

EDUCATION

California Institute of Technology (Caltech)

September 2020 - June 2024

B.S. Mechanical Engineering, Concentration in Robotics

Pasadena, CA

Relevant Courses: Robotics Systems, Experimental Robotics, Robotic Design Laboratory, Thermal Science, Mechanics, Mechanical Prototyping, Fluid Dynamics, Feedback Systems, Systems Engineering, Advanced Robotics, Kinematics, Dimensional Analysis

Extracurriculars: Caltech Robotics Club, Caltech Rover Autonomy, Technology, and Exploration Research Club, NCAA Track and Field Athlete, Vice President of Ricketts House, Society of Hispanic Professional Engineers

SKILLS

Technical Skills: Certified SolidWorks Associate, Rapid Prototyping, Machining (Mill, Lathe, Laser cutter, Waterjet), GD&T, Soldering, 3D modeling, 3D printing, Finite Element Analysis, Computational Fluid Dynamics, PCB Design, Technical writing, Systems Engineering, Welding

Software: SolidWorks, Onshape, Fusion 360, RVIZ, ROS2, ANSYS, Teamcenter, PDM, Git, Office

Programming: MATLAB, Mathematica, Python, Java, C++

Platforms: Linux, Windows, Arduino, Raspbian

PROFESSIONAL EXPERIENCE

- General Dynamics Electric Boat** September 2024 - Present
Mechanical Engineer I, Active Department of Defense Secret Clearance New London, CT
 - Own three critical future fast-attack submarine propulsion plant fluid systems; responsible for system design characteristics including materials, construction plans, components, operations, and arrangements
 - Cognizant engineer for robotic welding workcells and automated non-destructive testing in naval reactor piping applications
 - Perform cost analyses, failure mode analyses, heat load calculations, and trade studies
 - Lead interdisciplinary teams of engineers, technicians, and tradespeople to develop novel fluid systems designs
 - Develop Naval Nuclear Propulsion Plant technical system design documentation for government approval and information
- OffWorld Robotics** June 2023 - September 2023
Mechatronics Intern Altadena, CA
 - Reduced localization error by 198% through LiDAR-inertial odometry by designing a telescopic mast for sensor relocation
 - Owned the development of 3 robotic testing platforms for navigation software integration
 - Additively manufactured sensing hardware on flagship autonomous survey robot
 - Performed trade studies to develop robotic mobility platforms for swarm deployment
- Saint-Gobain Research North America** June 2022 - September 2022
Mechanical and Automation R&D Intern Northborough, MA
 - Engineered a fully automated machine for precision manufacturing of abrasive grinding wheels in a factory setting, reducing manufacturing deviations by over 50%
 - Designed a robust, environmentally isolated electrical panel to enable manual and autonomous operation in a plant
 - Wrote mathematical model of sediment deposition to optimize consistency across manufactured blocks, implemented in Python to generate autonomous pathing
 - Deployed 5 independently designed and fabricated calibration and testing devices in full-scale factory setting

CALTECH RESEARCH AND TEACHING EXPERIENCE

- Caltech Rover Autonomy, Technology and Exploration Research (CRATER)**
Robotic Manipulator Subteam Lead
 - Independently designed 6 Degree-of-Freedom robotic arm assembly for complex grasping and handling maneuvers
 - Designed and built a rover capable of extreme terrain traversal, autonomous SLAM navigation, and in-situ sample collection and analysis that was selected for the 2nd phase of the 2023 University Rover Challenge
 - Invited and competed in 2023 Canadian International Rover Challenge in Drumheller, Alberta
- Mechanical Engineering Teaching Assistant**
ME72ab: Robotics Design Laboratory
 - Designed and operated team-based Mechanical Engineering capstone project for a class of 25 students, tasked with designing semi-autonomous aerial vehicles
 - Led review circuit for 6-month engineering design process, providing teams with feedback and design guidance
 - Held weekly instruction and office hours on software/hardware development and integration using Ardupilot, Mission Planner*ME14: Introduction to Mechatronics*
 - Assisted Professor in operations for class of 38 students
 - Led review circuits for teams to develop 2 Mechatronics projects in 10 weeks
 - Held weekly instructional sessions and office hours on fundamental engineering design principles, i.e., design for manufacturing, hardware and material consideration and sourcing, 3D modeling, GD&T