Alex Zeng

Mechanical Engineer · Boston, MA

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EDUCATION

Northeastern University *Boston, MA*

Candidate for Bachelor of Science in Mechanical Engineering · GPA: 3.95 *September 2019 - June 2023*

- Awards: Dean's Scholarship, Dean's List (Fall 2019 – Fall 2020)
- Relevant Courses: Systems, Fluid Mechanics, Dynamics, Mechanics of Materials, Thermodynamics, Statics
- Activities: SEDS Mars Rover Team (Mechanical Co-Lead), ASME, Pep Band, Wind Ensemble

WORK EXPERIENCE

Mechanical Engineering Intern *Boston, MA*

Nextera Robotics *June 2021 - August 2021*

- Prototyped and constructed a cost-effective, vacuum suction end-of-arm tooling for a 6-axis industrial robotic arm in Fusion 360 capable of lifting 4'x8' drywall sheets according to FEA and material mechanics calculations
- Adapted geometry of a tablet interface to an infinite-Z 3D printer with DFM, reducing manufacturing time by two
- Consolidated a 360 degree and two USB cameras into a simple 4-part, 3D printed assembly
- Sourced and compiled $2,000 worth of mechanical and electrical components into BoMs for purchase

Reliability Engineering Co-op *Andover, MA*

MKS Instruments, Inc. *January 2021 - June 2021*

- Devised and designed heated, aluminum extrusion enclosures for life testing of gas analyzers, saving over $2,000 and weeks of time compared to outsourcing
- Performed highly accelerated life testing on mass flow controllers in temperature and vibration chambers, verifying product performance specifications and writing a life testing report
- Streamlined arduous data entry by coding Python scripts to aggregate raw data into Excel spreadsheets, decreasing routine data entry time
- Improved future product reliability by keenly searching for abnormalities during testing by discovering a product series experienced memory corruption issues

PROJECTS

Mechanical Team Co-Lead *Boston, MA*

Northeastern University Mars Rover Team (NUROVER) *September 2019 - Present*

- Constructed a Mars rover with 33 Northeastern students for competition in the University Rover Challenge
- Designed numerous mobility system parts using SolidWorks with a safety factor between 3 and 10, then confirmed safety factors through iterative testing in competition-like environments under expected stresses
- Coordinated weekly team meetings to discuss design progress, ensuring Gantt chart deadlines are met
- Operated a plasma cutter, CNC mills, and power tools to manufacture parts in Northeastern's MIE machine shop

Subassembly Team Leader and CAD Modeler *Online*

Marble Machine X CAD Team *June 2020 - Present*

- Collaborated weekly with 110 volunteers online to declutter and improve a machine with 6,000+ parts
- Modeled three "defeatured" parts according to QC standards, leading to an optimized, top-down master assembly controllable using one "skeleton" sketch
- Established a product breakdown structure (PBS) with an eight-digit number system to organize and group parts
- Scrutinized subassembly parts for interferences, fit, and balance of design intent with simplicity

SKILLS

Applications SolidWorks (CSWA Certified, CAD & FEA), Fusion 360 (CAD & FEA), Excel, MATLAB, Maple, PrusaSlicer

Fabrication 3D Printing (FDM), CNC and Manual Mills and Lathes, Waterjet, Laser Cutting, Power & Hand Tools

Languages Python, HTML / CSS, PHP, C, VBA