Matthew Zhu

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Education

University of Waterloo *Sep 2025 – May 2030*

BCS, Honours Computer Science with Co-op

- **Coursework:** Elementary Algorithm Design (Honours), Tools and Techniques for Software Development, Linear Algebra (Advanced), Calculus 2 (Honours), Mechanics, Interviewing
- **Cumulative GPA:** 3.9/4.0

Skills

Languages: Python, C, HTML&CSS, JS, PHP, Java

Technologies: Git, GitHub, Linux, Firebase, VSCode, LaTeX, Apache Netbeans, PyTorch, Modal

Experience

Software Team Member *Ottawa, ON*

SparkYouth Robotics Club FRC Team 8729 *Aug 2024 – Jun 2025*

- Developed and tested **Java** software code for our FRC competition robot, improving system reliability
- Learned about **electrical circuitry** and gained experience wiring and using a **Raspberry Pi**
- Used **PathPlanner** to create autonomous pathing for our robot to travel around the arena

Projects

Chess4All *Chess4All GitHub Link*

HTML, CSS, JS, FireBase

- Leveraged **Firebase authentication** to develop **secure login and signup systems** with **email validation**
- Created a **chess rule set** using **JavaScript** to implement **piece-movement logic** and **intuitive game flow**
- Organized **30+ endgame study pages** across **6 endgame categories** with **dropdown navigation menus**
- Applied **CSS** scripts to improve UI, implementing **overlay effects**, **hover animations**, and **dynamic styling**

OTMaC Website *OTMaC GitHub Link*

HTML, CSS, JS

- Built competition website using **Hugo** with custom theme config, **MathJax**, **dark mode**, and **CSS/JS**
- Implemented **dynamic copy-code button**, **theme switching**, and **multiple comment systems**
- Configured site with **sitemap**, **robots.txt**, **Open Graph tags**, and **asset fingerprinting** for production

KnightMare - ChessHacks *KnightMare GitHub Link*

Python, PyTorch, Modal

- Used **PyTorch, CNN** architecture to build a chess AI model that can process 4000+ legal moves in datasets
- Designed FEN-to-tensor systems and PyTorch Dataset abstraction to convert raw chess games into training tensors
- Developed validation methods and debugging functionalities to monitor model training progress across epochs
- Integrated Modal infrastructure to mount datasets and enable GPU model training on cloud hardware

Personal Website *Personal Website Link*

HTML, CSS, JS, FireBase

- Created a responsive portfolio website using **HTML**, **CSS**, and **JS**
- Built a real-time review system using **Firebase Firestore** with star ratings and dynamic content loading
- Used a personalized **GitHub** link for public hosting and advertising

Awards

- University of Waterloo **René Descartes National Scholarship Recipient** (1 of 10) - $25,000 (2025)
- University of Waterloo **President's Scholarship of Distinction Recipient** - $2,000 (2025)
- **Canadian Mathematical Olympiad (CMO)** Repêchage Qualifier, Eastern Ontario Silver Award (2025)
- 3x Qualifier for the **American Invitation Mathematics Examination** (2023 - 2025)