

# Bryce Richard

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## Education

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### 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
- Systems & Toolchains for AI Engineers
- Trustworthy AI
- 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

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**Programming Languages:** Python (proficient), C++ (advanced)

**Frameworks/Tools:** OpenCV, Pytorch, ROS, Linux, Spark, Solidworks, Unity, GitHub, REST

**Cloud & Databases:** AWS (EC2, Lambda), MongoDB, PostgreSQL

## Experience

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### 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

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### 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.