

Waleed A. Raza

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EXPERIENCE

Freddie Mac – Software Engineer Intern

McLean, Va

May 2024 – Aug 2024

- Part of the Self-Service Data Platform Team, working on Kubeflow platform on AWS infrastructure for Machine Learning & Data Science needs.
- Worked with department head to effectively communicate biweekly updates regarding platform to CTO.
- Streamlined internal users queries, concerns, and ideal features into actionable development plans.
- Organized a collaborative pipeline to understand and evaluate the cloud cost usage of platform, organized to compare and contrast 4 department's platform usage, wrote scripts to optimize costs. Reduced weekly costs from over \$111,400+ to ~ \$92,000
- Won intern challenge - Led a group of 11 interns to develop a future technology capable of enhancing the communication platform for Freddie Mac. Designed "mac overflow" from top to bottom, architecting solutions and system design, and allocating roles for team members. Upon my return I'll be working on base level implementations and cost analysis of this tool with a team of 3 interns.
- Created demo videos for new platform users operations regarding the kubeflow platform, specifically pipelines tool.
- Refined thousands of lines of internal documentation by training an LLM with data fed through a pipeline pulling from confluence. Reorganized the structure of confluence for the entirety of data department, after consulting with 1 member of each team(16+ teams).
- Assisted in developing, testing and deployment of TensorBoard feature from non-prod to dev platform. Wrote ML models in TensorFlow and PyTorch using KNN, K-Means, Linear & Logistic Regression algorithms to test implementation of TensorBoard feature to platform.
- Utilized TensorBoard's text plugin to display and analyze generated text samples and evaluation results from LLM's. Logged perplexity, BLEU scores, and other relevant metrics to track LLM performance.
- **Designed and implemented** a microservices-based feature to handle high-throughput data ingestion, ensuring horizontal scalability and maintaining low-latency performance in a distributed, multi-tiered system.
- **Created an API** using AWS Lambda and Amazon API Gateway to process streaming data in real time, reducing data processing delays by 30%.
- Worked with Kubernetes, sequentially evaluating pods to troubleshoot using cKF CLI, effectively documented TensorBoard implementation, setup, advantages, risks, etc. for Data Scientists. Responsible for Rapid Prototyping presentations in end of sprint Demo Meetings in front of Data Department.
- Was offered to stay on team part-time through final year of studies, received return offer for data engineering role, focused on architecting platform features in accordance with SDLC and internal customers views. Will be overseeing 2 interns

Datadept.net – Founder

Washington DC

Jan 2025

- Coordinating development of Pip library available in august 2025.
- Developed data engineering pipelines, notebook to production command line interface tool, integrated with toolchains ie docker, aws, azure, k8s. Turns the key in the production engineer, outlines tests and modularizes code.
- Developed Schema drift version control with ai integration to prevent pipelines from being damaged and running predictive analytics to foresee drift and alert before damage is done.
- Developed synthetic data generation with GANS and CTGANS to mimic datasets for testing and deployment.
- Architected and envisioned a data-engineering toolkit, aimed at freemium model for YC entry.

LEADERSHIP

Computer Science Club at George Mason - *Founding President*

Fairfax, Va

April 2023 – Aug 2024

- Organized a wide range of events, workshops, hackathons, networking engagements, as well as guest speaker talks from industry professionals from Microsoft, AWS, Mitre, Freddie Mac etc. to provide learning opportunities for members.
- Oversaw growth from zero to 1000+ members (>1/5 of all computer science students at Mason), spearheading outreach, and organizational infrastructure. Managed a team of 15+ to help organize corporate, hands-on/technical, and social events. <https://mason360.gmu.edu/gmucs/home/>
- Responsible for coordinating/overseeing GMU's hackathon in 2024: <http://hackfax.com/> with over 450+ registrants. .

PROJECTS

Hand-Recognition Shortcuts Application Using Computer Vision and Machine Learning

- Built with Python, OpenCV, MediaPipe, PyTorch, tkinter, scikit-learn; Hand motion detection and classification, leveraging ML models for higher accuracy. Users can perform various functions such as copy, move desktop, open browser, and navigate between screens using predefined hand gestures.
- Uses OpenCV & MediaPipe for tracking & feature extraction, TensorFlow is used to train deep learning models on gesture datasets for precise recognition.
- scikit-learn is utilized for preprocessing data and model evaluation, ensuring optimal performance.
- Integrated into an application via the tkinter framework, designed to continuously improve gesture recognition, analyzing user data and retraining models.
- Downloaded by 100+ users

StockSurveyor - Prediction & Assistance Tool

- MERN Stack (MongoDB, Express, React, Node.js), Python, TensorFlow, scikit-learn, Golang, typescript,
- Developed a web app to identify patterns and predict trends across tech, politics, and more, transforming data into actionable insights.
- Engineered a robust backend with Node.js and Express, leveraging MongoDB for scalable data storage and retrieval. Integrated ML models using TensorFlow and scikit-learn to analyze and predict patterns, with Angular providing a responsive and dynamic UI.
- Transformed a simple finance tracker into a powerful prediction tool, enhancing decision-making and strategic planning.

For detailed info on projects and experiences, check out my portfolio! | <https://waleedaraza.github.io/>

SKILLS

- **Back/Front-end Development:** Python, Java, C C++, JavaScript, Swift HTML, CSS, Node.js, Go Ruby Rust, GoLang, Django, GraphQL, Rest, Apollo, Relay Mongo DB Swift or Kotlin and React, Flutter, Xamarin, Ionic, Golang, Rust, Python, Embedded Linux, RTOS, comm protocols (can, i2c, spi, uart, ble, wi-fi)
- **Data Science & Machine Learning:** PyTorch, TensorFlow, TensorBoard, scikit-learn, NLTK, Scrapy, spaCy
- **Other:** Unix, Xcode, Objective-C, Junit, Git, GitHub, Kubernetes, Jira, bitbucket, confluence, Docker, Atlassian Suite, AWS Cloud, Azure MongoDB, AWS, Pursuing AWS Cloud Practitioner Certification, AWS Solutions Architect Certification. 10+ years of minecraft experience, 5+ years of java modding.

EDUCATION

George Mason University / WGU Computer Science BS, Entrepreneurship Minor

August 2022 – Jan 2025

- Intro Computer Programming (taught in Python), Object-Oriented Programming (OOP taught in Java), Data structures & Algorithms (DSA taught in Java), Low-level Programming (LLP, taught in C), Discrete Math, Statistics, Calculus, Operating systems, Calculus I!