

EDUCATION

UNIVERSITY of TORONTO

BASc, Engineering Science, 1st year

Cumulative GPA: 3.90/4.00

Dean's Honours List

Recipient of the U of T Engineering International Scholar Award (\$128,000)

Toronto, ON

Sep 2024 - Present

HONOURS & AWARDS

- Ranked in the top 10% of participants nationwide in the Canadian Open Mathematics Challenge (COMC).
- Secured a position within the 97th percentile in Canada, out of 2957 participants in the Avogadro Chemistry Exam hosted by the University of Waterloo.
- Received a bronze medal at the 2024 Toronto Science Fair for an innovative project involving the production of a recombinant protein with potential applications in curing Alzheimer's disease.
- Earned a distinction award (top 25%) in Waterloo Math Contests including Galois, Fermat, Hypatia, Euclid, and Canadian Senior Math Contest (CSMC) in grades 10, 11, and 12.

EXPERIENCE

U of T Undergraduate Engineering Research Day (UnERD)

Toronto, ON

Volunteer

August 2024

- Coordinated logistics for a research conference attended by 200+ undergraduate engineers and faculty, ensuring all sessions were prepared with appropriate seating, signage, and technical setups.
- Timed and monitored 20+ research presentations, using a stopwatch and visual cues to ensure each speaker adhered to their 10-minute limit and the event stayed on schedule.
- Assisted speakers with technical setups, including connecting laptops to projectors, resolving display issues, and managing last-minute file changes, ensuring a smooth flow of presentations.
- Moderated Q&A sessions, facilitating audience engagement and ensuring questions were concise and within the allotted time.

StarterHacks

Waterloo, ON

Hacker and Developer

July 2024

- Co-developed TeamUp, a mobile-friendly web app that connects users with nearby sports partners based on skill level, availability, and location, using APIs such as Google Maps for location-based matchmaking and Google Calendar for scheduling.
- Designed a user interface in Figma, creating 10+ interactive prototypes that ensured a visually appealing and intuitive experience across desktop and mobile devices.
- Implemented key app features, including secure user authentication (Auth0), real-time chat forums, and Gemini AI-powered matchmaking, streamlining the process of connecting players with similar interests.
- Pitched TeamUp to a panel of judges in a 5-minute presentation, highlighting its potential to promote physical activity, community building, and healthy lifestyles.

PROJECTS

Weather Forecasting

November 2024

- Built an LSTM-based time-series model in PyTorch to predict weather patterns using multi-step forecasting techniques.
- Conducted data preprocessing by splitting datasets into training and testing subsets, engineering features, and normalizing values for consistency.
- Implemented a neural network with multi-layer LSTMs, dropout regularization, and output reshaping to optimize prediction accuracy.
- Evaluated the model using metrics like RMSE, MAE, and R^2 , achieving significant improvement in prediction accuracy over baseline models.
- Visualized predictions against actual data for performance validation, providing insights for further refinement.

Gomoku AI Engine

October 2024

- Implemented a simple AI engine for Gomoku, a two-player board game, using Python to simulate intelligent gameplay.
- Developed algorithms for detecting and analyzing sequences of stones, including open, semi-open, and closed sequences, to evaluate board positions strategically.
- Built a function to compute optimal moves for the AI using a scoring mechanism, enhancing game difficulty and strategic depth.
- Designed and tested various functions for board analysis, including row detection, sequence classification, and win-state evaluation, ensuring accurate gameplay logic.

Semantic-Similarity

December 2024

- Constructed semantic descriptors by analyzing word co-occurrences in sentences, using dictionaries to map words to their context vectors efficiently.
- Designed and implemented a cosine similarity function to measure the semantic closeness of words by calculating the dot product of their vectors normalized by their Euclidean norms.
- Built a synonym prediction system that identifies the most semantically similar word from a set of choices based on cosine similarity calculations.
- Evaluated the model's performance through TOEFL synonym tests, using Python scripts to process test datasets and achieving an accuracy rate of approximately 85%.
- Processed large text files like *War and Peace* and *Swann's Way* by reading, cleaning, and tokenizing data to generate semantic descriptors from real-world datasets.

EXTRACURRICULARS

University of Toronto Robotics Association (UTRA)

Toronto, ON

Software Team Member - Perception subdivision

Sep 2024 – Present

- Collaborated with the Perception Team to enhance autonomous rover systems through tasks like depth estimation, 3D object detection, and camera calibration using the ZED stereo camera.
- Utilized the ZED camera's depth viewer to identify ramps and uneven terrain, improving the rover's ability to navigate complex environments.
- Explored deep learning techniques, including RNNs and attention mechanisms, in team tutorials, focusing on applications in point cloud forecasting and visual odometry.
- Engaged in resource onboarding sessions to learn OpenCV for camera calibration and ROS-based tools like Gazebo for simulation and visualization.
- Debugged issues in simulation pipelines, including ROS errors and compatibility challenges.

University of Toronto Machine Intelligence Team (UTMIST)

Toronto, ON

Active Member

Sep 2024 – Present

- Attended EigenAI 2024, gaining insights into AI/ML applications in healthcare and robotics, and exploring advanced topics such as AI hardware through academic presentations.
- Participated in workshops on LaTeX and strategies for efficient academic reading, acquiring skills to contribute effectively to scholarly research.
- Completed the Reinforcement Learning Workshop Series, developing a strong foundation in RL agents, decision-making algorithms, and policy gradients through hands-on projects and expert-led discussions.

SKILLS

- **Programming:** Python, MATLAB, C , VB (Microsoft Visual Basic), HTML, ROS (basic)
- **Data Analysis:** Statistical analysis, data visualization (Matplotlib, pandas, NumPy)
- **Technical Tools:** Numerical computing (MATLAB), Version Control (GitHub), IDEs (PyCharm, VS Code, Atom), Python Libraries and Frameworks (OpenCV, PyTorch), Collaboration (Google Colab, Notion)
- **Document & Design Tools:** LaTeX, Adobe Photoshop, Canva
- **Hardware:** 3D Printing, Stereo Camera Systems
- **Certifications & Trainings:** Personal Finance Certificate from McGill University, IELTS Certification (Band Score of 8.5), CS50 Introduction to Python, Introduction to AI and ML (empowered), MATLAB Onramp