

# Bilal Baig

## Software Engineer

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### EXPERIENCE

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#### Software Development Engineer

February 2022 – January 2023

*Global Inventory Orchestration - SCOT - Amazon*

*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

### PROJECTS

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

April 2021

- 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*

Sept 2020

- Created Tetris 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.

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

June 2021

- Created a real time chat 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.

### TECHNICAL SKILLS

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**Languages:** Java, Typescript Python, GO, Haskell, C++, C, JavaScript, HTML, CSS, MongoDB, SQL, R, OLAP

**Developer Tools and Platforms:** AWS, Git, Docker, Redis, Netlify, Heroku

**Libraries and Frameworks:** react.js, pandas, NumPy, Matplotlib, Selenium, scipy, sklearn, pygame

### EDUCATION

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#### York University

*Bachelor of Science in Computer Science*

*Toronto, ON*

*Sept 2017 – December 2021*