

Trisha Boodhoo

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Education

Purdue University, West Lafayette, Indiana, United States.
BS in Mechanical Engineering with Minor in Computer Science.

Expected Graduation, May 2025

Skills

- **Coursework:** Finite Element Analysis with Python and Abaqus Laboratory, Mechanics of Materials with UTM and MATLAB Laboratory, Machine Design, Dynamics, Statics, Graphical Communication and Spatial Analysis in NX, Electrical Engineering I with Laboratory, Measurement and Control Systems I with Laboratory, Fluid Mechanics, Thermodynamics, Programming in C, Problem-Solving and Object-Oriented Programming in Java, Data Structures and Algorithms in C++.
- **Programming:** MATLAB, C, C++, Python, Java, GDB, GitHub.
- **CAD and Simulation:** NX Siemens, SolidWorks, LTSPICE, LabVIEW, Abaqus.

Experience

Summer Undergraduate Research Fellow

May 2024- Ongoing

- Utilized PyInstaller to create executables, resolving bugs such as application freezing, endless spawn loops, and resource conflicts encountered with subprocess and multiprocessing libraries.
- Designed an MSIX-compatible installer using Advanced Installer to streamline installation and updates for Windows users.
- Implemented a low-cost, maintainable cloud-based authentication mechanism to prevent unauthorized use.
- Introduced version control with GitHub to the team, significantly improving workflow and documentation, and preventing frequent application breakdowns during development.

Projects

Abaqus Modelling of Shaft under Combined Loading, Individual Project

March 2024 – May 2024

- Devised a mathematical model for planar stresses on input shaft and generated stress contours using Python.
- Created a 2D Abaqus simulation of input shaft under planar stresses and validated it against the mathematical model via convergence analysis at critical locations.
- Modelled 3D shaft under combined loading on Abaqus and compared obtained Von Mises Stresses against hand calculations.

Machine Design Gearbox Design Project, Individual Project

May 2024

- Designed shafts, bearings, keys, and gears by selecting materials and dimensions to achieve a design factor of safety of 1.5 and a lifespan of 15,000 hours, using Goodman fatigue and yield failure criteria.
- Programmed Python scripts to iterate through material and dimension options. Selected and validated components from McMaster Carr and SKF catalogs, confirming the final design met all project requirements.

Basic Audio Equalizer, Group Project.

May 2023

- Coordinated with lab partners to design, build, and debug an analog audio amplifier, achieving all design objectives within a rigorous 2-week deadline by leveraging teamwork and strategic planning.
- Verified circuit design via LTSPICE simulation and, via 10+ hours of in-lab trial and error using calculated component values, obtained functional final product.

Skateboard Holder, Group Project.

January 2023 – May 2023

- Managed project timeline by setting and tracking weekly team goals using a Gantt Chart.
- Produced 16 bi-weekly industry-formatted memoranda and 3 milestone reports, finalizing drafts early to incorporate lab coordinator feedback for outstanding deliverables.
- Generated hand-sketches based on functional decomposition and selected final concept using decision matrix.
- Applied technical ability in NX to create 3D model and 2D fully dimensioned drawing of custom part for final assembly.
- Showcased design to a varied audience including industry professionals and peers from non-engineering majors.

Volunteering

Global Rainbow Foundation

January 2019 – March 2020

- Successfully initiated and led a targeted sponsor search, securing a donation of a medical bed for a cerebral palsy patient.
- Pioneered the digitalization of patient records, enhancing the efficiency of information management and accessibility. This facilitated faster and more organized home visits for patients.