# Muhammad Abdullah

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## SUMMARY

Experienced AI Engineer proficient in Python. Demonstrated expertise in advanced machine learning models, optimization techniques, REST APIs, and agile development. Skilled in comprehensive data analysis, preprocessing, and innovative model interpretability through visualization. Actively stays updated on the latest AI trends for effective contributions to teams.

## EDUCATION

**Deakin University**, Waurn Ponds, VIC, Australia                                          02/2023 - 11/2024
    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                                          08/2018 - 06/2022
    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
**Development:** React.js, Node.js, Vue.js, GitHub, Docker, Kubernetes, Terraform, REST APIs, MongoDB, MySQL, SwiftUI
**Cloud:** Azure, AWS (Amazon Sagemaker, EC2, S3), GCP (AutoML)

## EXPERIENCE

**AI Engineer**, RadicalX, New York, United States, Remote                                          11/2023 - Present
[AI Intern]
- Leveraging technologies such as AI technologies to develop ReX, an AI Coach who serves as a steadfast career companion for learners, offering personalized coaching, mentorship, and support throughout the different phases of the career lifecycle.
- Pioneering novel AI solutions using **LLMs**, **VertexAI**, **ChatGPT**, **NLP** and **Transformers**.

**Computer Vision Engineer**, Biztek Digital, Remote                                          09/2022 - 02/2023
[AI Development Lead]
- Developed deep learning models for object detection, tracking, and scene segmentation, leading to a **15% reduction in crop loss** through early pest and disease detection.
- Built image processing application modules in OpenCV, facilitating the analysis of data from different image-capturing sources and contributing to a **40% improvement in crop yield prediction** accuracy.
- Established an efficient infrastructure for data collection, training, and deployment of AI models, **reducing the time-to-market by 30%**.
- Led the AI development team to create a prototype with core features, including real-time anomaly detection, crop yield prediction, crop headcount, and automated pest identification, achieving tangible results.
- Devised a comprehensive review of cutting-edge technologies in the agricultural AI field, ensuring the project remained at the forefront of innovation.
- Deployed a **React** web application with a **Flask** backend to integrate **PyTorch** Computer Vision models and Machine Learning models, resulting in a **20% increase in user engagement**.
- Orchestrated the deployment of vision model APIs on **AWS** cloud environments, utilizing **Docker** for containerization and **Kubernetes** for orchestration.
- Performed code optimization and system maintenance on **Linux** systems using Bash scripting and **Git** for version control, ensuring robust software performance.
- Convinced investors to test the prototype with real-world data, increasing yield and cost savings.

**Software Engineer (ML)**, NUCES, Islamabad, Pakistan                    05/2022 - 12/2022
[Research and Development]
- Introduced ML pipelines and data visualization strategies, contributing to enhanced data understanding and **reducing data processing time by 20%**.
- Spearheaded the utilization of advanced ML algorithms to generate actionable insights, leading to a **30% improvement** in decision-making processes.
- Applied data cleaning techniques, resulting in a **15% improvement in data accuracy**.

**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

**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 (**Docker** + **Google Cloud Run**), crafting the core assistant development using **Google's Vertex AI**, **LangChain** and **ChatGPT** for AI-driven functionality and dataset creation.

**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**.