

# 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

**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** May 2022 - Present  
*Software Engineer* Edmonton, AB, Canada

- 4 month internship in software (**Python, Django, Docker, API Dev, Databases, Robotics, CAD**); <https://promiseroobotics.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, and 3-D Geometric manipulation (**Quaternions, Open CASCADE, Ifc**)

**Blue Sky Solar Racing** May 2021 - Present  
*Senior Strategy Engineer* 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 implementation of bifacial solar cells and for creating 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>
- Designing test plans for optical bench prototype (imaging, components, MTF) for next generation 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** 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/>

**University of Toronto-Trinity College** September 2021 - Present  
*Academic Advisor* 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)