

Mohammad Hamza Asif . Jarvis Consulting

I am an Ontario Tech University alumnus with a B.Eng. (Honours) in Software Engineering. During my studies, I gained hands-on experience as a Software Engineer Intern at Bell Mobility, where I led optimization projects and implemented automation solutions to enhance system efficiency using Alteryx and cloud computing, collaborating with the IT team to schedule tasks. I worked closely with cross-functional teams, including data science, software development, and machine learning experts, to develop machine learning models that significantly improved customer acquisition strategies. My expertise spans cloud computing, data management, and AI-driven analytics, and I am passionate about driving innovation in large-scale automation and predictive technologies. In my free time, I enjoy playing chess and staying active.

Skills

Proficient: Java, Python, C++, SQL, Docker, Kubernetes, Git, Maven, Agile/Scrum, Alteryx

Competent: AWS, Google Cloud, Spark, Hadoop, Hive, JavaScript, React

Familiar: C#, Scala, Swift, PHP, HTML, CSS, Mobile Development

Jarvis Projects

Project source code: https://github.com/jarviscanada/jarvis_data_eng_MohammadAsif

Linux Cluster Resource Monitoring App [GitHub]: Developed a solution to monitor cluster nodes by using Bash scripts to collect hardware specifications and real-time resource usage data (CPU, memory, disk). The data was stored in a PostgreSQL database running in a Docker container. To ensure continuous data collection, the host usage script was automated using cron, executing every minute. This application is useful for system administrators to track and manage system performance across multiple nodes, enabling proactive maintenance and resource optimization by providing insights into hardware usage data to prevent potential bottlenecks.

Core Java Apps [GitHub]:

- **Grep App:** Developed a Java application replicating the functionality of the grep command used in Linux systems. The application scans files in a specified directory for matches to a given regex pattern and outputs these matches to an output file. To optimize memory consumption, Java Streams were utilized, enabling efficient storage of data during intermediate operations and supporting aggregate functions. The application is packaged with Maven and containerized using Docker.
- **JDBC App:** Designed and implemented a Java stock trading program that emulates real-time stock trading using the Alpha Vantage REST API for live data. Executed via the command line, it allows users to buy, sell, and manage stocks, with holdings stored in a PostgreSQL database. Utilized JDBC with a PostgreSQL driver for database operations and applied DAO and Repository design patterns for maintainable code.

Python Data Analytics [GitHub]: Developed a PoC for a UK-based online giftware retailer, London Gift Shop (LGS), using Python, Pandas, NumPy, and Matplotlib to analyze historical data. Identified sales trends, customer behavior, and seasonal patterns through data wrangling. Implemented RFM segmentation to enhance targeted marketing and optimize revenue growth. Performed cohort analysis to track customer retention over time. Visualized key insights using Matplotlib to support data-driven decision-making.

Hadoop [GitHub]: Developed a big data processing solution using Google Cloud Platform (GCP) Dataproc to analyze large datasets efficiently. The project leveraged Apache Zeppelin as an interactive data analytics environment and utilized the Hive interpreter for SQL-based querying on distributed data. This solution enables scalable data processing and real-time analytics, making it suitable for enterprise-level big data applications.

Highlighted Projects

Adaptive Cruise Control: Developed software for autonomous vehicles to utilize LiDAR and depth camera sensors for mimicking adaptive cruise control functionality, including vehicle platooning (grouping) to optimize lane usage on highways and other real-road scenarios. Sensor data was processed through a computer vision model to estimate distance and classify obstacles, which was then fed into a neural network model for optimizing decision-making. The system was built on ROS2 and Autoware, leveraging a publish-subscribe (pub-sub) algorithm for inter-node communication within the simulation environment.

P2P Social: A decentralized social network distributed across multiple devices using blockchain technology, ensuring content is secure, immutable, and free from centralized control. Networking within P2P Social is handled using Java NIO TCP connections. Upon starting the daemon, each node is assigned a listening socket for managing incoming connections, which allows other nodes to send updates regarding new nodes, blockchain changes, and more. The network leverages asymmetric encryption to validate post integrity and offers true end-to-end encrypted private messaging. It also ensures network availability even if individual nodes fail. Administrators can extend the platform with new features as blockchain-based blocks, allowing seamless software updates without the need to create separate networks. Additionally, the design decouples the network from user interfaces, enabling custom interfaces on mobile, desktop, or command line platforms.

Professional Experiences

Junior Software Engineer, Jarvis (Sep 2024 - Present): Led the development and optimization of data pipelines using Apache Spark and Google Cloud Platform (GCP), ensuring efficient data processing and high data integrity. Implemented scalable ETL solutions to manage large datasets, collaborating with cross-functional teams to drive business insights. Developed and maintained cloud-based data storage solutions using PostgreSQL and Hive, applying data manipulation techniques for enhanced query performance. Automated data workflows and containerized applications using Docker, streamlining operational processes and ensuring seamless data deployment. Monitored cluster performance and implemented proactive solutions to minimize downtime. Delivered actionable insights by leveraging Spark SQL for large-scale data analysis, contributing to data-driven decision-making across the organization.

Software Engineer Intern, Bell Mobility (May 2022 - Aug 2023): Led the research and development of optimization strategies for propagation models, significantly improving mobility prediction accuracy through analytical techniques and effective cross-functional collaboration. Developed and implemented automation tools using Alteryx, cloud computing, and Python, streamlining operations and ensuring high data integrity, which enhanced wireless network predictions. Co-developed a machine learning model for optimizing customer acquisition strategies with predictive analytics. Worked on various development projects, utilizing Python and C#, and collaborated closely with IT to develop and maintain automation scripts that improved overall operational efficiency.

Education

Ontario Tech University (Sep 2019 - Apr 2024), Bachelor of Engineering (Software Engineering), Software Engineering - 2021, 2023 President's List - 2022, 2024 Dean's List

Miscellaneous

- AWS Certified Cloud Practitioner
- AWS Cloud Essentials
- Playing chess
- Weightlifting