

# Zach Kutschke

Portfolio: <https://zkutschke.github.io/projects.html>

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## Education

### Massachusetts Institute of Technology

Cambridge, MA

- Candidate for B.S. in Mechanical Engineering, GPA: 4.8/5.

February 2021

- Coursework includes: Thermal-Fluids Engineering, Dynamics and Controls, Mechanics and Materials, Design and Manufacturing, Numerical Calculus, Measurement and Instrumentation, and Analog Electronics.

### Swiss Federal Institute of Technology Zürich

Zürich, CH

- Exchange student in the Department of Mechanical and Process Engineering.

February - May 2020

- Coursework includes: Metal Additive Manufacturing, Risk Analysis, Energy Systems and Power Engineering.

## Professional Experience

### Pure Watercraft

Seattle, WA

*Mechatronics Intern*

June 2020 - August 2020

- Developed test equipment to validate the BMS, battery controllers, and throttle construction.
- Designed and implemented data acquisition unit to analyze gearbox pressures and inform decisions on its valving.
- Automated leak rate testing process of battery enclosure along with part tracking and data logging of the tests.

### Impact and Crashworthiness Lab (MIT)

(Remote)

*Undergraduate Researcher*

May 2020 - Present

- Developed a physics-informed neural network to solve systems of coupled thermo-mechanical PDEs and utilized it to model thermal runaway of damaged lithium-ion batteries.

### Global Engineering and Research Lab (MIT)

(Remote)

*Drip Irrigation Team Undergraduate Researcher*

May 2020 - Present

- Created a smartphone app to streamline remote control of the lab's irrigation system and enable collection of usage information from drip irrigation systems.

### BD Medical - Advanced Diabetes Care

Andover, MA

*Research and Development Intern*

June 2019 - August 2019

- Designed and manufactured automated testing equipment to improve manufacturing efficiency of latest insulin delivery device.
- Supported the development of a new leak rate test method for critical modules of new insulin delivery device.

### Musashi Auto Parts - Michigan

Battle Creek, MI

*Engineering Intern*

June 2018 - August 2018

- Designed and fabricated a computer-controlled tool cart to aid in machine installation.
- Collaboratively designed custom holders for production line operators' gauges and measuring equipment.

### Musashi Auto Parts - Michigan

Battle Creek, MI

*Engineering Intern*

June 2017 - August 2017

- Designed testing apparatus and process to determine acceptable leak rate of gear assemblies and used the results to generate new production line specifications to reduce bad parts.
- Utilized GTAW, GMAW, plasma cutters, mills, and lathes to improve production equipment.

## Leadership Experience

### MIT Solar Electric Vehicle Team

Cambridge, MA

*Business Lead & Mechanical Engineer*

September 2018 - Present

- Designed, tested, and manufactured parts of the mechanical system (parking brake, suspension, wheel package).
- Spearheaded team sponsorship efforts leading to an acquisition of over \$90k to support team operations.

## Skills & Interests

**Skills:** Inventor, Solidworks, Machining & Welding, Arduino/C, MatLab, Python.

**Languages:** Conversational German.

**Interests:** Photography, Weight Lifting, Judo, Community Service.