Mohan Dixit

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Education

University of Waterloo — Waterloo, ON
Incoming Bachelor of Computer Science — *Sept. 2026 – Apr. 2031*

Experience

Academic Tutor — Markham, ON
Kumon — *Aug. 2024 – Present*
- Instructed **50+** students weekly in mathematics and English, tracking individual progress and adjusting teaching strategies to improve outcomes.

Problem Setter and Tester — Markham, ON
TOPSOJ — *Feb. 2025 – Present*
- Designed and tested over **150** rigorous mathematical problems for over **3000** active users using **LaTeX** tools.

Projects

Court Vision | *PyTorch, NBA API, Webscrapers, Statistical Analysis* — 2025 - Present
- Developed a predictive analytics engine using Linear Regression, Random Forests, and **XGBoost** models with **38** features, experimentally selecting the optimal architecture.
- Engineered a custom data scraping and cleaning pipeline to ingest live NBA statistics, player efficiency ratings, and team metrics for over **1200** players and **20+** unique statistics.
- Launched and maintained a Role Based Access Control web application in a production environment, ensuring international access **24/7** using **Flask** and **SqLite**.
- Architectured an automated scoring pipeline using **NumPy** to evaluate multi-dimensional model outputs and surface top-performing players.

Atlas | *Claude API, React, Live Market Data* — 2026 – Present
- Developed a comprehensive portfolio management system integrating a **SQL-based** relational database.
- Engineered a custom processing system utilizing **DeepSeek v3 Pro** and **LangGraph** to create an **Orchestrator-Worker Framework** to perform technical analysis on the top **500** equities.
- Implemented a **News API** streaming pipeline ingested by our custom processing system using **Kafka**, dynamically notifying the users of potential Stock Crashes

Code Metrics | *Java Swing, DMOJ API, ELO calculation algorithms, Data Parsing and Cleansing* — 2025 - 2026
- Designed a desktop application following strict **Model-View-Controller** patterns and implemented multi-threading through **Swing Worker** to cut loading time by **90%**
- Authored a sophisticated **Competitive Rating** algorithm calculating user proficiency through historical performance trends across the DMOJ ecosystem of over **500** problems.
- Developed a real-time **Contest Engine** capable of generating custom competitive programming rounds streamlined through the DMOJ API.

Extracurriculars and Leadership

President — Markham, ON
Chess Club, Bur Oak Secondary School — *Dec. 2022 – Jun. 2026*
- Organized the YCC, a chess tournament consisting of 8 schools with **80+** active students participating, raising **$500** through sponsorships.

Executive Member — Markham, ON
Math and Coding Club, Bur Oak Secondary School — *Sept. 2024 – Jun. 2026*
- Coached over **200** students for national mathematics and computing contests.

Competitions and Awards

Canadian Open Mathematics Challenge – Ranked top **125** nationally, qualified for the Canadian Mathematical Olympiad Qualifying Repêchage (CMOQR), 2026
Canadian Senior Mathematics Contest – Ranked **92nd** out of 15,153 participants (top 0.6%), 2026
AIME – Qualified for the American Invitational Mathematics Examination by placing in the top **5%** on the AMC 12, 2026
DMOJ – Achieved Candidate Master rating of **1,706** on Canada's premier competitive programming platform, 2025
Chess.com – Rated 2100, ranked in the **99.8th** percentile globally

Technical Skills

Languages: Python, C++, Java, JavaScript, Go
Frameworks and Tools: React, Node.js, scikit-learn, PyTorch, Fast-AI, Linux, SQLite, Kafka, RedPanda
Other: Git, LLMs, AI Tools