

# LAWRENCE TSAI

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## HIGHLIGHTS OF QUALIFICATION

- 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
- Well-rounded involved student at the University of Toronto with additional interests in Chemistry, Human Biology, and Philosophy

## 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*

## RELEVANT EXPERIENCE

### Promise Robotics

*Software Engineer*

May 2022 - Present

*Edmonton, AB, Canada*

- 4 month internship in software (**Python, Django, Docker, API Dev, 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 security features, full-stack integrations with databases, & 3D Geometric manipulation (**Quaternions, Open CASCADE, Ifc**)

### Blue Sky Solar Racing

*Senior Strategy Engineer*

May 2021 - Present

*Toronto, ON, Canada*

- Optimized the construction and 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

*Space Systems Optics Team Member*

May 2022 - Present

*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>
- Designing test plans for optical bench prototype (imaging, components, MTF) for the next-gen satellite; <https://www.utat.ca/space-systems>

## PROJECTS

### Quick Ocular Movements Detection

July-August 2022

- A webcam screening tool to detect strabismus(eye misalignment) for Jeremy Moreau and Dr. Etienne Benard-Seguin (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-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

*Chief Executive Officer and Founder*

March 2019 - Present

*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/>

### University of Toronto-Trinity College

*Academic Advisor*

September 2021 - Present

*Toronto, ON, Canada*

Coordinated academic events and mentored students in Physical Sciences within a college of 1800+ students

## SKILLS AND INTERESTS

### Software Skills

**Python, Java, MATLAB, Django, Docker, Figma, C, C++, Open CASCADE, OpenCV, NumPy**

### Certifications

Self Driving Cars 4-Course Specialization by the University of Toronto (in progress)

### Languages

English, Mandarin, Taiwanese, French (3 Years), Latin (Elementary), Spanish (Elementary)