Michael Liu

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Education

University of Waterloo *Sept 2025 - Apr 2030*
BMath in Mathematics (Undeclared)

- First-year student intending to declare Applied Mathematics w/ Scientific Computing & Machine Learning
- Activities: Varsity Cross-Country Athlete, WAT-ai Design Team

Bill Crothers Secondary School *Aug 2021 - Jun 2025*
Ontario Secondary School Diploma

- Graduated 2nd in Class of 2025 with 99.167% Top 6 Grade 12 Average
- Awards: Academic Accomplishment Award, Excellence in Mathematics Award, 8x University of Waterloo Mathematics Contest School Champion + Certificate of Distinction, 6 Additional Academic Course Awards
- Activities: Cross-Country Captain, Track & Field, Peer Tutoring, Half-Marathon

Technical Skills

Programming Languages:	Python, SQL
Data/ML Libraries:	Pandas, NumPy, scikit-learn, Matplotlib/Seaborn/Plotly, PyTorch
Databases/Tools:	PostgreSQL, MySQL; Git, GitHub; Jupyter Notebook, VS Code; Excel, Tableau

Job Experience

Data & Research Team Member with Project See-DR *Waterloo, ON*
WAT.ai (University of Waterloo Artificial Intelligence Design Team) *Sept 2025 - Present*

- Collected, organized, and preprocessed medical imaging data for diabetic retinopathy detection using ML models
- Collaborating with a small team of students on model training, evaluation, and documentation

Tennis Instructor & Tennis Racquet Stringer *Markham/Unionville, ON*
Unionville Tennis Club/Premier Racquet Clubs Markham *Apr 2022 - Aug 2025*

- Over 500+ hours worked across 4 summers in summer camps and private hitting lessons
- Provided racquet stringing services for local tennis players from my basement

Personal Projects

Tennis Stroke Classification w/ PyTorch CNNs *github/TennisStroke*

- Built a custom CNN model in PyTorch to classify tennis strokes from a 2,000 image-dataset, achieving 91% test accuracy, deployed to Streamlit
- Preprocessed image data by organizing into train/test splits using scikit-learn and applying image transformations for consistent inputs
- Evaluated performance in Jupyter Notebook, then moved to Python scripts

LightGBM & PyTorch NYC Taxi Fare Machine Learning Model *github/NYC-Taxi-Fare*

- Built machine learning models in Python to predict NYC taxi fares using the official Kaggle dataset
- Implemented feature engineering (distance calculation, time-based features, landmark features)
- Deployed the model using Streamlit for real-time fare prediction, integrated Nominatim API to grab coordinates from user-provided addresses

Python & PostgreSQL Secure Login System *github/SQL/login_app*

- Built a user authentication system with PostgreSQL and bcrypt, enforcing strong password rules using regex, and secure storing using salted hashing
- Developed front-end using Streamlit to support account creation and error handling