PARTHIPAN

571-921-2734 | deerajkumar2067@gmail.com | https://linkedin.com/ | https://researchgate.net/ | Portfolio

## Education

**MS in Mechanical Engineering**, Purdue University, West Lafayette, IN - **GPA : 3.56/4** Jan 2023 – Dec 2024

**B.Tech in Mechanical Engineering**, Vellore Institute of Technology, India - **GPA : 8.58/10** Jun 2018 – May 2022

## Experience

**Graduate Research Assistant**, Purdue University, IN Jan 2023 – Present

- Developed numerical models in MATLAB for strain estimation and blood velocity reconstruction with high computational efficiency and solution accuracy
- Employed Dijkstra algorithm to segment heart ventricles from echocardiograms in MATLAB
- Implemented supervised ML using TensorFlow to classify different types of echocardiograms with an accuracy of 85%
- Enhanced strain estimation accuracy to 80% of the ground truth through spectral domain correlations

**Junior CAE Engineer**, Zeus Numerix, India Jan 2022 – Dec 2022

- Conducted CFD (ANSYS Fluent) and FEA (ANSYS APDL) to analyze thermal and mechanical loads on aircraft intake paint coatings, supported by FMEA for failure analysis.
- Contributed to the development of a CFD solver involving high-speed flows, incorporating the k-$\epsilon$ turbulence model
- Collaborated on a C++ meshing module using open-source, enhancing computational performance with adaptive techniques

**Undergraduate Research Assistant - Heat Transfer**, Vellore Institute of Technology – India Nov 2021 – Jun 2022

- **Thesis** : Analyzed heat transfer properties of pin fins across various flow patterns and Reynolds numbers using CFD
- Calculated Nusselt number, pressure drop and pumping power for Reynolds numbers between 9,000 and 35,000
- Implemented PCM (paraffin wax) into the pin fins and reduced the base temperature by 20 %

**Undergraduate Research Assistant - Fluid Mechanics**, Vellore Institute of Technology – India Nov 2019 – Sept 2020

- Analyzed oscillating shock wave impact on a flat plate boundary layer at hypersonic speeds using CFD
- Examined shock bubble length for various incipient shock angles and calculated the pressure and shear stress on a flat plate
- Used a UDF to define the oscillations of shock generator in Ansys Fluent with a k-omega SST turbulence modelling for Mach number of 5.8, structured mesh was generated using Ansys ICEM

**Mechanical Engineer Intern**, Ruhrpumpen Global – India Apr 2019 – Jun 2019

- Designed mechanical systems for oil and gas pumps with detailed calculations, and created 2D layout drawings, 3D parts, and assemblies using AutoCAD and SOLIDWORKS
- Managed BOMs and technical reports, and in-process improvements throughout the entire product lifecycle, ensuring adherence to industry standards in quality and technology

## Projects

**Spaceport America Cup** - Team Leader Jun 2020 – Jun 2021

- Led a team of 25 undergraduates for the Spaceport America Cup, developing a sounding rocket with an 8.8-pound payload and a target altitude of 10,000 feet
- Achieved 5th place in the Asia Pacific region in 2021, demonstrating leadership and time management
- Used SOLIDWORKS to design different rocket subsystems and performed FEA for structural integrity of rocket

**CanSat Competition** - Team Leader Jun 2020 – Jun 2021

- Designed and developed a Maple seed-inspired payload that auto-rotates during free fall to reduce velocity, achieving 13th place worldwide in Cansat 2021
- Utilized rapid prototyping with 3D printing to iterate and optimize designs for testing and refinement
- Performed CFD analysis using ANSYS Fluent on the payload to study its drag and lift characteristics

## Skills

**Technical Skills:** CAD, CAE, Finite Element Analysis, CFD, Numerical methods, HPC, GPU computing, GD&T, Mechanical Design, DFMA, Product Development, FMEA, Certified SOLIDWORKS Associate (CSWA)

**Softwares:** SOLIDWORKS (CSWA), AutoCAD, ADAMS, Siemens NX, Creo, CATIA, Abaqus, Patran, ANSYS, STAR CCM+, OpenFoam, Deal.ii, LS-DYNA, MATLAB, C, C++, R, Python, XFLR5, OpenRocket