

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://promiserobotics.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)**