# Matthew Falcone

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## Education

**University of Toronto** — Mississauga, ON

*Honours Bachelor of Science, Computer Science Specialist, Co-op* — *Sep. 2023 - May 2028*

- Second year, CGPA: 3.85/4.0
- Relevant courses: Software Tools and Systems Programming, Data Structures and Analysis, Computer Organization, Software Design.

## Experience

**Full Stack Web Developer** — November 2024 - Present

*Wealthseed* — *Toronto, ON*

- Developed fast and interactive front-ends using React and TailwindCSS, including the creation of over **50** custom components
- Designed and implemented multiple tables for a PostgreSQL database, applying effective database design methodologies.
- Worked with another developer to implement and test a bespoke authorization flow, leveraging JWT and a custom backend to provide secure access to over **100** students.
- Demonstrated knowledge of client and server-side interactions through the design and review of almost **20** RESTful API endpoints.

**Data Annotator** — January 2025 - Present

*DataAnnotation (Remote)* — *Toronto, ON*

- Labelled and annotated training data for machine learning models to enhance AI's programming capabilities and understanding of code structure.

## Projects

**Sokoban** | *RISC-V Assembly* — Fall 2024

- Developed a version of the classic video game Sokoban, using only pure RISC-V Assembly.
- Implemented a Linear Congruential Generator (LCG) for random number generation.

**Spotifire** | *Typescript, React, Python, Next.js, OAuth* — May 2024

- Trained a model using an OpenAI embeddings function that takes a description of music from a user and outputs the most fitting music genre to that description. Used to implement a semantic search for Spotify.

**FreeInternet** | *Java, Batch scripts* — August 2023

- Identified and exploited a flaw in a cruise ship's internet system, allowing a user to connect to their internet without paying.

## Co-curriculars

**University of Toronto Formula Racing Team** | *Firmware, Electrical systems* — Fall 2024 - Present

- Contributed to a charging application written in Vite to graph, store and analyze charging data from an electric race car in real-time. Implemented a front-end that receives charging data from an Arduino over WebSocket to display charging telemetry. Configured a Firestore database to store charging telemetry for statistical analysis.
- Studied Arduino code security on the Teensy4.1 platform, with the goal of preventing unwanted or corrupt code from executing on the car's microcontrollers. Worked with the team lead to discuss and implement security strategies.

## Technical Skills

**Languages**: Java, JavaScript, TypeScript, Python, C/C++, SQL, TailwindCSS, Assembly, R
**Frameworks/Libraries**: React, Node.js, Next.js, TensorFlow, ChromaDB, Supabase, Firebase, Express.js, Web3.js, Radix UI, Shadcn/ui, Semantic UI React, Flask
**Developer Tools**: Git, VS Code, PyCharm, IntelliJ, Makefile, SSH, Bash, Wireguard, pgAdmin, PlatformIO, Arduino IDE