Andrew Wu

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Education

McMaster University, in Engineering – Hamilton, Ontario — Sept 2025 – present

St. Robert Catholic High School, in IB Diploma — Sept 2021 – June 2025

- GPA: 4.0 (97%)

Skills

Languages: Python, TypeScript, JavaScript, Java, HTML/CSS, SQL

Technologies/Frameworks: Next.js, React, Node.js, Express.js, PostgreSQL, MySQL, Git, Postman, Docker, Kubernetes

Libraries: FastAPI, scikit-learn, Matplotlib, NumPy, Pandas

Projects

NewKnew — Sept 2025

- Developed GPT-4-powered news platform, delivering concise insights on trending tech articles.
- Implemented **Express/Node.js** backend with a **PostgreSQL** database, optimizing query performance and clustering articles via **k-means**, displayed through a responsive **Next.js** frontend for personalized feeds and live topic updates.
- Automated data pipeline in **Python** to scrape and preprocess **500+** articles, reducing manual curation time by **90%**.

Restaurant Location Optimization — Nov 2024

- Designed a profit-maximization model with **NumPy** using a non-linear cost function and implemented a gradient descent algorithm to converge on optimal restaurant coordinates.
- Addressed model limitations by integrating non-Euclidean geometric constraints, increasing accuracy by **70%**.

Wilberforce Pendulum Simulation — Feb 2025

- Built a computational physics simulation solving nonlinear differential equations to model pendulum motion.
- Designed data visualization pipeline with **Matplotlib**, producing clear insights on oscillatory and rotational dynamics.

Research Project: Biomechanical Landing Optimization — Sept 2023

- Conducted research analyzing how variations in human landing techniques affect stress on musculoskeletal systems.
- Applied statistical and computational methods to interpret results; authored a research paper synthesizing findings with potential applications in sports science and injury prevention.

Experience

Full Stack Developer, McMaster Solar Car Project – McMaster University — Sept 2025 – present

- Designed and implemented an automated **MkDocs documentation pipeline** integrated with **GitHub Actions CI/CD**, streamlining team knowledge sharing and ensuring up-to-date docs.
- Designed and deployed **LGTM** stack (Loki, Grafana, Tempo, Mimir) to monitor operations and track **OpenTelemetry** metrics and logs through profiled **Docker** containers.
- Implemented robust error handling via **FastAPI** and **Jinja2**, improving platform reliability.

Software Developer, McMaster Artificial Intelligence Society – McMaster University — Oct 2025 – present

- Developed a **Next.js** + **Fast-API** web application that performs real-time deepfake detection from user uploads.
- Integrated async model serving, batch processing, and GPU-accelerated inference to optimize latency and throughput.
- Deployed ML inference pipeline with Docker and Kubernetes, leveraging NGNIX load balancing and Redis caching on cloud infrastructure.

Software Developer, McMaster Exoskeleton – McMaster University — Sept 2025 – present

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Media Executive, Student Athletic Council – St. Robert CHS — Sept 2021 – June 2025

- Produced and managed digital media strategy for school athletics, generating **200,000+** engagements in one year through sports highlight reels and social campaigns.
- Collaborated with cross-functional teams to build community engagement, demonstrating leadership and project management skills.

Certifications and Achievements

- Canadian Youth Physicist's Tournament Gold Medal | IYPT
- Certified B1 French Speaker | Diplôme D'études En Langue Française
- Sports Medicine ILC Qualifier | HOSA SLC