

# Bryan Zheng

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## EDUCATION

### University of Massachusetts Amherst

B.S. Mechanical Engineering, Minor in Engineering Management

Amherst, MA

Expected May 2027

- Coursework: Design of Mechanical Components, Thermodynamics, Statics, Intro to Electrical Engineering, Material Science, Principles of Management & Accounting, Fundamentals of Marketing

### Korea University

Study Abroad Program

Seoul, KR

May 2025

- Coursework: Solid Mechanics, Dynamics, Operations Management

## SKILLS

**Programming:** MATLAB (Simulink), Python (NumPy, Matplotlib), Java, JavaScript, C++

**Design:** SolidWorks, Fusion 360, Ansys, CNC, 3D Printing, Milling, Fabrication

## EXPERIENCE

(Rensselaer Polytechnic Institute)

Troy, NY

### Structural Research Intern

Nov. 2022 – May 2023

- Researched structural health monitoring in autonomous aerial vehicles, attaching sensors to a hexacopter to collect and analyze flight condition data
- Fabricated carbon fiber sheets using epoxy resin; layered and bonded sheets to create custom designs
- Performed tensile testing with a universal testing machine to evaluate material strength and mechanical behavior

## PROJECTS

### Candle Safe

- Conducted research on existing patents, CO<sub>2</sub> canisters, and valve mechanisms to find out design feasibility
- Integrated an Arduino Uno with a LiDAR sensor to detect curtains approaching candle's flame
- Modeled and assembled components in SolidWorks; constructed the final prototype housing from plexiglass
- Prototyped a delivery mechanism to release CO<sub>2</sub> from a canister via a controlled valve system

### Aluminum Wrench Design

- Designed and manufactured a 1.04 oz aluminum wrench capable of applying 280 in-lb torque to a 1/4" bolt
- Performed finite element analysis in ANSYS to identify stress concentrations, validate analytical predictions, and iteratively remove material while maintaining structural stiffness

### ECE 361 "Smart Car" Project

- Built a small autonomous vehicle powered by two motors, an Arduino Uno, and LiDAR sensors
- Programmed the car to navigate freely and avoid obstacles by altering its direction upon detection

## EXTRACURRICULAR ACTIVITIES

### UMass Fencing Club

Member

Sept. 2023- Current

- Competed in Regional events in 2023 and 2024, contributing to team placements of 1st and 2nd in regional events
- Maintained rigorous training schedule of 10+ hours weekly while balancing academic coursework
- Contributed to club growth by recruiting new members and promoting fencing events on campus

### Minuteman Rocketry Club

Sept. 2023 – May 2025

Structural Design Team

- Collaborated with the Recovery and Payload teams to design a rocket structure that met all subsystem requirements
- Structural simulations in OpenRocket to evaluate stability, aerodynamic performance, and safety margins

### Regional Food Bank of Northeastern New York,

Sept. 2023 – Current

- Packaged a variety of products, including dry, frozen, and refrigerated foods, as well as household items
- Helping feed 350,000 people a month across 23 New York Counties

### UMass American Society of Mechanical Engineers (ASME)

Sept. 2023- Current

### UMass Excel Club

Sept. 2025 – Current

- Participated in developing a capstone project for an automated, AI-enabled networking platform