

# Bilal Baig

## Software Engineer

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### EXPERIENCE

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#### Full Stack Engineer

June 2024 – Present

*Hack For LA (Volunteer)*

*Remote*

- Collaborated with a multidisciplinary team to create a Web Traffic Demand Management tool for the LA Department of Transportation using **React**, **JavaScript**, **MSSQL**, **Express.JS** and **Node.JS**
- **Enhanced UI functionality and User Experience by 30%** by evaluating and migrating to an expanded icon npm package
- Engineered share snapshot functionality by constructing a **database object**, **API endpoints**, and **Stored Procedures** to allow users to control other users' access to view snapshots, improving app functionality

#### Software Development Engineer

February 2022 – March 2023

*Amazon*

*Toronto, ON*

- Developed Event Driven Microservices Architecture using **Java**, **TypeScript**, and **AWS Services**, processing **1000+** of daily global inventory events and ensuring precise inventory levels
- Led initiative to automate correcting inaccurate data in inventory stores using AWS Lambda, S3, and DynamoDB, resulting in the mitigation of business impacts and a **15% reduction in time spent on weekly manual tasks**
- Designed a second iteration of an inventory tracking system, utilizing AWS Step Functions workflow, **enhancing operational accuracy by 40%**
- Mentored junior engineers through 1:1 biweekly meetings, giving suggestions on code structure, clarity, and design, leading to an **overall increase in team productivity and agility**
- Automated cleaning up 100+ weekly log files with CronJobs, mitigating service certificate errors during critical code freeze periods

### PROJECTS

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#### Latent Semantic Analysis | *Python, NumPy, SciPy, Sci-Kit Learn, matplotlib, LaTeX* | [GitHub](#)

- Formulated a Latent Semantic Analysis algorithm for processing a vast text corpus of 490,000 documents
- Crafted a PPMI matrix derived from a sparse matrix representation of the top 10,000 words across all documents
- Built a Matrix Factorization algorithm implementing Stochastic Gradient Descent from scratch using NumPy

#### Crossroads: A Social app | *Swift, SwiftUI, Firebase*

- Lead developer for an iOS social app that connects users with nearby individuals using real-time location data, utilizing Swift, SwiftUI and Firebase
- **Increased app security** by generating and hashing a cryptographically random nonce for authentication requests, mitigating replay attacks
- Added P2P communication using the MC Framework enabling users to privately chat with other nearby users

#### Quotetaking | *Swift, SwiftUI, Core Data, ChatGPT API* | [GitHub](#)

- Created an iOS app to conveniently save quotes from thousands of books using Swift and SwiftUI
- Improved user satisfaction by leveraging OpenAI's ChatGPT API to provide users quote explanations and context
- Enhanced user experience by integrating Vision framework's OCR technology for quick image-to-quote extraction

### TECHNICAL SKILLS

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**Languages:** Java, TypeScript & JavaScript, Swift, Objective-C, SQL, Python, Golang, NoSQL, Haskell, C++

**Developer Tools and Platforms:** AWS, Git, Docker, Redis, MongoDB

**Libraries and Frameworks:** SwiftUI, Core Data, React, pandas, NumPy, Matplotlib, Selenium, SciPy, Scikit-Learn

### EDUCATION

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#### York University

September 2017 - December 2021

*Bachelor of Science in Computer Science*

*Toronto, ON*

Courses: Database Systems, Big Data Systems, Data Mining, Machine Learning, Digital Audio Design, 3D Computer Graphics

### HOBBIES & INTERESTS

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Motorcycles & Cars, Philosophy, Fitness, Literature, Playing guitar & piano, Video Games