

# Zach Kutschke

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

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## Education

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### Massachusetts Institute of Technology

Cambridge, MA

- Candidate for B.S. in Mechanical Engineering, GPA: 4.9/5.
- Coursework includes: Thermal-Fluids Engineering, Dynamics and Controls, Mechanics and Materials, Manufacturing Processes and Systems, Numerical Calculus, Measurement and Instrumentation, & Analog Electronics.

February 2021

### Swiss Federal Institute of Technology Zürich

Zürich, CH

- Exchange student in the Department of Mechanical and Process Engineering.
- Coursework includes: Metal Additive Manufacturing, Risk Analysis, Energy Systems and Power Engineering.

February - May 2020

## Professional Experience

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### Impact and Crashworthiness Lab (MIT)

(Remote)

Undergraduate Researcher

May - December 2020

- Developed physics-informed neural networks to solve unsteady heat transfer problems and supplant finite element solvers in modelling thermal runaway of damaged lithium-ion batteries.

### Global Engineering and Research Lab (MIT)

(Remote)

Drip Irrigation Team Undergraduate Researcher

May - December 2020

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

### Pure Watercraft

Seattle, WA

Mechatronics Intern

June 2020 - August 2020

- Developed test equipment to validate the BMS, battery control boards, 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.

### 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

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### MIT Solar Electric Vehicle Team

Cambridge, MA

Business Lead & Mechanical Engineer

September 2018 - December 2020

- 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

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

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