

# LAWRENCE TSAI

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## HIGHLIGHTS OF QUALIFICATION

- Incoming SWE Intern at **Capital One** (Summer 2023), Previous SWE Intern at **Promise Robotics**, Current 4th Year student at **UofT**
- Lighthearted problem solver with full stack industry/extracurricular experience and proficiency in **Python, Java, MATLAB, and Django**
- Eager learner that is working towards mastery of **C, C++, and Machine Learning** along with advanced studies in **Math and Physics**

## EDUCATION

### University of Toronto - Trinity College

September 2020 - Present

*Honours Bachelors of Science Candidate- Mathematics (Specialist-with Physics Applications), Computer Science (Minor), Chemistry (Minor)*  
Toronto, ON, Canada

#### · Relevant Coursework:

*Computer Science:* Software Tools & Systems Programming, Software Design, Computation Theory, Computer Organization

*Physics:* Computational Physics, Dark Matter & Energy, Electricity & Magnetism, Classical & Quantum Mechanics

*Math:* Real Analysis, Groups & Symmetry, Complex Variables, ODEs & PDEs, Linear Algebra, Abstract Mathematics

*Chemistry:* Graduate Level Bioinorganic Chemistry, Analytical/Physical(Thermo & Quantum)/Inorganic Chemistry

*Other:* Philosophy of Physics & Science, Human Physiology I, Sociology, Latin I

### 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

### University of Toronto Biology Information Technology Department

September 2022 - Present

*Information Technology Support Assistant*

- Maintaining and optimizing the security and robustness of internal servers, hardware, and architecture of 3 biological science departments

### Promise Robotics

May 2022 - August 2022

*Software Engineer*

Edmonton, AB, Canada

- 4 month internship in software (**Python, Django, React, Node.js, Docker, Databases, Robotics, CAD**); <https://promisrobotics.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 - Present

*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 - Present

*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 2024.
- Numerical analysis (**Python**) and R&D for optical components (grisms and holographic gratings); Github: <https://github.com/spacesys-finch>
- Leading a team of 2 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>

## OTHER EXPERIENCE

### L & S Landscaping

March 2019 - Present

*Chief Executive Officer and Founder*

Lower Bucks County, PA, USA

Started a company in high school with 25+ Employees catering 100+ customers in a 35 kilometer radius while responsible for financials, quoting, and marketing. Grossed \$10,000s in revenue; <https://ls-landscaping.business.site/>

## SKILLS

### Software Skills Certifications

**Python, Java, MATLAB, Django, Docker, Figma, C, C++, Open CASCADE, OpenCV, NumPy**  
Self Driving Cars 4-Course Specialization by the University of Toronto (in progress)