# Bryce Richard

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## Education

**Carnegie Mellon University** — Pittsburgh, PA

M.S. in Mechanical Engineering - Research | *QPA: 3.9/4.0* — *Anticipated Graduation: May 2025*

*Relevant Coursework:*

- Advanced Computer Vision
- Trustworthy AI
- Systems & Toolchains for AI Engineers
- Intermediate Deep Learning

**Brigham Young University** — Provo, UT

B.S. in Mechanical Engineering; Minor in Computer Science | *GPA: 3.9/4.0* — *April 2023*

## Skills

**Programming Languages:** Python (proficient), C++ (advanced)
**Frameworks/Tools:** OpenCV, Pytorch, ROS, Linux, Spark, Solidworks, Unity, GitHub, RESTful APIs
**Cloud & Databases**: AWS (EC2, Lambda), MongoDB, PostgreSQL

## Experience

**Carnegie Mellon University - Biorobotics Lab** — Pittsburgh, PA

*MattLab Graduate Research Assistant* — *August 2023 - Present*

- Designed and implemented a **real-time sortation system** for a robotic disassembly pipeline, in collaboration with a major OEM, optimizing the recycling process for smart devices.
- Trained and fine-tuned **YOLOv8** and other object detection models (U-Net, Mask-RCNN) for **semantic and instance segmentation**, achieving high precision in identifying and sorting components.
- Integrated a SCARA robotic arm with real-time vision-based decision-making using **ROS**, enabling efficient and accurate component sorting.
- Spearheaded the development of a custom annotation tool using the **Segment Anything Model (SAM)** to streamline data labeling, reducing annotation time by 50%.

**Juni Learning** — Remote

*Senior Computer Science Instructor* — *August 2021 - September 2023*

- Instructed students in a one-on-one setting on the theory and application of machine learning libraries in Python.
- Taught students to organize and manipulate large datasets for analysis using Pandas and Scikit-learn in Python.

**Brigham Young University - FLOW Lab** — Provo, UT

*Research Assistant* — *August 2022 - May 2023*

- Developed optimization tools that integrated bathymetry data to minimize the LCOE of offshore wind farms, decreasing the projected LCOE of projects by 10% after optimization.

## Projects

**Mini Offshore Wind Turbine**

*2023 D.O.E Collegiate Wind Competition* — *August 2022 - May 2023*

- Collaborated with a cross-discipline team of 13 students in the D.O.E.'s Collegiate Wind Competition to design and implement a control system for a wind turbine, enhancing its power regulation and safety capabilities.
- Designed and programmed a control system using an Arduino to adjust turbine blade pitch, regulate generator power output, and dynamically manage load conditions, contributing to a 7th-place finish in turbine testing.