

Tirth Patel

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Education

University of Waterloo

Waterloo, ON

Bachelors of Computer Science, Minor in Statistics

2023-2027

Relevant Coursework: Data Structures and Algorithms, Object Oriented Programming, Computer Organization and Design, Multi-variable Calculus, Statistics

Technical Skills

Languages: Python, C, C++, HTML, CSS, JavaScript, Typescript, Bash, SQL, Swift, Matlab

Frameworks: PyTorch, Tensorflow, OpenCV, Keras, Selenium, Flask, React.js, Node.js, Next.js

Tools: AWS (Redshift, S3, Lambda, EC2, Glue), Docker, Kubernetes, MongoDB, Postgres, MySQL

Experience

Ontario Ministry of Health

May 2024 – Aug 2024

Software Developer Intern — Data Tools team

- Optimized MOH's Redshift **file loading script** using Glue, reducing **load time by 65%** and increasing file size limits.
- Engineered a solution that **cut DB monitoring latency by 10x**, by distributing operations across Redshift nodes.
- Streamlined file upload times **by 45 seconds per file** for business partners by deploying a web app on an EC2 instance with **integrated Lambda functions**.

University of Waterloo Formula Electric

January 2024 – Current

Firmware Engineer

- Created **HIL tests** using Python to validate electric car components and determine expected behavior.
- Conducted in-depth examination of **C firmware code** and schematics to create comprehensive documentation.
- Worked collaboratively with peers to program an LED panel using an **STM32 microcontroller** in C.

Nuvei

May 2023 – Aug 2023

Software Engineering Intern — Automated Risk Assessment team

- Implemented a **decision tree model** that streamlined client risk evaluations, reducing manual decision time **by 40%**.
- Accelerated large risk assessments by **25%** by revamping **MongoDB database design** to improve data structure.
- Crafted **enhanced test cases** for the risk assessment model, improving model reliability and accuracy assessments.

Projects

ForexTrading | *Python, Tensorflow, Keras, PyTorch, OandaAPI*

- Engineered and trained a **Deep Neural Network binary classification model** on 40,000+ data-points with **binary cross-entropy loss and sigmoid activation** for Forex market prediction.
- Leveraged grid search with **StratifiedKFold cross-validation**, resulting in a **3%+ improved prediction accuracy**.
- Implemented **vectorized and iterative backtesting** classes to test 10+ financial strategies on financial instruments.

TV Reference Cyclic Paradox Finder | *Python, Typescript, React.js, HTML/CSS*

- Utilized **TMDB API** and a **Depth-First Search algorithm** to identify **cyclic references** between TV shows.
- Increased algorithms capacity to handle **250% more data points** while maintaining optimal search performance.
- Developed and deployed a react web application to visualize TV show references and paradoxical connections, **implementing graph theory to render interactive graphs** that reveal the paradoxes.

Basketball Form Corrector | *Python, Sci-Kit Learn, Pandas, Numpy, OpenCV*

- **Generated, processed and normalized** data of the different angles when someone shoots a basketball.
- Created a **KNN model** from the ground up to **classify** the most important characteristics of the persons shot.
- Presented an accurate recommendation to the user using **statistical analysis** based on the determined characteristics.