Vimal Makenthirarasa . Jarvis Consulting

I am a recent graduate from the University of Western Ontario, and a current part-time Masters student at the Georgia Institute of Technology (remote), working towards a Masters degree in Computer Science with a specialization in Machine Learning. My academic experience has provided me with an extensive understanding of programming and proper software development practices, including writing clean code and efficiently debugging issues to provide high quality software solutions to suit clients' needs. In terms of professional experience, I have worked as a Web Developer for the University of Western Ontario, working on real-time management of a dynamic website, ensuring up to date information delivery and a seamless user experience. I also worked as a Software Developer for LingoThyme Inc., an EdTech startup company created to help users learn languages in a collaborative environment. During my time at LingoThyme Inc., I played a pivotal role in building the company's full-stack collaborative learning platform and developed several key features including the implementation of live data synchronization between users with optimized socket functionality and the creation of multiple custom responsive web pages to deliver a satisfying user experience.

Skills

Proficient: Java/Spring, Python, JavaScript, Linux/Bash, RDBMS/SQL, Agile/Scrum, Git

Competent: Docker, React (MERN), Pandas, Flask, HTML/CSS

Familiar: C/C++, Angular, Google Cloud Platform (GCP), Pytorch, Matplotlib

Jarvis Projects

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

Linux Cluster Monitoring Agent [GitHub]: Designed, implemented, tested, and deployed a Linux cluster monitoring agent to gather and monitor hardware specifications and real-time resource usage of a Linux cluster. Created Bash scripts to automate processes for creating, starting, and stopping the Docker container used for the PostgreSQL instance, as well as to automate creation of PostgreSQL database tables. Populated database tables with hardware specifications and resource usage data using Linux commands. Automated gathering of hardware specifications and resource usage data by using Cron to schedule running the data collection scripts every 60 seconds and updating the database accordingly. Enhanced system visibility and resource optimization for system administrators to help them make informed decisions on future resource planning.

Grep App [GitHub]: Created a Java application that mimics the functionality of the Linux Grep command by letting users search for specific patterns within files. Given a regex pattern, a directory path, and a specified output file path, the app searches all files in the given directory, creates a list of lines that match the given regex pattern, and writes all matched lines to the provided output file. The Java Grep App implements 2 different approaches. The first approach uses standard file I/O and for loops, which is sufficient for smaller files. The second approach uses Lambda & Stream APIs to increase efficiency when handling larger datasets, requiring much less memory to function properly. The app utilizes core Java libraries for file I/O, SLF4J for logging, Stream API for more efficient memory usage, Maven for dependency management and build automation, and is deployed using Docker.

Stock Quote App [GitHub]: Developed a command-line application to simulate the management of a stock portfolio. Users can retrieve current stock information through the Alpha Vantage API and store this data in a PostgreSQL database using JDBC. They can then simulate buying/selling stocks and view currently held positions. The app utilizes Maven for dependency management, Docker for containerization, Jackson for parsing and serializing between JSON and Java objects, JUnit and Mockito for testing, as well as SLF4J and LOG4J for logging.

Python Data Analytics [GitHub]: Carried out analysis on historical transaction data for the London Gift Shop (LGS) company in order to help LGS gain a better understanding of customer purchase patterns through metrics such as monthly sales, customer activity, and RFM (Recency, Frequency, Monetary) analysis. This analysis is meant to help LGS develop targeted marketing campaigns in order to increase customer engagement and improve revenue growth. The project was built using Jupyter Notebook with Python, PostgreSQL for data storage, and various python libraries such as Pandas for data cleaning and manipulation, Numpy for numerical operations, and Matplotlib for generating graphs.

Highlighted Projects

Stock Analyzer using CART Regression: Conducted an in-depth evaluation of four Classification and Regression Tree (CART) regression algorithms—Decision Tree Learner, Random Tree Learner, Bootstrap Aggregating Learner (Bag

Learner), and Insane Learner—through the design and execution of three targeted experiments using stock data for multiple worldwide indexes. Analyzed the effects of leaf size on overfitting, assessed the efficacy of bagging in mitigating overfitting, and compared decision trees with random trees using innovative performance metrics. Utilized Python, along with Matplotlib and NumPy, to implement the algorithms, perform data analysis, and visualize results. Delivered actionable insights to enhance model generalizability and optimize predictive performance, demonstrating strong proficiency in machine learning techniques and data visualization.

Facial Recognition Based Home Security System: Developed a robust home security system leveraging C++ and OpenCV on a Raspberry Pi platform. Integrated advanced functionalities including facial recognition, object detection, and real-time image processing to monitor live camera feeds effectively. Implemented a Haar Cascade classifier to accurately identify known faces, achieving a 91% accuracy rate, thereby ensuring reliable security monitoring and enhancing user confidence in system performance. Demonstrated expertise in computer vision, embedded systems, and real-time data processing to deliver a scalable and efficient security solution.

Professional Experiences

Software Developer, Jarvis Consulting Group (2024-Present): Worked with a team of Software Developers in an Agile team environment to create several technical projects using the full software development life cycle. Developed and deployed a Linux cluster monitoring agent using PostgreSQL, Docker, and Bash scripting to gather and monitor hardware specifications and real-time resource usage of a Linux cluster. Enhanced system visibility and resource optimization for system administrators to help them make informed decisions on future resource planning.

Web Developer, University of Western Ontario (September 2022 - April 2023): Worked on real-time management of dynamic website, ensuring up to date information delivery and seamless user experience. Developed efficient automation processes to streamline workflow, resulting in 40% reduction in time spent on routine tasks and maintaining consistent updates. Enhanced website usability and boosted user traffic by 25% through implementation of intuitive navigation structures and organization of content for optimal user engagement.

Software Developer, LingoThyme Inc. (May 2021 - August 2021): Played a pivotal role in the development of the company's full-stack collaborative learning platform using React, Express, Node.js, and MongoDB. Took charge of optimizing real-time data synchronization and reducing latency by 33% with Socket.io, significantly improving live collaboration features. Improved user experience through custom web development, leveraging image compression, resource optimization, and asynchronous loading techniques, which led to a 55% reduction in page load times. This project resulted in a 30% increase in engagement metrics during test phases, showcasing the platform's impact on user interaction and responsiveness.

Education

Georgia Institute of Technology (2024-Present), Master of Science, Computer Science(remote, part-time)

University of Western Ontario (2018-2023), Bachelor of Science, Computer Science

Miscellaneous

- Hackwestern 8 - won Best Fintech Hack award among 341 participants
- Used to play competitive League of Legends, ranked in top 0.2% of players, placed high in multiple amateur tournaments
- Member of the Western Strength weightlifting club with the goal of competing in the future