John Liu

liuyuhengs@gmail.com | +1 (403) 383-6907 | JohnlLiu | John Liu | Portfolio

Skills

Languages Python, C++, Java, SQL, JavaScript
Libraries/Tools PyTorch, Keras, LangChain, Scikit-Learn, Pandas, PyTest, AWS, Docker, Kubernetes, Git, Unix
Competencies Data & Quantitative Analysis, Deep Learning, Supervised/Unsupervised Learning, Reinforcement Learning, NLP, Predictive Analysis/Modeling

Experience

Boeing | **Software Engineer** *Feb 2024 – Present*

- Developed and maintained a client-tailored scheduling and logistics optimization application using Python and proprietary languages through continuous integration and delivery (CI/CD)
- Wrote and delivered scalable, well-tested code with a focus on maintainability and performance, leveraging best practices in version control and automated testing using, PyTest, Gherkin, and Git
- Built a Retrieval-Augmented Generation (RAG) LLM system using LangChain and Hugging Face models to improve search and retrieval across internal proprietary knowledge bases
- Acted as a key point of contact for clients, delivering fast, effective solutions while fostering strong relationships through clear communication and collaborative problem-solving by translating technical concepts into business value

MIT-PITT-RW | **Software Engineer** *Jul 2022 – Nov 2023*

- Created a Python application for generating race lines and velocity profiles for an autonomous racecar, enabling high-speed maneuvers (150+ mph) in competitive self-driving events
- Designed a streamlined data pipeline for seamless integration of large data, allowing for efficient race line and velocity profile generation and created interactive graph UIs using Plotly for enhanced data visualization and user-friendliness
- Developed collision checking and path cost function scripts in C++ as part of a vehicle path prediction controller, resulting in improved autonomous pathing decisions

Wyheng Technologies Ltd. | **Software Developer** *Sep 2020 – Aug 2021*

- Automated performance calculations for oil and gas piping equipment using Python, accelerating preliminary calculations by 30%, and built an ETL pipeline with Pandas to streamline production data processing and improve analysis workflows
- Conducted rigorous software testing and refactored legacy code to enhance reliability and performance, achieving a 20% improvement in software speed and overall productivity.

Projects

Receipt/Document Tracker (OpenCV, Flask, MongoDB, PostgreSQL, AWS) *Oct 2023 – Jan 2024*

- Engineered and deployed a robust receipt management system using Python, Flask, and AWS, incorporating a custom-built OCR (optical character recognition) service for accurate text extraction from images and documents
- Utilized PostgreSQL to store user login information and MongoDB as a persistent database allowing for users to keep track and manage their expense history
- Implemented an intuitive user interface, enabling seamless navigation, document tracking, and statistical insights into spending habits

MLOps End-to-End: Mini GPT (PyTorch, Streamlit, Docker, Kubernetes (GKE), Google Cloud Build) *Apr 2023*

- Designed and built a text GPT model from scratch using a transformer language model and PyTorch, generating contextually relevant text responses based on user input
- Created and deployed a chatbot web app from the GPT model using Streamlit, resembling the functionality of ChatGPT
- Implemented CI/CD pipelines through containerized deployments to GCP Kubernetes Engine and automated builds using Cloud Build

Sentiment Analysis on Movie Reviews (Pytorch, Scikit-learn, Pandas, NumPy) *Jun 2022*

- Developed and trained an NLP model to predict and differentiate positive and negative movie reviews with an 87% accuracy
- Preprocessed data using Bag of Words and Word2Vec approaches. Trained a custom neural network using Pytorch
- Performed image classification on various data sets using custom CNNs. Conducted data analytics using Scikit-learn, including performing PCA, K-means clustering, DBScan, and T-SNE

Education

University of Waterloo – Waterloo, ON *2022*
Master of Engineering – MEng, Electrical and Computer Engineering
Specialization in Artificial Intelligence and Machine Learning

University of Waterloo – Waterloo, ON *2020*
Bachelor of Applied Science – BASc, Honours Mechanical Engineering (With Distinction)