Muhammad Haris Idrees

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Education

University of Toronto — **Graduated: June 2024**

Honours Bachelor of Science in Computer Science and Mathematics — *CGPA: 3.68/4.00*

Coursework: Data Structures and Analysis, Algorithms, OOP, Databases, Systems Programming, Machine Learning, Neural Networks, Deep Learning, Data Analytics, Linear Algebra, Machine Vision, Calculus, Statistics, NLP, LLMs.

Technical Skills

Languages/Database: Python, Java, C, SQL, Bash, JavaScript, Typescript, React, CSS, Haskell, Racket, LaTeX, R
Technologies/Framework: Linux, Unix, Windows, Github, Pandas, Numpy, Keras, Scikit Learn, PyTorch, TensorFlow, Node.js, AWS, Azure, Google Cloud, Tailwind
Software & Tools: PyCharm, Google Colab, VS Studio, IntelliJ, Firefox, IDLE, Eclipse, Ubuntu, Git Bash, PowerShell
Soft Skills: Communication, Teamwork and Collaboration, Problem-Solving, Attention to Detail and Time Management

Projects

Spongebob Script Generation | *Python, RNN, NumPy, PyTorch, TensorFlow* — **February – April 2023**
- Pre-processed 393 SpongeBob episode scripts by cleaning and filtering, then divided them into 60-20-20 split for Training, Validation, and Test sets - using NumPy.
- Implemented an LTSM network model that generates SpongeBob scripts given a starting word and length.
- Tuned hyperparameters such as learning rate, weight decay, batch size, and epochs to achieve a training accuracy of 38 % and validation accuracy of 29 %, achieving fair results.

Image Classification | *Python, Machine Learning, NumPy, Pandas* — **October – December 2022**
- Pre-processed data from student surveys that describes three images – using Pandas and NumPy
- Implemented and explored various model options such as Naive Bayes, kNN, clustering, and decision trees
- Developed Naive Bayes model to predict an image based on attributes such as written descriptions.
- Tuned hyperparameters of Naive Bayes model and obtaining a 92% validation accuracy

Video Game Digital Distribution System | *Java, OOP* — **March – April 2021**
- Constructed back-end of a digital distribution system using OOP techniques, that allows users to buy/sell games.
- Designed to work alongside a theoretical front-end interface that provides the back-end with daily transaction text files.
- Worked in a team of four software engineer students using the Agile methodology adapted from SDLC and UML diagrams, to conduct planned sprints and create a product backlog of scrum data.

American Sign Language | *Machine Vision, Python, Jupyter Notebook, CNNs, PyTorch* — **Febuary – March 2023**
- Developed a convolutional neural network to classify American Sign Language hand gestures (A-I) from images
- Preprocessed and loaded image datasets using torchvision ImageFolder class
- Designed and implemented an end-to-end machine learning (ML) pipeline, building and training CNN architectures with and without batch normalization, achieving 72% validation accuracy.
- Applied transfer learning with pre-trained AlexNet for feature extraction, improving classification performance.

Experience

UofT Department of Mathematical and Computational Sciences — **August 2023 – April 2024**

Teaching Assistant — *University of Toronto Mississauga*
- Led tutorials and office hours for 1500 students enrolled in Introduction to Mathematical Proofs and Integral Calculus courses, demonstrating strong communication skills by effectively explaining complex mathematical concepts and fostering an engaging learning environment.
- Collaborated with TAs and Professors to grade assignments and provide lecture support on topics related to Mathematical Proofs, developing teamwork and collaboration skills by sharing responsibilities.
- Invigilated and scanned exams, tests, and quizzes with instructors of both courses, exhibiting organizational skills and the ability to follow procedures meticulously.

SRHacks — **April 2023 – June 2024**

Education Mentor and Judge — *University of Toronto Mississauga*
- Led office hours to help students with their coding & engineering competition.
- Hosted interactive workshops to help students learn fundamental coding principles and engineering skills.
- Collaborated with a team of judges to grade student's submitted final projects.

Awards & Certifications

- Dean's List University of Toronto Mississauga — **December 2023**
- Learning Excellence Award in Introduction to Computer Science — **May 2021**
- University of Toronto Mississauga Entrance Scholarship $2000 — **September 2019**
- Ontario Scholar Certificate — **June 2019**