

YAWAR ASHRAF

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Education

University of Toronto

BASc in Engineering Science, Major in Machine Intelligence, Minor in Robotics

Sep. 2019 – May 2024

Toronto, Ontario

Experience

AMD

Memory Validation and Design Intern

May 2022 – April 2023

Markham, Ontario

- Setup and executed stressful memory tests and performed careful **GDDR6** chip tuning from multiple memory vendors based on a deep analysis of characterization results.
- Designed and Developed multiple **memory, bandwidth and power measurement** analysis tools that reduced processing time of key tasks by **40%-symbol** and saved over 80+ hours every month.
- Conducted an internal study on GDDR6 memory devices using an oscilloscope, performing Spread Spectrum and Jitter analysis, which informed design considerations for GDDR7

Typebrite Inc.

Co-Founder and Chief Technical Officer

February 2023 – Present

Oakville, Ontario

- Led multiple client engagements, successfully secured an enterprise client contract worth over **35,000 CAD** for API documentation & developer environment solutions tailored to enhance **developer workflows & client engagement**.
- Steered Typebrite to specialize in transforming raw APIs into engaging documentation using **Large Language Models** and git styled streamlined developer workflows and collaborative documentation generation.

Networks Lab @ UofT

Research Intern

May 2021 – August 2021

Toronto, Ontario

- Received a **2021 NSERC award** for Summer Research. Designed, built and tested a power-saving circuit that was designed to allow for **6-12 months** of Long Range communication with no more than 2 AA batteries.
- Contributed to the development and testing of a multi-hop self organizing **LoRa 32u4** network for surveying and collecting waterfall data across a village in Mexico to help design and install rain water collection systems.
- Designed and built outdoor electronic circuit enclosures in compliance with IP65 waterproof rating. Prepared detailed enclosure and circuit design documents for replicability and to be implemented in Mexico.

aUToronto

Software Engineer, Simulation and Deep Learning Acceleration Team

January 2021 – April 2022

Toronto, Ontario

- 1st Place Winner of **2022 SAE Autodrive Challenge II**.
- Engineered a noise modeling technique to enhance the car's camera functionality, enabling accurate mapping from noisy to clean images via a **Denoising Convolutional Neural Network (DnCNN)**.
- Addressed the extensive data requirement for training the **DnCNN** by custom-building a **Generative Adversarial Network (GAN)**, which successfully generated real-world noise models, markedly improving the performance.

Projects & Research

Multi-Robot Coordination for Urban Search for Missing Person Thesis | Paper

September 2023

- This research focuses on using a decentralized market-based **task allocation** algorithm to optimize trajectory planning for a heterogeneous Multi-Robot System while leveraging a dynamic probabilistic model.

Motion Planning for Autonomous Vehicles | CARLA, SciPy, OpenCV

November 2021

- Developed autonomous vehicle stack that includes state estimation, localization, visual perception and motion planning.
- Implemented a hierarchical motion planner to navigate through real world scenarios modeled in the CARLA Simulator.

Sentiment Driven Market Forecasting AI | PyTorch, RNN, LSTM, Sci-Kit Learn, TF-IDF

April 2022

- Parsed over 1.6M tweets and implemented a NLP pipeline along with VADER sentiment results to classify tweets.
- Key indices and S&P500 data was used to augment the existing model using **LSTM** blocks in a **RNN** architecture.

Early Detection of Invasive Ductal Carcinoma | Deep CNN, TensorFlow

April 2021

- Implemented a Convolutional Neural Network architecture using an attention enhanced AlexNet architecture to parse over 500,000 Breast Histopathology images for early detection of Invasive Ductal Carcinoma (IDC).

Extracurricular & Certifications

- **Squash Athlete:** Part of UofT Varsity team for 5 years; Received **Bronze-T award** for exceptional athletic performance; Highest Canadian **Men's Under 23 Ranking of 38**.
- **Self-Driving Car Specialization:** Completed the 4-course *Coursera* Specialization offered by UofT.

Technical Skills

Languages: Python, C, C++, MATLAB, Verilog, HTML/CSS, PostgreSQL, ROS, Java, JavaScript, .NET

Technologies/Frameworks: Spring Framework, JAX, Jenkins, Microsoft Azure, Docker, Selenium, Flask, React, AWS