

LAWRENCE TSAI

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HIGHLIGHTS OF QUALIFICATION

- SWE Intern at **Capital One** (NYC, Summer 2023) seeking **New Grad SWE Roles** for **Jan/Feb 2024** (Graduating in **Dec 2023**)
- **University of Toronto Math & Physics** student with a **Computer Science Minor** who is expanding knowledge in **ML & Finance**
- Additional experience in a **seed-stage Robotics startup**, **IT Support**, **ML Research**, **Satellite Design**, & **Solar Racing Strategy**

EDUCATION

University of Toronto - Trinity College September 2020 - December 2023
HBSc Candidate- Math (Major), Physics (Major), Computer Science (Minor), 3.95 CS GPA Toronto, ON, Canada

Council Rock High School North August 2016 - June 2020
Diploma with Distinguished Honours in Gifted Program GPA: 4.283/4.0 SAT: 1580/1600 ACT: 35/36 Newtown, PA, USA

PROFESSIONAL/RELEVANT EXPERIENCE

Capital One June 2023 - Present
Software Engineer Intern Manhattan, New York City, NY, USA

- On the **Payments Intelligence** Team working on migrating transaction cache data from **Redis** to **DynamoDB** to save **\$100,000+** annually
- **Redesigning & Implementing** the database for millisecond(s) latency for our ML model for over **180 billion transactions** annually
- Working with a **gRPC API** and utilizing **AWS** Products such as **DynamoDB, EC2, ECS, Fargate, S3, Boto3, ElastiCache**

Cognitive Neuroscience & Sensorimotor Integration Laboratory (University of Toronto) May 2023 - Present
ML Research Assistant Toronto, ON Canada

- Researching the Dorsal & Ventral Streams for human grasp point determination & object recognition with explainable **CNNs** & **EEG** data
- Hypothesis: "Differences between the two streams are due to differences in how the two streams are optimized (not by different initializations)"

University of Toronto Biology Information Technology Department September 2022 - April 2023
Information Technology Support Assistant Toronto, ON Canada

- Working with **Linux** environments, **TCP/IP** Protocols, & **Bash** scripting to create embedded systems for the department
- Maintaining department hardware and conducting **Penetration Tests** to find vulnerabilities in for 3 biological science departments

Promise Robotics May 2022 - August 2022
Software Engineer Intern Edmonton, AB, Canada

- 4 month internship in software (**Python, Django, React, Node.js, Docker, Databases, Robotics, CAD**); <https://promiseroobotics.com/>
- Top intern contributor in creating algorithms for robotic preprocessing/sequencing with applied Physics and **ML** for automated construction
- Developed and reviewed full-stack integrations with databases, security, & 3D manipulation (**Open CASCADE, Ifc, Quaternions**)

Blue Sky Solar Racing May 2021 - April 2023
Senior Strategy Engineer Toronto, ON, Canada

- Optimized the construction, telemetry, & performance of our solar car for the American and World Solar Competition along with fabrication
- Conducted research on the implementation of bifacial solar cells and created simulations of cell output from weather and geographic data
- Created a parallel computed simulation (**MATLAB, Python, Ansys, CAD**) in a StratApp for future gens; <http://blueskysolar.utoronto.ca/>

University of Toronto Aerospace Team May 2022 - May 2023
Space Systems Optics Team Member Toronto, ON, Canada

- Development of a hyperspectral imaging CubeSat to measure anthropogenic gas emissions across Ontario, Canada. Set to launch in 2025.
- Numerical analysis (**Python**) and R&D for optical components (grisms and holographic gratings); Github: <https://github.com/spacesys-finch>
- Leading a team to design test plans for the optical bench (imaging, components, MTF) for the satellite; <https://www.utat.ca/space-systems>

PROJECTS

Quick Ocular Movements Detection July 2022-August 2022

- A webcam screening tool to detect strabismus (eye misalignment) for Dr. Etienne Benard-Seguin and Jeremy Moreau (University of Calgary)
- Used **Python, OpenCV, MediaPipe, React, Node.js, CSS, HTML, Figma** to give results at 4 mm tolerance at 95% confidence
- Conducted medical research and pitched to Neurotech professionals; Github: <https://github.com/lt77777/Quick-Ocular-Movements-Detection>

Amigos Friend Making Webapp September 2021-December 2021

- A webapp built using **Java, Spring Framework, Javascript, CSS, HTML, Figma** to find matches in a database of potential friends
- Implemented a weighted matching algorithm using user metadata to be used through **Thymeleaf** generated webpages deployed on **Azure**
- Designed the entire software model and frontend design to achieve an A in the course; Github: <https://github.com/lt77777/Amigos-App>

SKILLS

Software Skills Python, Java, C, AWS, Databases, Git, Bash, MATLAB, Django, Docker, Linux, Figma
Certifications Bloomberg Market Concepts, AWS Cloud Practitioner (In Progress), Self Driving Cars by UofT (In progress)