Farnaz Mozaffari . Jarvis Consulting

I recently completed my master's degree in Computer Engineering from the University of Guelph with a focus on AI applications. During my master's studies, I worked with different datasets and developed machine learning and deep learning models mainly in python for various applications such as cybersecurity systems. With my strong background in analyzing and interpreting large datasets and the development of highly accurate forecasting systems, I started my training program at Jarvis Consulting group. Developing various projects at Jarvis led me to become skilled in debugging and increasing code efficiency in SQL and Java Stream APIs as well as gaining a comprehensive knowledge of Linux, Spring framework, and AWS. I am a self-initiated and motivated person with a passion for implementing complex algorithms. Also, I am eager to have a positive impact on business transformation and performance improvement. With my rewarding experience at Jarvis, I am confident I will be a great candidate for Software Development opportunities mainly in the fields of Data and Machine-learning Engineering.

Skills

Proficient: Java, Linux/Bash, RDBMS/SQL, Agile/Scrum, Git, Python, Machine Learning (Linear Regression, Bayesian Network, SVM, KNN, K-means clustering, ANN)

Competent: Springboot, REST APIs, Android App Development, AWS Cloud Development, XML/ HTML5

Familiar: Computer Networking, Hadoop, CSS3, C, C++

Jarvis Projects

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

Cluster Monitor [GitHub]: Built a real-time internal tool that collects and records the hardware specifications and node resource usages, such as CPU and memory information. Stores the collected data in a locally hosted PostgreSQL database, which is provisioned by docker containers. Implemented by using Bash Scripts and PostgreSQL.

Core Java Apps [GitHub]:

- Twitter App: Implemented Twitter CLI application that interacts via Twitter REST API by forming arguments into HTTP requests. Enables users to create a tweet with a geotag and output the created tweet object in JSON format. Through this minus V based application, looking up or deleting a tweet by ID can be achieved.
- JDBC App: Developed JDBC based application that acts as a bridge between the RDBMS and the Java application. Allows users to connect to PostgreSQL and perform CRUD operations (Create, Read, Update, Delete).
- Grep App: Designed Java 8's Stream APIs based application that utilizes pattern matching methods. Searches recursively through all the files in a directory for the lines that match the provided regular expression. Outputs the matched lines into a new file.

Springboot App [GitHub]: Developed a three-tier Microservice REST API based application, which provides an online trading platform to sell or buy stocks. The application gathers market information from IEX Cloud and persists the gathered data in a local PostgreSQL database. Springboot framework is utilized for dependency management in this project.

Hadoop [GitHub]: In Progress

Spark [GitHub]: In Progress

Cloud/DevOps [GitHub]: Deployed the Springboot trading app on the Amazon Web Services (AWS) cloud making it scalable, elastic and highly available. The AWS tools that are used in this project are: Elastic Cloud Compute(EC2), Amazon Relational Database Service (RDS), and AWS's Elastic Beanstalk (EB). Built DEV and PROD environments as well as created CI/CD pipeline using Jenkins and Elastic BeanStalk to automate and fasten the deployment life cycle.

Python Data Analytics [GitHub]: Designed a PoC to solve business problems of a sales company by using Python, Jupyter Notebook, Pandas Dataframe, and Numpy as the main tools. Presented solution reports by using table and plots. RFM segmentation is perormed to categorize the customers into different segments based one their interactions and having the ability to improve the sales revenue.

Highlighted Projects

Cyber-Attack Classification with Machine-Learning and Deep Learning: Developed SVM, Naive Bayes, and Neural Networks algorithms for anomaly detection in power systems. Compared the performance of each method in terms of F1 score, accuracy, and computational time. Deployed ANN algorithm pertaining to an F1 score of 96 percent and an accuracy of 94 percent.

Android Mobile Application: Designed and developed core features for online tutorial Android applications using Java and XML.

Embedded Design by Using HPS and FPGA Hardware Coprocessor: Implemented AES algorithm using HDL on DE1-SoC board

Real-Time HW/SW Integration for an Embedded Controller System: Programmed ARM STM32 board in C and implemented a real-time operating system based controller on the STM32 board for controlling the plant temperature.

Rowhammer Attack detection and prevention: Predicted and prevented Rowhammer attacks exploiting hardware vulnerabilities by developing pattern recognition models in Python.

Real-Time home security systems: Developed real-time application that relates to "Home-security" by using uc/os- III. The app performed 3 concurrent tasks with unique priorities. 1)Detecting 'intruder' with PIR motion sensor 2)Triggering camera capture if motion is detected 3) Sending alerts. Real-time analysis was recorded for evaluating the performance of the application.

Professional Experiences

Software Developer, Jarvis (2020-present):

- Developed, managed ,and tracked project plans to implement requested features in a timely manner at the discretion of the product owner.
- Responsible for implementing unit testing frameworks (JUnit and Mockito) leading to successful validation of application deployment.
- Assisted the project team in identifying code errors and providing methods for resolving issues.
- Reported progress to the team members through Sprint Retrospective

Machine-Learning Researcher, Smart Cyber-Physical System Lab (SCPS), University of Guelph (May 2019 - Feb 2020):

- Conducted scientific research in areas of Machine-learning and Artificial Intelligence for anomaly detection in cyber-physical systems.
- Deployed machine learning pipelines: dimensionality reduction, feature extraction, data integration, data mapping, and algorithm development.
- Developed highly accurate Artificial Neural Network in the TensorFlow framework to predict and prevent cyber attacks.
- Collaborated with an engineering team to work on real-life smart grids' systems datasets driven from Mississippi State University

Graduate Teaching Assistant, University of Guelph (Sep 2019 - Dec 2019):

- Performed all teaching assistant duties for 3 undergrad courses: (ENGG3050) Embedded Reconfigurable Computing Systems, (ENGG2410) Digital Systems Design, (ENGG*3410) Systems and Control Theory.
- Supervised laboratory. Demonstrated lab equipment functions and reviewed lab results.
- Assisted and mentored 200 students in either group or on an individual basis.
- Individually held weekly tutorial sessions

Hardware Service Engineer, Hamianfan Company (Aug 2016 - Dec 2017):

- Conducted technical quality control for electronic units prior to commercial distribution.
- Worked on placing and rooting high-speed multi-layer circuit boards.
- Collaborated with hardware engineers to design flex circuits from concept phase to mass production

Education

University of Guelph (2018-2020), Master of Engineering, Computer Engineering

Azad University (2011-2016), Bachelor of Engineering, Electrical and Computer Engineering

Miscellaneous

- Neural Networks and Deep Learning- deeplearning.ai (2020)
- Python for Data Science and AI - IBM (2019)
- Machine Learning - Stanford University (2019)
- Web Design - Tehran Institute of Technology (2018)
- FPGA - Tehran Institute of Technology (2016)
- AVR microcontroller - Tehran Institute of Technology (2016)
- Learning Based Anomaly Detection in Critical Cyber-Physical Systems, Springer Book, July 2020