Bilal Baig

Software Engineer

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Experience

Software Development Engineer February 2022 – January 2023

Amazon - SCOT - Global Inventory Orchestration *Toronto, ON*

- Worked on services responsible for directing inventory across the world using **Java**, **Typescript** and **AWS Services**
- Designed and led implementation for a state machine workflow to ensure a response was received following requests for allocating **thousands** of items
- Planned and oversaw implementation for operational tools to allow our team to **save 20% of time spent on-call** and **prevent major business impacts** by automating a process to analyze and correct discrepancies between data stores for **millions** of items
- Deep dived and corrected failure points and maintained operational excellence in our services during on-call
- Cooperated with external teams to integrate new business types in our and their services

Projects

Real time Chat App | *GO, React.JS, MongoDB, JS, HTML, SCSS, Redis, Docker*

- Created a real time chat app using **Go** for the backend and **React.JS** for the frontend
- Made use of websockets to allow for instant communication between any number of clients
- Allowed users to speak with large groups of people in public rooms or with a single person in private messages
- Maintained Server and User information using **MongoDB**
- Applied Redis' Publish-Subscribe pattern to allow for asynchronous messaging and to improve performance and scalability

Latent Semantic Analysis | *Python, Jupyter, numpy, scipy, sklearn, matplotlib, LaTeX*

- Produced a Latent Semantic Analysis algorithm for an English Wikipedia dump text corpus of 490,000 documents in **Jupyter**
- Utilized **sklearn** to create a sparse matrix representation of the top 10,000 most frequent words from all 490,000 documents
- Wrote an algorithm to create the Positive Pointwise Mutual information matrix from the sparse matrix of the top 10,000 most frequent words
- Developed a Matrix Factorization algorithm with Stochastic Gradient Descent from scratch using **NumPy**
- Visualized the top 300 most frequent words among 490,000 documents on a 2D graph using **t-SNE**

Simple Tetris | *Python, pygame*

- Created a Tetris clone using **Python** and the **pygame** library
- Developed scoring function to compete with ones self or others.
- Expanded options to let players choose multiple difficulties and a scaling difficulty to allow for the game to be more challenging and less monotone

Technical Skills

Languages: Java, Typescript Python, GO, Haskell, C++, C, JavaScript, HTML, CSS, MongoDB, SQL, OLAP
Developer Tools and Platforms: AWS, Git, Docker, Redis, Netlify, Heroku
Libraries and Frameworks: React.JS, pandas, NumPy, Matplotlib, Selenium, scipy, sklearn, pygame

Education

York University Toronto, ON

Bachelor of Science in Computer Science *Sept 2017 – December 2021*