Muhammad Abdullah

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SUMMARY

With over two years of AI and ML experience, I excel in leveraging advanced machine learning and NLP technologies. At RadicalX, I enhanced user engagement by 35% through the development of ReX, an AI Coach using VertexAI and ChatGPT. At Biztek Digital, I reduced crop loss by 15% and improved yield prediction accuracy by 40% with deep learning models. My work on a React web application and Flask backend integrated with PyTorch increased user engagement by 20%. At NUCES, I introduced ML pipelines, reducing data processing time by 20% and improving decision-making by 30%.

EDUCATION

Deakin University, Waurn Ponds, VIC, Australia
    Master of Applied Artificial Intelligence
    Coursework: Web Development, Machine Learning, DevOps, Deep Learning, Computer Vision, NLP, Reinforcement Learning, Maths for AI, MLOps

NUCES, Islamabad, Pakistan
    Bachelor of Science (Computer Science)
    Coursework: AI, Cloud Computing, Data mining, Computer Vision, NLP, Knowledge Graphs, UX design

SKILLS

Programming Languages: Python, JavaScript, C/C++/C#, HTML/CSS, Swift
AI/ML: TensorFlow, PyTorch, Hugging Face, OpenCV, Weights and Biases, MLflow, Model Training on GPU, Object Detection/Recognition, Image Classification/Segmentation, GANs, Vision Transformers, LLMs (BERT, GPT), Natural Language Processing FastAPI, VertexAI, ChatGPT, Retrieval Augmented Generation (RAG)
Development: React.js, Node.js, Vue.js, GitHub, Docker, Kubernetes, Terraform, REST APIs, MongoDB, MySQL, SwiftUI
Cloud: Azure, AWS (Amazon Sagemaker, EC2, S3), GCP (Gemini, VertexAI, AutoML)

EXPERIENCE

Full Stack Engineer, Gopher Industries, Melbourne, Australia   03/2024 - 06/2024
[Backend Lead]
- Spearheaded collaborative efforts within the design team, creating an intuitive UI for Senior Rights Victoria's phone screening portal web app, enhancing user experience and accessibility by 25%.
- Contributed significantly to the development of a dynamic React web application, improving frontend performance and user engagement by 30%.
- Led the development of the MongoDB backend, ensuring data integrity and scalability, resulting in a 20% increase in application efficiency.
- Orchestrated seamless teamwork and technical expertise, delivering a user-centric digital solution for Senior Rights Victoria on time and within budget.

AI Engineer, RadicalX, New York, United States, Remote   11/2023 - 03/2024
[AI Intern]
- Developed ReX, an AI Coach using **VertexAI** and **ChatGPT**, enhancing user engagement by 35% and incorporating **retrieval-augmented generation** techniques for evidence-based responses.
- Pioneered novel AI solutions using **LLMs**, VertexAI, NLP, and Transformers, ensuring accurate and reliable outputs aligned with educational standards.
- Collaborated with educational advisors to refine the AI's constructive and accessible language, improving user satisfaction and trust in the system.

Computer Vision Engineer, Biztek Digital, Remote   09/2022 - 02/2023
[AI Development Lead]
- Implemented deep learning models for **object detection**, reducing crop loss by 15% and improving yield prediction accuracy by 40%, showcasing the ability to design and evaluate large-scale AI systems.
- Developed image processing application modules in **OpenCV**, facilitating **data analysis** from various sources and contributing to a 20% increase in user engagement through a user-friendly interface.

- Led the AI development team to create prototypes with **real-time anomaly detection** and automated pest identification, achieving tangible results and demonstrating strong problem-solving skills.
- Conducted a comprehensive review of cutting-edge technologies in agricultural AI, ensuring the project remained at the forefront of innovation and aligned with the need for ongoing research and development in agriculture-related AI applications.

Software Engineer (ML), NUCES, Islamabad, Pakistan   05/2022 - 12/2022
[Research and Development]
- Introduced ML pipelines and **data visualization** strategies, reducing data processing time by 20% and enhancing data understanding.
- Spearheaded the utilization of advanced ML algorithms, improving decision-making processes by 30%.
- Applied **data cleaning** techniques, increasing data accuracy by 20%.

AI Intern, AIM Lab, NUCES, Islamabad, Pakistan   08/2021 - 09/2021
[Research and Development]
- Revamped ML pipelines and data visualization, achieving a **10% reduction in data processing duration** for increased efficiency and enhanced comprehension.
- Generated valuable insights by utilizing state-of-the-art ML algorithms, increasing **efficiency by 15%**.

PROJECTS

Animal Detection: Designed an **Azure Custom Vision** project on the **Azure ML** platform that detects animals in real-time through a Rest-API model endpoint.

ML Pipeline using DVC: Crafted a Machine Learning pipeline using **Data Version Control (DVC)** to efficiently manage and reproduce the entire workflow. The pipeline consists of four main stages: prepare_data, make_features, train, and evaluate. This will run necessary stages based on the dependencies, ensuring that only changed components and their dependencies are re-executed.

Fraud Analysis and Detection: Analyzed financial transaction data, designed data preprocessing and feature engineering pipelines, optimized models through hyperparameter tuning and cross-validation, and enhanced model explainability with effective visualizations.

Interstellar Intelligence: Led AI development and cloud deployment, crafting the core assistant development using Google's **Vertex** AI, **LangChain**, and **ChatGPT** for AI-driven functionality and dataset creation. Integrated **Retrieval Augmented Generation (RAG)** using **CosmoDB** as vector storage to enhance the accuracy and relevance of responses. Utilized **Docker** for containerization and **Google Cloud Run** for scalable deployment.

DeepPestDetector: Achieved an efficient CNN classifier for Pest images on the IP102 dataset. Embedded trained model in **TFLite** format in an iOS mobile app using **Swift** for real-time classification.

Ship Detection using Yolov8: Trained and analysed the Yolov8 model on a top-view ships image data set to detect objects within a frame. Deployed model using **FastAPI** on **AWS EC2** instance.

Semantic Image Data Clustering using VGG-19: VGG-19 model for unsupervised image data clustering and analysis to extract image features and cluster similar images together.

Satellite Image Segmentation: Applied U-Net model for image segmentation of satellite images.

POS Tagger for the Urdu Language: Developed a Parts of speech tagger for the Urdu language in Python.

English News text Summarisation: Automated scraping and parsing of English News data from sources, applied EDA and NLP techniques to create a text summarisation model.

Fleet Management System: Debugged a Full-stack web application using **React.js**, **Express.js**, **Node.js**, and **MongoDB** with advanced state management using **Redux**. Designed the Hi-Fi prototype in **Figma**.