AMARI BOXILL

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EDUCATION

Carnegie Mellon University **August 2024 - May 2026**
Master's, Mechanical Engineering *GPA: 4*

Carnegie Mellon University **August 2021 - May 2025**
Bachelor's, Mechanical Engineering *GPA: 3.7*

PROFESSIONAL EXPERIENCE

ARM Institute **Pittsburgh, PA, USA**
Mechanical Engineer Intern *May 2025 - August 2025*
- Designed and fabricated novel end of arm tooling designed to withstand 750N of closing force with less that 1mm of deflection, for AI data collection robot workflow
- Created 200+ part model of robot work cell in SolidWorks for development of digital twin system, mapping cell computer vision systems for robot workflow.
- Wrote program for project workflow using FANUC software in combination with PLC for I/O handling.

CMU Microrobotics Laboratory **Pittsburgh, PA, USA**
Research Intern *May 2024 - August 2024*
- Designed a novel spring mechanism for MEMS airflow sensor for use in unmanned aerial vehicles
- Developed testbed for assessing aerodynamic and structural performance of airflow sensors, through two-way fluid-structural interaction simulations in ANSYS workbench.

PROJECTS & OUTSIDE EXPERIENCE

Spirit Racing Systems **Pittsburgh, PA, USA**
Engineering Lead *July 2023 - May 2025*
- Modeled and built human-piloted composite racing vehicle for competition, using FEA, CFD and CAM to optimize vehicle dynamics and aerodynamic performance
- Managed team of about twenty mechanics, resulting in perfect execution by team and overall victory
- Managed procurement and operation of hardware, including CNC router and various tools and materials

Liver Biopsy Robot **Pittsburgh, PA, USA**
Mechanical Engineer *January 2025 - May 2025*
- Designed gantry and end effector rof liver biopsying robot, allowing quick, accurater and minimally invasive biopsying.
- Realized end effector using DFM in additive manufacturing.
- *Link to project*

HERMIT (Robot Forestry Platform) **Pittsburgh, PA, USA**
Mechanical Engineer *August 2024 - May 2025*
- Developed 6-legged robot research platform, capable of teleoperated and autonomous traversal of difficult terrain, while carrying a 2 kg research payload at approximately 3 miles per hour
- Designed and built robot leg and chassis subsystem using SolidWorks FEA and ROS simulations,
- Designed robot control system with varying walking patterns for differing environmental conditions using both classical inverse kinematics and ROS simulations.
- *Link to project*

PCBuddy **Pittsburgh, PA, USA**
Mechanical Design: Methods & Applications Student *August 2023 - December 2023*
- Ideated, modelled, and analyzed a novel prototype for a computer numerical control soldering gun, for use by people with disabilities in the hands and eyes
- Manufactured prototype using waterjet, traditional machining, and additive manufacturing, while constrained by a $200 materials budget
- Used Arduino C++ and Python to create both a camera-focused automatic control feature using in addition to a manual remote control

SKILLS

Skills: C/C++, MATLAB, SolidWorks, Arduino, Python, AutoCAD, ANSYS, ROS, Manual Mill, Lathe, CNC Router, 3D Printing, Electronic Design, FEA, Autodesk CFD, CAM, Robotic Systems, Mechanical Engineering, Mechatronic Design, Thermodynamics, Heat Transfer, Feedback Control Systems, Electronic Sensing & Actuation, CAD