

Darsh Shah

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Education

University of Waterloo

Sept 2023 – Present

Bachelor of Software Engineering, Co-op

Waterloo, ON

- Guo Family Engineering Scholarship and President's Scholarship of Distinction
- Relevant Coursework: Data Structures and Algorithms (C), Data Abstraction and OOP (C++), Sequential Programs (C++), Methods of Software Engineering, Linear Algebra, Linear/Digital Circuits, Computer Architecture

Experience

Wealthsimple

Jan 2025 – Apr 2025

Data Science Intern

Toronto, ON

- Crypto team

Wat Street

Sep 2024 – Present

Quantitative Developer

Waterloo, ON

- Researched implied volatility forecasting and applications using derivatives pricing under the Black-Scholes model
- Validated a custom mean reversion model on the algorithmic trading team using a local backtesting platform
- Designed a CNN for digit classification, trained on the MNIST dataset of **60,000 samples**, achieving **97% accuracy**

ComputerTalk

May 2024 – Aug 2024

Software Developer Intern

Toronto, ON

- Created a client reporting system that logs message and call history with Angular and C#, improving data accessibility
- Resolved critical bugs on the Journal page related to file hierarchy parsing, correcting the display of LOB entries
- **Generated reports 22% faster** by replacing SAP with Telerik UI, upgrading the company-wide reporting architecture

UW Orbital

Apr 2024 – Present

Firmware Developer

Waterloo, ON

- Executed a thermal management task in C using a queue to prioritize cooling actions based on real-time sensor inputs
- Implemented interrupt-driven overheat shutdown with the LM75BD sensor, triggering safety protocols to prevent damage
- Decreased **task execution time by 30%** using FreeRTOS to schedule firmware tasks for concurrent sensor data processing

Projects

Vibe | *Audio-based Mood Detection Platform for Personalized Music Suggestions*

- Built an audio-based emotion detection platform that provides mood-specific music suggestions using the Spotify Web API
- Trained a MLP neural network on an AI-augmented dataset of **10,000+ points**, mapping speech features to music genres
- Designed a multi-variable scoring algorithm to rank songs by mood likeness, boosting recommendation **accuracy by 25%**
- Launched a full-stack application with Spotify authentication and playlist read/write access, displaying results in real time

Trader Dashboard | *Full-stack Dashboard for Trading and Market Monitoring*

- Predicted potentially misvalued stocks using historical correlation in the J.P. Morgan Software Engineering Experience
- Displayed clear and visually appealing live graphs using the Perspective library to display data for traders to monitor
- Developed a data processing pipeline using Python and Pandas, resulting in efficient analysis of large financial datasets

DetectGPT | *Reverse-engineered GPT-generated text identifier*

- Developed a LLM-content detector, incorporating NLP techniques to detect AI-generated text with **87% accuracy**
- Calculated sentence perplexity by comparing GPT-2 next-word predictions with inputted text to quantify text variability
- Evaluated burstiness by calculating perplexity deviation across sentences, reducing **detection error by 21%**

Skills

Languages: Python, JavaScript/TypeScript, C++, C, C#, SQL, HTML/CSS

Frameworks/Libraries: React.js, Angular, ASP.NET, MongoDB, Node.js, Flask, OpenCV, NumPy, TensorFlow, Bootstrap

Tools: Git, Bash, Docker, Azure, GraphQL, MySQL, Figma, Jupyter Notebook, Firebase, Arduino, FreeRTOS, Linux