Ali Asgher Mohammed

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Education

National University of Sciences & Technology October 2020 – May 2024
Bachelors in Electrical Engineering (GPA: 3.80/4.00) *Islamabad, Pakistan*

- **Awards:**
  - NUST High Achievers Award 2022-2024
  - NUST Merit Based GPA Scholarship 3rd - 6th Semester

Experience

Sketric Solutions June 2024 - Present
Machine Learning Engineer *Remote*

- Developed scalable backend infrastructures using Flask and Django with sqllite and NoSql Databases
- Designed MLOps pipelines using MLflow to track ML model performance and manage life-cycle
- Built the ML pipeline of company's first Generative AI based micro SaaS product Resumes Ranker using OpenAI and AWS

Sketric Solutions Oct 2023 – May 2024
Part time Machine Learning Engineer *Remote*

- Engineered machine learning models for tasks including detection, segmentation, and optical character recognition
- Conducted comprehensive error analysis to identify and resolve dataset issues, to enhance model accuracy
- Accelerated model performance by optimizing speed (FPS) using techniques such as TensorFlow Lite
- Maintained the codebase with Git version control for seamless collaboration within cross-functional teams

Information Processing and Transmissions Lab June 2023 – December 2023
Researcher *NUST*

- Worked on maximizing data rates of energy harvesting devices in CR-NOMA networks using deep reinforcement learning (DRL)
- Solved a continous action spaced optimization problem using DRL and convex optimization
- Contributed in writing a research paper as a first author to publish our findings in a journal publication

TruID June 2022 – September 2022
Machine Learning Intern *NUST*

- Completed hands-on labs on various Python libraries for data visualisation and handling
- Handled data extraction from XML annotation files
- Worked in a team to devise strategies for passive liveness detection using deep learning

Projects

AquaGuard (Final Year Project) | *Drone Avionics, Embedded Systems, Python Programming*

- Developing a complete end-to-end product of a search and rescue UAV to autonomously detect and rescue a drowning person by dropping a float (Nominee of Rector's Gold Medal, Top 7 FYPs)

Resumes Ranker | *GenAI, AWS amplify, AWS DynamoDB*

- Designed and implemented an end-to-end solution tailored for the recruiting industry, enabling efficient scoring and detailed analysis of bulk resumes. Leveraged cutting-edge technologies, including OpenAI and cloud computing, while employing advanced prompt engineering techniques to optimize the outputs of large language models (LLMs).

Contract Sense | *Python, Ultralytics*

- Developed an innovative solution for a contracting company to proactively identify potential government tenders by leveraging web scraping and Generative AI (GenAI). The solution enabled the company to detect tenders faster, significantly improving their bid success rate by 100 %.

Visualizer AI | *Python, OpenCV, Meta SAM, Ultralytics YOLO, Computer Vision*

- Developed innovative algorithms for computing perspective transforms of walls, floors, and countertops in 2D indoor images using semantic scene understanding. These algorithms matched the performance of industry leaders who had been refining their solutions for 5+ years, while delivering results 3x faster

Drown AI | *Python, OpenCV, Ultralytics YOLO, MLOPs, SQLite*

- Developed an end-to-end analytics solution for Dubai beaches, utilizing AI to detect drowning and swimming individuals. Led the backend development, including crafting database operations with SQLite and implementing ML model training pipelines using MLflow

SniperPlate | *OpenCV, Ultralytics, Parseq, RPI*

- Deployed an Automatic License Plate Recognition (ALPR) system on a Raspberry Pi 5 by training custom object detection and OCR models. Enhanced the model's processing speed from 600 ms to 120 ms by implementing NCNN model quantization techniques. Initially achieving an overall frame rate of 2.5 FPS, we optimized performance to 8.0 FPS through advanced techniques such as threading and queue management in Python.

Publications

- A. A. Mohammed, M. W. Baig, M. A. Sohail, S. A. Ullah, H. Jung and S. A. Hassan, "Navigating Boundaries in Quantifying Robustness: A DRL Expedition for Non-Linear Energy Harvesting IoT Networks," in *IEEE Communications Letters*, doi: 10.1109/LCOMM.2024.3451702. Link to paper

Technical Skills

Languages: Python, C/C++
Technologies: OpenCV, Pytorch, TensorFlow, Flask, SQLalchemy, TensorRT, Numpy, Timm, Albumentations, Hugging Face, Jetson Nano, Raspberry PI, Gazebo, ROS, Git
Concepts: Data Structures & Algorithms, Artificial Intelligence, Computer Vision, Robotics, Object Oriented Programming
Certifications:

- Neural Networks and Deep Learning - DeepLearning.ai
- Improving Deep Neural Networks: Hyperparameter Tuning, regularization, and optimization - DeepLearning.ai
- Structuring your Machine Learning Projects - DeepLearning.ai
- Convolutional Neural Networks - DeepLearning.ai
- AI Capstone Project with Deep Learning - IBM
- Deep Learning with PyTorch : Object Localization - Coursera
- What is Data Science? - IBM
- Tools for Data Science - IBM
- 5-Days boot camp on Deep Learning for Object Detection and Semantic Segmentation In Visual Data

Co-Curricular Activities

Team Burraq March 2022 – May 2024
Co-Founder *NUST*

- Co-founded a pioneering student team to participate in UAV competitions, winning two national competitions
- Participated in drafting the business case and sponsorship proposal for the team's agricultural drone, generating PKR 200,000 in sponsorship
- Orchestrated Social Media campaigns for spreading knowledge about UAV industry in Pakistan which increased the engagement of handles by 2x

Daraz Digital Store June 2020 – August 2020
Founder

- Bootstrapped PKR 40,000 to setup a Daraz digital kitchenware store, generating PKR 100,000 in lifetime revenue
- Hunted products to sell by tracking competitor's daily sales, market saturation, and product reviews
- Employed strategies such as giveaways and Facebook Ads to rank the product on multiple keywords in just a week