

Michael Liu

✉ m529liu@uwaterloo.ca ☎ 289-943-5743 ⚡ michaelliu 🌐 AgentXCross 🌐 michaelliuml.ca

Education

University of Waterloo

BMath in Mathematics

Sept 2025 - Apr 2030

- Major Average: 94% — Cumulative Average: 93%

- Activities: Varsity Cross-Country, Varsity Track, WAT.ai (Artificial Intelligence) Design Team

Bill Crothers Secondary School

Ontario Secondary School Diploma

Aug 2021 - Jun 2025

- Graduated 2nd in Class of 2025 with 99.17% Top 6 Grade 12 Average

- Awards: Academic Accomplishment Award, Excellence in Mathematics Award, 8x University of Waterloo Mathematics Contest School Champion

Technical Skills

Programming Languages: Python, SQL, C

Data/ML: PyTorch, scikit-learn, Pandas, NumPy, Matplotlib

Databases/Tools: PostgreSQL, MySQL; Git, GitHub; Jupyter Notebook, VS Code; Excel, Tableau

Job Experience

Machine Learning Engineer

WAT.ai (University of Waterloo Artificial Intelligence Design Team)

Waterloo, ON

Sept 2025 - Present

- Worked on an applied medical imaging project focused on diabetic retinopathy with a small team of students.
- Led dataset curation, preprocessing, and experiment organization.
- Currently co-authoring a research paper titled “CNN vs. ViT-based U-Nets for Diabetic Retinopathy Lesion Segmentation”.

Tennis Instructor & Tennis Racquet Stringer

Unionville Tennis Club/Premier Racquet Clubs Markham

Markham/Unionville, ON

Apr 2022 - Aug 2025

- TPA (Tennis Professionals Association) Certified Instructor.
- Over 500 hours of on-court instruction across 4 summers leading group camps and private hitting sessions for athletes of varying ages and skill levels.
- Built a personal racquet-stringing service for local tennis players from my basement.

Projects

Fundus Diabetic Retinopathy Lesion Segmentation @ WAT.ai

[github/fundus-image-segmentation](#) ↗

- Built a PyTorch data pipeline with image-mask augmentations for IDRiD and DDR fundus datasets.
- Designed and trained Swin-UNet and CMAC-Net models for multi-class lesion segmentation.
- Wrote task-specific loss functions (Focal Tversky) to address class imbalance.
- Led ablation study on input resolutions and loss function choice.
- Evaluated models using class-wise and mean F1, IoU, and Recall.

Tennis Stroke Multi-Class Classification

[github/tennis-stroke-classification](#) ↗

- Built image classification models to identify tennis strokes from still images.
- Trained and compared pretrained CNNs (ResNet-18, MobileNetV3, ConvNeXt-Tiny).
- Applied Grad-CAM visualizations to interpret model attention.
- Deployed models on a Streamlit application.