Matthew Zhou

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Education

McGill University *Aug 2025 – Expected 2030*
Bachelor of Engineering in Software Engineering Co-op
Relevant Coursework: Fund. of Software Dev., Programming Fdn., Linear Alg., ODEs, Electric Circuits I, Calculus 3
Cumulative GPA: 3.9/4.0

Skills

Languages: English (Native), French
Programming Languages: Python, C++, Java, Javascript, HTML/CSS/SCSS
Libraries & Tools: Git, React, Docker, Three, Leaflet, Github, Node, PostgreSQL, React Flow, LaTeX

Projects

Nodality.ai | React (Flow), Javascript, Python, PostgreSQL, Docker *Oct 2025 - Present*
AI Mind-Mapping Full Stack Web Application

- AI focused mind-mapping application that makes suggestions separate user ideas and simulates graphs using **React** with React Flow node handling front-end and Node data handling with python implementation of OpenAI API.
- Developed a **Node.js/Express** backend with **PostgreSQL** to manage secure user authentication via session-based data.
- Implemented a **similarity index** to analyze semantic relationships between user idea nodes, allowing intelligent node clustering and AI-generated suggestions.

navigator.ai | Javascript, HTML/SCSS, Three.js, Leaflet.js, Python *Sept 2023 - July 2024*
Traffic Routing FOSS Web Application

- Built a web-based navigation app optimizing routes by time, distance, and safety using **7 years** of Ottawa traffic data.
- Integrated **OpenOttawa API** for live traffic data and mapped incidents using **Three.js** and **Leaflet.js**.
- Designed an AI feedback system enabling users and city admins to improve road safety with **OpenAI API**.
- Featured in **2** major local news outlets **Ottawa Citizen** and **CTV primetime** in enhancing urban mobility innovation.

Tempora | Javascript, HTML/CSS, Python *Oct 2021 - Jan 2022*
Productivity Google Extension

- Developed frontend with 3 peers to build a productivity google extension with multiple features.
- Reached **40+ users** and promoted STEM education through presentations at **2 middle schools.**

Experience

McGill Formula SAE Electric *Montreal, Quebec*
Driverless/Autonomous Member | C++, ROS 2, Python, Docker *Sept 2025 – Present*

- Training **YOLOv8**-based deep learning model for live cone detection and classification under different lighting conditions.
- Developing **ROS2** nodes to process sensor data and manage high-frequency changes for real-time autonomous navigation.

YTP - Ottawa Chapter *Remote*
Youth Tutoring Project Design Lead | Blender, Google Cloud, Python *Oct 2024 – May 2025*

- Automated google sheets by deploying Python scripts via **Google Cloud** to organize social media postings.
- Designed outreach posts and videos to YTP Ottawa Chapter social medias, using **Blender** to design 3D graphics.

VEX Team 50226A *Ottawa, Ontario*
Software Lead / Mechanical Member | C++, CAD *Oct 2023 – Feb 2025*

- Developed autonomous and teleoperated functionality despite hardware limitations using C++ and **OOP**.
- Gained hands-on experience with **pneumatics** and its mechanical properties with programmed implementation.

FIRST Robotics Team 8729 Sparkling Youth Robotics Club *Ottawa, Ontario*
Software Team Lead | Java, WPILib, PathPlanner *June 2023 – July 2025*

- Instructed **19** software members in programming and testing of command-based robots using **OOP** with **Java**.
- Developed and tested autonomous paths with swerve using Bezier curve trajectories for precision in **PathPlanner**.
- Integrated computer **vision pipelines** using Raspberry Pi 4 and **PID tuning** using hardware systems like REV Hardware Client and FRC Driver Station.