

# 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**)
- Light-hearted problem solver with full stack industry/extracurricular experience and proficiency in **Python, Java, and API Development**
- **University of Toronto Math & Physics** student with a **Computer Science Minor** who is expanding knowledge in **ML & Finance**

## 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 cache for millisecond(s) latency for our ML model for over **180 billion transactions** annually

**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

<b>Software Skills</b>	<b>Python, Java, C, AWS, Databases, Git, Bash, MATLAB, Django, Docker, Linux, Figma</b>
<b>Certifications</b>	Bloomberg Market Concepts, Self Driving Cars 4-Course Specialization by the University of Toronto (in progress)