Xavier S. Johnson

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Portfolio: https://xaviersjohnson.github.io/devportfolioX/

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SKILLS

Software Skills: SolidWorks, Siemens NX, CREO, Fusion 360, Python, MATLAB, KiCAD, Nastran, SOLIDWORKS SIMULATE
Technical Skills: Sheet Metal, Plastic part design, 3D Printing, GD&T, Machining, DFM, DFA, Thermal & Static Simulations Tolerance Analysis, DOE, Manufacturing, FEA, HVM

WORK EXPERIENCE

Mechanical Engineering Intern
May 2024 – Aug 2024
ASML — San Diego, CA
- Designed mechanical fixtures using sheet metal design in NX12 in order to implement a heating stage in a Modular Vacuum chamber
- Developed, performed calculations, and implemented a component-level test bench to test for adhesive delamination in the droplet generator
- Prototyped and created sheet metal and plastic parts to integrate different electrical modules into test chambers and improve reliability testing
- Managed 4 different projects while collaborating with mechanical design and reliability engineers, vendors, and manufacturing

Product Design Engineer Intern
May 2023 – Aug 2023
Amazon Lab 126 — Sunnyvale, CA
- Designed and prototyped a universal debug fixture for devices using CREO, incorporating pogo pins, PCBA, FPC flex cable, and springs
- Collaborated with tooling/mold engineers and contract manufacturers to ensure proper molding of plastic parts and seamless UDF assembly, applying DFM/DFA principles to optimize manufacturability and reduce production issues
- Conducted rapid 3-D prototyping and user study to ensure feasibility, user-friendliness, and proper functionality of components
- Created plastic and sheet metal parts to house electrical assemblies, collaborating cross-functionally with electrical, software, and tooling engineers, as well as CMs/External Vendors, to meet specified design requirements
- Performed FEA contact analysis in CREO Simulate for removable snaps, optimizing cantilever length, lead in/out angle, and width of snaps

Hardware Reliability Engineer Intern
May 2022 – Aug 2022
Amazon Lab 126 — Sunnyvale, CA
- Researched and addressed in-field issues, collaborated with failure analysis, thermal engineers, and technicians to develop innovative solutions, and analyzed experiment data
- Developed component-level test and utilized HALT chamber for thermal aging to evaluate the thermal stability / leaching of different materials, enhancing part reliability and guiding supplier improvements
- Researched into different absorbent materials and glass/ceramics for test rig, ensuring test accuracy and performance
- Designed, prototyped, and created drawings for a test rig, drawing inspiration from various literature - in CREO
- Revised product level validation test to match use case environment using Arrhenius model and customer data

Mechanical Design Engineer Intern
May 2021 – Jan 2022
Siemens Healthineers — Knoxville, TN
- Conducted tolerance stack-up analysis (worst case) to ensure allowable misalignment of the belt drive in the Patient Handler System (PHS)
- Assisted development engineers in building and testing the Patient Handler System through life cycle, thermal imaging, and acoustic tests.
- Also assisted in prototyping and designing sheet metal parts in Siemens NX 12 to improve safety/patient experience
- Performed machine design calculations to ensure components of PHS had allowable safety factors, allowable angle misalignments, and to find areas to improve such as using new materials, editing tolerances on drawings, and using new components

Quality/Design Engineering Intern
August 2020-Jan 2021
Bosch Home Appliances — Oak Ridge, TN
- Designed different parts using principles of plastic part design in NX 12 and used 3-D printing to rapidly prototype parts
- Developed a Python script and GUI to interface with Home Connect API Simulators, enabling settings adjustments for refrigerators
- Designed parts for refrigerator assemblies and drafted new refrigerator assemblies in NX 12 and Teamcenter PDM
- Assisted quality engineers in developing a data analytical software program in Excel to reduce time sorting through failure symptom data and filter necessary information

UNDERGRADUATE RESEARCH

Undergraduate Research Assistant (Additive Manufacturing)
February 2022 – May 2022
Oak Ridge National Lab / University of Tennessee — Oak Ridge, TN
- Assisted in researching the material transitions of Carbon Fiber reinforced ABS to non-filled ABS made by a dual hopper extruder
- Prepared samples for analysis by using diamond saw, drying materials using heat oven, using chemical solvent and ultrasonicating to break down material, then filtering the sample under fume hood.
- Performed strength testing on samples using a DMA

Undergraduate Research Assistant (Surgical Robots)   February 2021 – Sep 2021
<u>**University of Tennessee | Robotics Lab**</u>   Knoxville, TN
• Contributed to research on the use of robotic camera systems in minimally invasive surgeries (MIS), involving the design of components for a product utilizing a six DOF manipulator and other electrical elements using SOLIDWORKS
• Developed innovative housings to secure PCB, MC board, antenna and electronic modules in a fully enclosed environment and made connection to a separate force torque sensor and a actuator assembly easier
• Enhanced actuator assembly for ease of insertion of EPMs and micromotor

PROJECTS

Omni Direction Treadmill – Capstone Berkeley   Fall 2024 – Spring 2025
• Performed structural analysis on FEA frame in SOLIDWORKS simulate to ensure stability and verify material selection
• Resolved ball rotation issues via root cause analysis of enclosure tolerances, coatings, and assembly
• Conducted user studies and prototyped magnetism and friction based braking systems
• Redesigned frame from sand casting to CNC machined parts reducing cost & lead time while increasing manufacturability
• Machined t-slot framing and plates, ensuring precise alignment and fit for assembly

IEEE Robotics Club – SUMO BOT   Spring 2021
• Created a "sumo bot", a robot that competes against other robots and attempts to knock them off a platform
• Created the robot for competition with a custom chassis, Mecanum wheels, an Arduino, driver boards, and a lever mechanism
• Created lever mechanism with wooden ramp to throw other robots off balance/undercut front wheels

Lazy Dog Robot (Python Project)   Spring 2020
• Developed code for a custom speaker that focuses on appealing to the mental health of students and assists them in daily life.
• Created a speech recognition robot in Python that can tell the weather by utilizing an API, say different phrases based on input, give the time and date, and send an email including various resources that are tailored towards engineers

LEADERSHIP & INVOLVEMENT

Lead Ambassador – University of Tennessee Engineering Professional Practice   August 2023 – Spring 2024
• Produced instructional videos, conducted interviews with engineers, directed social media initiatives, resulting in a 500% surge in students engagement on social media
• Conducted engaging and informative presentations to students, effectively communicating program benefits, requirements, and opportunities
• Spearheaded a dynamic team of ambassadors, overseeing training, scheduling events, and improving student engagement

EDUCATION

University of California Berkeley
• Master of Engineering | Mechanical Engineering – Product Design | GPA: 3.84 | GEM Fellow | Expected Graduation Date: May 2025
University of Tennessee Knoxville
• Bachelors | Mechanical Engineering | Graduation Date: May 2024