**Education**

**University of Toronto** (GPA **3.90**/4.00)

* Computer Science Specialist | Software Engineering Stream Class of 2025
* Statistics Specialist | Data Mining and Machine Learning Stream

**Skills**

**Languages:** Java, Python, C, C++, R **|** **Databases:** SQL, Firebase **|** **Tools/Frameworks:** GitHub, JavaFX, NumPy, Matplotlib, Git, SVN **|** **Web Development:** HTML, CSS, JavaScript, Django **|** **Principles:** OOP, MVP, AGILE, SCRUM, SOLID, Design Patterns

**Professional Experience**

**Teaching Assistant** Sep 2022 – Present

**University of Toronto** **|** Python, CSV Files, NumPy, Matplotlib, Calculus

* Courses: Calculus I (MATA31), Calculus II x2 (MATA36, MATA33), Introduction to Programming (CSCA20)
* Held tutorial sessions with attendance of **30-40** students to reinforce concepts and review code for assessment
* Teaching Concepts Include: Data Structures, SQL, CSV Files, NumPy, Matplotlib, Python Core Concepts

**Research Assistant** May 2022 – Present

**University of Toronto** **Computer and Mathematical Science Research Group**

* Working alongside Professor Brian Harrington to conduct research on computing and education
* Co-authored research paper on impact of Covid-19 on computing education, submitted to [**SIGCSE TS’ 2023**](https://sigcse2023.sigcse.org/details/sigcse-ts-2023-posters/70/Finding-and-Categorizing-COVID-19-Papers-in-CS-Education)

**Quality Assurance Software Engineer Intern**  Sep 2019 – Jun 2020

**Microart Services Inc** **|** Python, C++, Arduino, Raspberry Pi

* Collaborated with team of over **20** engineers to construct testcases for software and circuitry in electronics
* Worked on designing, writing, documenting, and executing test plans for all stages of product development as well as implementing functionality according to testcases following TDD, increasing efficiency by over **25%**

**Projects**

**Histopathologic Cancer Detection CNN Model** (Presently Working On)

* Algorithm will identify metastatic cancer in small image patches taken from larger digital pathology scans
* CNN model of 6 convolutional layers, 6 batch normalization layers using PyTorch Libraries
* Trained on over 198,000 scans with feed forward function that uses Leaky ReLU Activation function

**Course Planner App |** [GitHub](https://github.com/AshwinM1523/b07FinalProject) **|**

* Developed Android app to help students register for courses and plan schedules
* Implemented Admin and User login services with Firebase Authentication and Realtime Database
* Created 6 user stories following SOLID principals and software design patterns testing with Junit and Mockito

**Health Canada App |** [Video](https://www.youtube.com/watch?v=rkqStDlyGfs&ab_channel=HarisMalik), [GitHub](https://github.com/asadCoder/Health-Canada-App) **|** Amazon HackTo Submission

* Implemented user and client-side interfaces in Android Studio using Java/Kotlin focused on drastically decreasing wait times by **5x** by introducing centralized health data and records for a more seamless clinic experience
* Currently working on Blockchain integration to store records and increase network security by over **120%**

**Multilayer Perceptron Neural Network**

* Developed Supervised Learning Classification model using Perceptron activation function with binary outputs
* Optimized backpropagation to adjust weighting of inputs and increase accuracy of model by over **150%**
* Tweaked learning rate to find optimal balance between training time and accuracy using mean squared error

**Academic**

* **Voting Theory:** Programmed 6 voting systems to study their diverse effects on elections using Python
* **Movie Database:** Programmed a movie review database in C using Visual Studio inspired by IMDB
* **Music Sequencer:** Utilizes Binary Search Trees to store and tune notes adjusting pitch and frequency of music

**Activities**

**Learn AI Associate, UofT AI**  Jan 2022 – Present

* Aided in the organization and development of the [Learn AI](https://www.uoft.ai/) course teaching AI concepts and frameworks (e.g. TensorFlow, PyTorch) as well as important algorithms to over **600** undergraduate students

**Member, UofT Machine Intelligence Student Team** Sep 2022 – Present

* Aided in [NumerAi Quant](https://utmist.gitlab.io/projects/numerai/) project by providing backtesting strategies to avoid overfitting and survivorship bias
* Provided insight into strategies utilizing options and implied volatility to leverage position by up to **10x**