Tirth Thakar

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Portfolio: https://tirththakar.github.io/

Education

Master of Science in Mechanical Engineering - GPA: 3.7/4.0 Aug 2023 - May 2025
University of Connecticut, USA

Bachelor of Engineering (Hons) in Engineering Science - GPA: 8.4/9.0 Jan 2017 - Nov 2021
University of Auckland, New Zealand

Work Experience

Research Assistant - University of Connecticut - CT, USA Aug 2023 - May 2025

- Spearheaded 100+ validation tests on dielectric elastomer actuators in simulated extreme environments
- Engineered precision payload systems using SolidWorks and additive manufacturing for high-altitude balloon deployment, enabling real-world testing in harsh atmospheric conditions
- Led DFMEA process across payload systems, identifying and mitigating 15+ high-risk failure modes, cutting RPN by 85% and enhancing overall system reliability

Mechanical Engineer - Fisher & Paykel Technologies - Auckland, New Zealand Jan 2022 - Aug 2023

- Led multiple teams for end-to-end motor systems product development using CAD, FEA, and DFM principles
- Lowered production costs by 19% via design, material optimization, and simulation via ANSYS
- Developed automated Python and LabView scripts to streamline testing workflows and shortening test duration by 10%
- Produced and revised manufacturing drawings with GD&T to support assembly and compliance with ISO standards
- Enhanced torque output and thermal stability of electric motors via simulation and iterative testing in ANSYS

Projects and Publications

Soft Robots in Extreme Environments
Tirth Thakar, Mihai Duduta | Science Robotics (In progress)

- Showcased the behavior and characteristics of dielectric elastomer actuators when exposed to low Earth orbit environmental conditions and demonstrating an increase in performance by 15% under cold vacuum conditions

Raspberry Pi Heatsink Design in SolidWorks and ANSYS

- Engineered a custom heatsink and performed thermal and CDF simulations in ANSYS and SolidWorks to analyze thermal performance and investigated impact of material, fin count, height, and spacing on heat dissipation

6-DOF Robotic Arm Design and Assembly in SolidWorks

- Modeled a 6-DOF robotic arm in SolidWorks, designing all 22 custom components and creating a full assembly. Ensured proper joint alignment and motion range for accurate kinematic functionality and integration readiness

Small Scale Wind Turbine Design Project

- Modeled, fabricated and tested a prototype wind turbine using CAD and FEA to perform structural analysis for design iteration and prototyping, achieving an output power of 50W in wind speeds of 10 knots

Capstone Project: Cardiac Simulation Uncertainty Quantification

- Utilized finite element modeling, machine learning, and statistical tools using Python code to analyze spatial-temporal uncertainties in simulations of 25+ patient-specific heart ventricle models to improve heart disease diagnosis

Tools, Skills, Awards and Extracurricular

CAD & Simulation: SolidWorks, ANSYS Mechanical, ANSYS Fluent, Structural, Thermal, Fluid, AutoCAD, KiCad, GD&T

Programming & Analysis: Python, MATLAB, C++, Tableau, Minitab, LabView

Manufacturing & Testing: Design for Manufacturing (DFM), 3D Printing, Oscilloscopes, Data Acquisition Systems

Documentation & Tools: MS Office Suite, Git/GitHub, Jira, Confluence

Pratt & Whitney Advanced Systems Engineering Fellowship - University of Connecticut 2024 - 2025

Edward Connolly Faculty of Engineering Scholarship - University of Auckland 2017

Engineering Dean's List - University of Auckland 2017 - 2021