

Ahnaf Tajwar

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Education

Boston University

M.S. Software Engineering, *College of Arts and Sciences*
B.S. Mechanical Engineering, *College of Engineering*

May 2024, GPA: 3.9/4.0

May 2021, GPA: 3.8/4.0, Dean's List

Relevant Coursework: Data Science, Software Engineering, Software Design and Patterns, Advanced Programming Techniques, Data Structures and Algorithms, Mobile App Development, Web App Development, Information Structures with Java, Product Design

Skills: Python, TypeScript, Java, Kotlin, C, C++, HTML, CSS, JavaScript, Next.js, React.js, Node.js, Flask, Android Studio, Selenium, SQL, PostgreSQL, Apache Spark, Databricks, Microsoft Azure, Kubernetes, AWS, S3, ETL, Pandas, NumPy, scikit-learn, OpenAI API, Git, *English, Bengali, Spanish, SAFe 5 Practitioner*

Work Experience

General Motors

Warren, MI

Software Engineer - AI/ML Mapping Software

Feb 2023 – Current

- Developed software to process **several hundred terabytes** of data to be used in map creation for autonomous vehicles and **deep learning models**, enhancing data processing speed and accuracy using **Python** and **Apache Spark**
- Identified **geospatial** locations lacking cellular coverage using vehicle telemetry data and produced **Mosaic** visualizations covering **all of North America**, resulting in improved customer experience
- Rearchitected map matching pipeline by persisting redundant data and queries to **Hive**, reducing run time by **40%**
- Refactored data ingestion **ETL pipelines** to perform appropriate transforms and **automate delivery**
- Optimized key mapping algorithm using **graph theory** for assigning critical map components with **100%** coverage
- Created **unit test** suites deployed through **GitHub Actions** improving **CI/CD** and achieving **85%+** line coverage
- Leveraged backend and data processing tools such as **Kubernetes, Amazon S3, Databricks, and Microsoft Azure** for data transformations, automating workflows, data visualization, scaling on the cloud, and distributed systems

Software Engineer - Android Embedded Developer

June 2022 – Feb 2023

- Developed embedded vehicle camera software using **C++** to automate displaying error views when errors occur
- Optimized vehicle cluster test application to provide a comprehensive simulation of camera views
- Tested on in-vehicle displays and hardware to simulate customer experience and identify/resolve **software defects**
- Fixed over **100 Parasoft** violations, resulting in cleaner and more robust code

Software Integration Engineer - Software Features Integration

February 2022 – June 2022

- Tested Access and Security features in various vehicle programs accounting for every potential user case
- Root caused Diagnostic Trouble Codes that arise after testing by understanding the software architecture
- Created technical documentation and opened change requests to present to stakeholders

Project Engineer - Seat Components

June 2021 – February 2022

- Designed a parameterized snap in NX that automatically generates an optimal design given user desired parameters
- Created a Design for Six Sigma design process and compiled a catalog of potential product designs

Projects

Fireside Chatbot

Aug 2024 – Aug 2024

- Created an **AI-powered** customer service **chatbot** using **NextJS, React, Node.js, and MaterialUI**
- Leveraged **Langchain** and **Pinecone** to embed and retrieve user queries. **Groq** used for the **llama3.1-8b LLM**

Pantry Tracker AI

July 2024 – July 2024

- Created an inventory tracker app using **Next.js** and **React**, allowing users to upload items to a list stored in **Firebase**
- Integrated an **AI vision** model using the **OpenAI API** to classify user-captured images into an item
- Implemented **CRUD** functionality and local **camera integration**, designed with **Material UI** components

Tweet Sentiment Analyzer

April 2024 – May 2024

- Created a sentiment analysis tool that determines the sentiment of text using multiple **NLP machine learning** models
- Implemented Logistic Regression, Bernoulli Naive-Bayes, and kNN algorithms for a binary label classification
- Preprocessed data to filter out non value added characters and optimized results using a **TF-IDF** vectorizer
- Fine-tuned models' hyperparameters using **GridSearchCV**, achieving highest accuracy of **80%**

GearOnTheGo

Sep 2023 – Oct 2023

- Created a **CRUD** equipment rental web app using **Flask** and **React**, allowing the user to both host and rent equipment
- Led the User Login, Registration, and Security features implementation for backend development all within a clean **UI**
- Implemented unit and automated tests using **Selenium** achieving **100%** of code coverage
- Utilized **PostgreSQL** hosted on **ElephantSQL** as a database to store information on items, users, and reservations