

# LAWRENCE TSAI

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## EDUCATION

**University of Illinois Urbana-Champaign**  
*MCS Candidate*

January 2024 - Present  
Urbana-Champaign, IL, USA

**University of Toronto - Trinity College**  
*HBSec - Math (Major), Physics (Major), Computer Science (Minor)*

September 2020 - December 2023  
Toronto, ON, Canada

· **Graduate Coursework:** K-Theory & C\* Algebras, High Energy Physics, Formal Methods in Software Design

**Council Rock High School North**  
*Diploma with Distinguished Honours in Gifted Program GPA: 4.283/4.0 SAT: 1580/1600 ACT: 35/36*

August 2016 - June 2020  
Newtown, PA, USA

## PROFESSIONAL/RELEVANT EXPERIENCE

**Capital One**  
*Software Engineer*

February 2024 - Present  
Manhattan, New York City, NY, USA

· On the **Real-Time Decisions** Team working on **Distributed Backend APIs** for Aquisitions (Making decisions on Credit Card Applications)

**Capital One**  
*Software Engineer Intern*

June 2023 - August 2023  
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

**University of Toronto Biology Information Technology Department**  
*Information Technology Support Assistant*

September 2022 - April 2023  
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**  
*Software Engineer Intern*

May 2022 - August 2022  
Edmonton, AB, Canada

· 16 week internship working with **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 the **full-stack API** with UI and robotic code outputs to run physical demonstrations of our **MVP for seed investors**

**University of Toronto Aerospace Team**  
*Space Systems Optics Team Member*

May 2022 - May 2023  
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>

**Blue Sky Solar Racing**  
*Senior Strategy Engineer*

May 2021 - April 2023  
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/>

## 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, GoLang, C, AWS, Databases, Git, Bash, MATLAB, Django, Docker, Linux, Figma
Certifications	Bloomberg Market Concepts, AWS Solutions Architect - Associate