

Andrew Peng

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SKILLS

Technical: Proficient in C++, C, Java, Python, R, and JavaScript, with experience in AI/ML; PyTorch, NumPy, Pandas, Matplotlib, PyYAML, Jupyter Notebook, and Weights & Biases

Research: Hands-on experience conducting research across math, computer science, data science, and biology

Problem Solving: Strong analytical and algorithmic reasoning skills through competitive programming and math contests (Codeforces, CCC, AMC, CSMC)

Communication: Excellent written and verbal communication skills; Trilingual in English, French, and Mandarin

Leadership: Managed teams in coding and research projects; Led school orchestra to successful performances

EXPERIENCE

Vector Institute & University of Toronto (PI: Prof. Babak Taati) Toronto, ON
Research Intern May 2026 – Present

- Awarded \$12,000 University of Toronto Department of Computer Science Research Grant
- Analyzing internal dynamics of Diffusion Transformers (DiTs) to perform interventions guiding generation
- Developing 4D Gaussian Splatting (4DGS) pipeline for human reposing
- Parallelized large-scale experiment sweeps across multi-node High-Performance Computing (HPC) clusters using Slurm scheduling

University of Toronto Aerospace Team Space Systems Toronto, ON
Deep Learning Team Lead June 2026 – Present

- Presented *Synthesizing Hyperspectral Data using Generative Models to Train Spectral Unmixing Methods for low-cost Crop Residue Cover Mapping* at 2026 ISPRS Congress
- Building hyperspectral foundational models

Developer/Researcher September 2025 – June 2026

- Built and trained Denoising Diffusion Probabilistic Models (DDPM) and Denoising Diffusion Implicit Models (DDIM) to generate satellite remote-sensing synthetic spectra for crop-residue mapping on FINCH satellite mission
- Developed a modular PyTorch toolkit for diffusion-based synthetic data generation and model training/evaluation, with configurable noise schedules, loss functions, reproducible training pipelines, and visualization notebooks
- Tuned Multilayer Perceptron (MLP) and U-Net architectures (depth, width, and activation functions) to reach > 90% validation R^2 while minimizing reconstruction loss
- Published at 2026 ISPRS Congress: isprs-archives.copernicus.org/articles/XLIX-B3-2026/881/2026/

LabPath Hackathon Toronto, ON
Lead Developer July 2025

- Used Python RandomForest ML model (using Pandas and NumPy) to create a Thyroid Cancer Risk Index
- Fast-paced research, decision-making, and paper-writing
- Selected for publication in peer-reviewed URNCST journal: urncst.com/index.php/urncst/article/view/998

Youreka Canada Toronto Chapter Toronto, ON
Lead Researcher January 2025 – June 2025

- Used R to normalize, aggregate, and perform data analysis on large datasets, discovering a link between certain air pollutants and Lyme disease
- Led 4-person team, won first place in Toronto, represented Toronto at Youreka National Symposium

NASA GLEE (Great Lunar Expedition for Everyone) Team 3217 Boulder, CO (remote)
Team Lead March 2022 – September 2025

- Used C to write software for Arduino Lunar Satellite to transmit data on the Lunar Surface collected by sensors and hardware (temperature, magnetometer, accelerometer, capacitive) we tested and calibrated
- Handled power and automation constraints in designing mechanism to place satellites on the Lunar Surface
- Led 10-person team, organized and ran weekly collaborative meetings/workshops, served as key contact with NASA

Canadian Undergraduate Mathematics Conference 2024	Vancouver, BC
<i>Speaker</i>	<i>July 2024</i>

- Gave widely acclaimed talk on $\omega^2 + \omega + k$ transfinite game value in Infinite Connect Four (original research)
- Result heavy in game theory, set theory, and logic

EDUCATION

Honours Bachelor of Science in Computer Science, Minor in Mathematics and Statistics <i>University of Toronto</i>	Toronto, ON <i>September 2025 – June 2029</i>
Ontario Secondary School Degree, Certificate of Achievement in Core French <i>Bloor Collegiate Institute</i>	Toronto, ON <i>September 2021 – June 2025</i>
Associate of The Royal Conservatory of Music (ARCT) Diploma <i>Royal Conservatory of Music</i>	Toronto, ON <i>September 2014 – August 2024</i>

AWARDS

1 of 4 students out of $\sim 72,000$ total with 100% graduating average <i>TDSB (Toronto District School Board) Top Scholar</i>	Toronto, ON <i>2025</i>
• Featured by Canadian Broadcasting Corporation: youtube.com/watch?v=63f4XV12V_0	
Selected by panel of undergraduate and graduate students as best research project <i>1st Place, Youreka Toronto Research Symposium</i>	Toronto, ON <i>2024, 2025</i>
Scored 127.5/150, the 3 rd highest AMC 12A score of 2024 <i>3rd Place, AMC (American Mathematics Competitions) 12A</i>	Toronto, ON <i>2024</i>