# 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 **240 billion transactions** annually
· Working with a **gRPC API** with **Jenkins** and utilizing **AWS** Products such as **DynamoDB, EC2, ECS, Fargate, S3, Boto3**
· First Place out of 36 teams in Intern Hackathon, created a Slackbot to summarize messages using **NLP** and **ML** over a weekend

**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)