

# Alexey Albert

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## EDUCATION

### University of Toronto

September 2024 – Present

Pursuing Honours Bachelor of Science (HBSoc), Mathematics

### Philip Pocock Secondary School

September 2020 – June 2024

OSSD, Ontario Scholar Recognition, Proficiencies in all CS-related courses.

## EXPERIENCE

### ML Researcher, UTMIST

October 2025 – Present

- Working on a generative model that operates over weight space to address inverse problems like machine unlearning, image inversions, and binary quantization, applying recent advances in flow-based models, energy-based models, and equivariant architectures for flexibility and performance.
- Expect to be published by summer 2026

### Jr Lead, UofT Robotics for Space Exploration, Aerial Subteam

June 2025 – Present

- Spearheaded the Skule SEF application for a highly scrutinized \$3000 line item for and successfully secured funding
- Led and solely designed a complete brand overhaul including new logos, website, and brand identity
  - Designed and implemented a new website using Svelte and Tailwind, deployed onto an OCI compute instance with a CI/CD pipeline that updates it automatically on push
- Presented at a Lunch & Learn to high school students
- Secured a software license sponsorship equivalent to \$1200 annually.

### UofT Robotics for Space Exploration, Aerial Subteam

September 2024 – June 2025

- Developed on-board camera system to record high quality redundant video during launch and parachute deployment in a heavily power- and performance-constrained environment.
- Was solely responsible for parachute selection, involving CAD modeling and CFD simulations of various parachute sizes and shapes to select one that would slow the CANSAT down to the precise speed required by the mission parameters.
- Solely designed and built QHA ground station antenna and worked with team members to optimize the design using Ansys HFSS simulations.
- Secured a software license sponsorship equivalent to \$50,000 in value
- Designed subteam mission patch
- Placed 1st in North America and 5th overall out of 40 teams at competition.

### UofT SDSS Datathon

March 2025

- Lead a team and developed a MVP web app to forecast the probability and predicted length of TTC subway delays using a multi-output neural network

### STA130 Research Project

December 2024

- Developed a OLS regression model and used p-value analysis to determine if playing online video games during periods of social isolation have a positive correlation with mental health

### Harmonic Music Match (Side Project)

September 2023 – 2024

- Solely developed and designed a web app that would match registered Spotify users based on the similarity of their listening activity
- Developed using HTML/CSS/JS with Node.js, Express, and jQuery. Used MySQL for user info and a vector database (Milvus) to store songs as embeddings in latent space. Hosted on an AWS EC2 machine with nginx.

## SKILLS

**Languages and Frameworks:** Java, SwiftUI, Swift, HTML, CSS, Javascript, Python, MySQL, LaTeX, Tailwind, Svelte, Express.js, NumPy, pandas, PyTorch,

**Software Tools:** Jupyter Notebooks, Git, Xcode, PyCharm, VS Code, PlatformIO

## LEADERSHIP AND ACTIVITIES

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## **RSX Seek JR. Volunteer, Software Advisor**

November 2024

- Assisted high school teams tasked with building a mini moon rover with Arduino and ECE troubleshooting questions.

## **High School STEM Club, Founder and President**

September 2023 – June 2024

- Founded and led the STEM club, focusing in 3D printing, CAD, and coding projects/events
- Collaborated across multiple school administration changes to procure a 3D printer and certify a local vendor for 3D printing purchases.

## **High School Broadcast Club, Lead Producer, Anchor, and Mentor**

May 2022 – June 2024

- Lead the broadcast club to deliver a smooth and professional school news broadcast every morning; worked in the tech positions and live anchor positions an equal amount.

## **Student Senate Representative, DPCDSB**

September 2022 – June 2023

- Represented my school on the board level, voiced general concerns, and consulted on board policies and initiatives.

## **COMPETITIONS**

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2024 CEMC Euclid Mathematics Competition, 2024 CEMC Canadian Computing Competition, 2024 OBA-OJEN Mock Trial Tournament, 2023 DPCDSB Game Development Competition, 2023 Apple Swift Student Challenge, 2023 CEMC Hypatia Mathematics Competition, 2023 CEMC Hypatia Mathematics Competition, 2023 CEMC Hypatia Mathematics Competition, 2023 OBA-OJEN Mock Trial Tournament (semi-finalist), 2023 CEMC Canadian Computing Competition