# Aaron Schmitz

**Mechanical / Software Engineering**

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**Project Portfolio:** https://schmitza.vercel.app/

## Education

### The Cooper Union, New York, NY — 2019 – 2023

- Bachelor of Engineering in Mechanical Engineering, Minor in Computer Science | Magna Cum Laude | GPA: 3.75
- Coursework in robotics, artificial intelligence, natural language processing, machine learning, data structures and algorithms, filters, thermodynamics, heat transfer, fluid dynamics, systems, simulations, finite element analysis, and feedback controls.

### Google Data Analytics Professional Certificate — Winter 2024

- Professional certification in data analysis using tools such as SQL, Tableau, and R.
- For verification, see https://coursera.org/share/32331dc42518c249cbc566ff11325a03

## Employment

### Home Teams Online LLC – Software Engineer — January 2024 - Present

- Full-stack development lead for large project reworks and feature additions, including HTO's custom registration form software.
- Organizing and leading design feedback and review meetings, and assisting in task management and creation.
- Front-end development with JavaScript, HTML, and CSS in a remote IIS server environment using GitFlow and Jira version control.
- Analyzing and updating Google Analytics and SEO to improve ad performance and website discoverability.
- Advising on design decisions for UI and additional features.

### NYC Department of Design & Construction (DDC) – Intern — Summer 2022

- Created and presented ASHRAE 211 Level 2 Energy Audit of the Harlem Courthouse at 170 East 121st Street for the DDC and the Department of Civil and Administrative Services - https://www.nyc.gov/site/ddc/steam/STEAM/2022/steam-blog-080422.page
- Analyzed existing usage and provided analysis and recommendations of energy conservation methods. This report was used to approve and fund an air-source heat pump project with envelope improvements.

## Research, The Cooper Union

### Body Tracking & Robotics - Project Lead — 2019 – 2023

- Developed a robotic arm that mimics human movements in real time by integrating machine learning position estimation with Robot Operating System (ROS) and feedback control systems in Python and C++.
- Developed a web app to share data between devices using JavaScript, providing flexibility for different use cases.
- Developed 3D stereo body location identification software in C++ that triangulates 2D OpenPose data from two USB webcams and uses OpenCV to project the points into a 3D world space to locate body parts.

### Bio-Inspired & Soft Robotics - Project Lead — 2021 – 2023

- Designed a novel squid-like propulsion mechanism that pressurizes and ejects a seawater jet, providing underwater navigation at higher efficiency than comparable systems on the market, such as propellers.
- Designed a soft robotic swinging robot that can grasp and swing on bars of varying shapes without touching the ground.
- Designed, manufactured, and tested soft robotics actuators made of silicon molds that grip objects of varying shapes.

## Formula SAE Motorsports, The Cooper Union

### Vehicle Dynamics - System Lead — 2021 – 2023

- Created and delegated a large variety of SPRINT tasks to team members to meet strict deadlines.
- Managed switch to electric car to ensure system met all required deadlines.
- Maintained documentation and knowledge transfer to younger members to ensure future team success.

### Brakes & Pedals - Subsystem Lead — 2020 – 2023

- Designed, simulated, manufactured, and tested a complete brake system for the 2021, 2022 and 2023 cars.
- Defended design at the FSAE Internal Combustion Car Competition; achieved the highest design ranking in team history.

## Skills

C++, C, C#, CMake, Python, Bash, Unix, JavaScript, HTML, CSS, SQL, MATLAB, LaTeX, ROS, Ansys, Siemens NX, FEMAP, SimCenter, Autodesk Inventor, AutoCAD, SolidWorks, LogiSim, Arduino, LabView, Unity, Blender, Microsoft Excel, Word, PowerPoint, PyTorch, Keras, TensorFlow, neural networks, natural language processing, computer vision, robotics, artificial intelligence, machining, rapid prototyping, 3D printing, laser cutting, circuit design, SPRINT task creation & delegation, project management, cost estimation.