

# Muhammad Abdullah

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## EDUCATION

- Deakin University**, Waurm Ponds, VIC, Australia [Feb 2023 - Nov 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 [Aug 2018 - Jun 2022]  
Coursework: AI, Cloud Computing, Data mining, Computer Vision, NLP, Knowledge Graphs, UX design

## SKILLS & PROFICIENCIES

**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, FastAPI  
**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)

## PROFESSIONAL EXPERIENCE

- AI Engineer**, RadicalX, New York, United States, Remote [Nov 2023 - Present]  
[AI Intern]
- As an Artificial Intelligence Engineer at RadicalX, I am leveraging technologies such as OpenAI, Vertex AI and TensorFlow to develop ReX, an AI Coach who serves as a steadfast career companion for learners, offering personalized coaching, mentorship, and support throughout the various phases of their career lifecycle.
  - I am currently working on an AI Interview preparation assistant using **LLMs**, **Vertex AI** and **Transformers**.
- Computer Vision Engineer**, Biztek Digital, Remote [Sep 2022 - Feb 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 various 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.
  - Conducted a comprehensive review of cutting-edge technologies in the agricultural AI field, ensuring the project remained at the forefront of innovation.
  - Developed 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

[May 2022 - Dec 2022]

[Research and Development]

- Developed ML pipelines and data visualization strategies, contributing to enhanced data understanding and **reducing data processing time by 20%**.
- Generated valuable insights by utilizing state-of-the-art ML algorithms, improving decision-making processes.
- Applied data cleaning techniques, resulting in a **15% improvement in data accuracy**.

**AI/ML Intern**, AIM Lab, NUCES, Islamabad, Pakistan

[Aug 2021 - Sep 2021]

[Research and Development]

- Created ML pipelines and data visualization strategies, contributing to enhanced data understanding and **reducing data processing time by 20%**.
- Generated valuable insights by utilizing state-of-the-art ML algorithms, improving decision-making processes.
- Applied data cleaning techniques, resulting in a **15% improvement in data accuracy**.

## PROJECTS

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**DeepPestDetector:** Trained an efficient CNN classifier for Pests images on the IP102 dataset (102 classes, ~75000 images). 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 multiple objects within a frame. Deployed model using **FastAPI** on **AWS EC2** instance.

**Fleet Management System:** Developed 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**.

**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.

**Multi-Object Detection using YOLO:** Implemented the YOLO research paper.

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

**AI Chess Game using MinMax:** Introduced MinMax algorithm to optimise each move. Player vs Player, Player vs and AI vs AI up to a depth of 3.

**Exam Scheduler using Genetic Algorithm:** Created a Genetic algorithm to come up with a solution satisfying maximum soft and hard constraints.

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

## INTERESTS

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An AI Engineer deeply passionate about AI and Python programming. Equipped with Python software engineering skills and practical AI experience. Adept at REST API development, and databases, and thrive in rapid web-based development cycles. Enthusiastic about staying updated on AI trends and eager to contribute to dynamic AI teams.