Tirth Patel

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Education

University of Waterloo	Waterloo, ON
Candidate for Bachelors in Computer Science, **3.5 GPA**	Sept 2023 - May 2027

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

Technical Skills

Languages: Python, C/C++, HTML/CSS, JavaScript, Typescript, Bash(Linux), SQL, Swift

Developer Tools: VS Code, PyCharm, Git, AWS Redshift, Lambda, EC2, Glue, Sagemaker, PowerBI

Frameworks: PyTorch, SciKit-Learn, Tensorflow, OpenCV, Pandas, Selenium, Flask, React.js, node.js

Experience

Software Developer   **May 2024 – Current**
Ontario Ministry of Health - Corporate and IT Solutions Division   *Toronto, Ontario*
- Incorporated **python to create scripts in AWS glue** that assisted in the **migration of data** to **redshift clusters**.
- Developed a web-appl hosted on an **EC2 instance**, integrating Lambda functions for **automated data processing**.
- Wrote comprehensive **unit tests** for multiple scripts, ensuring reliable performance in a **production environment**.

Firmware Engineer   **January 2024 – Current**
University of Waterloo Formula Electric   *Waterloo, Ontario*
- 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 identify source variables and functions.
- Worked collaboratively with peers to program an LED panel using an STM32 microcontroller, utilizing C programming.

Full Time Volunteer   **June 2023 – September 2023**
BAPS Akshardham   *Robbinsville, New Jersey*
- Joined the volunteer force to help build the largest Hindu temple in the world located in New Jersey, built using over 2 million cubic feet of stone, and 300,000 individual stones.
- Helped create a **MERN stack** inventory web-application that increased efficiency in stone transportation by **40%**.
- Worked seamlessly alongside hundreds of other volunteers of varying ages, skill levels and professions.

Projects

ForexTrading | *Python, Tensorflow, Keras, Sci-Kit Learn, Oanda* ⊙
- 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** to optimize hyperparameters such as regularization strength and network architecture, resulting in a **3%+ improved prediction accuracy**.
- Implemented **vectorized and iterative backtesting** classes to test 10+ financial strategies on financial instruments.

TV Reference Cylic Paradox Finder | *Python, Typescript, React.js, HTML/CSS* ⊙
- Utilized TMDB API and a **DFS algorithm** to identify **cylic references** between multiple TV show references.
- Developed 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.

Health Services Website | *Python, Sci-Kit Learn, Pandas, Numpy, Flask, HTML/CSS JavaScript* ⊙
- Developed a web-app where the user receives a severity report of what to do based on chosen symptoms that they have.
- Seamlessly implemented Flask for the backend for a max **15 second response time** on all queries.
- Used a **random forest classifier** model trained on a dataset of 5000 symptom classifications to classify the severity.