Abdullah Ahmed Alzahrani

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SUMMARY

Machine Learning Engineer with a foundation in Electrical Engineering, focused on deploying research-grade models to production in computer vision and deep learning. Brings a solid grasp of theoretical ML and a hands-on approach to building scalable, reliable systems.

EDUCATION

Bootcamp: Building and Deploying AI Models (In-Person)
Tuwaiq Academy · Riyadh, Saudi Arabia · Feb 2025 – May 2025

Bachelor of Science in Electrical Engineering (Focus Area: Machine Learning)
Rensselaer Polytechnic Institute (RPI) · Troy, NY · Sep 2020 – Dec 2024

CERTIFICATIONS

Databases and SQL for Data Science with Python
Stanford – Coursera: Sep 2024

Machine Learning Specialization
IBM – Coursera: May 2024

SKILLS

ML Frameworks: TensorFlow, PyTorch, Scikit-learn;
Coding languages: Python, C++
Data handling: SQL, Pandas, and Matplotlib
Version Control: GitHub and SVN
Model deployment: FastAPI, Render, and Streamlit

PROJECT

Gharsa
Tuwaiq Academy · abodeza.github.io/projects/gharsa/ · May 2025 – May 2025
· **Designed and coded a full CV pipeline** that localises and classifies five leaf-disease types from a single image, integrating classical HSV masking, Meta's Segment-Anything (SAM), and a fine-tuned CLIP model.
· **Authored a robust color-masking stage** in OpenCV (HSV thresholds + morphological close/open) to highlight candidate disease pixels; supplies a high-recall seed for later segmentation.
· **Embedded SAM for automatic mask generation** and wrote an IoU-based filter that keeps only masks overlapping ≥20 % with the disease mask, cutting false positives by a factor of four.
· **Implemented a greedy bbox-clustering + padding algorithm** (NumPy) that guarantees non-overlapping crops ≥256 px—critical for consistent downstream feature extraction.
· **Fine-tuned CLIP (ViT-B/32) on ~500 leaf images**, achieving >90 % balanced accuracy across all classes; converted to `SentenceTransformer` for fast cosine similarity scoring on GPU.

Predictive Refrigerant Leak Modeling in VRF Systems [Capstone Project]
Rensselaer Polytechnic Institute, State Energy Agency, and a Private Energy Firm · August 2024 – December 2024
· **Worked with my team to assist the client** in complying with EPA regulations using ML models.
· Developed charge level classification models achieving **91.15% accuracy on unseen data as the first team to work on the project.**
· **Achieved 73.3% accuracy in detecting leaks** exceeding 20% undercharge via anomaly detection.
· Conducted frequent meetings with the client ensuring a tight feedback loop and the customer requirements were met.

Quantum-Inspired Machine Learning Using Tensor Networks [CSCI-4961 Final Project]
May 2024 – August 2024
· **Reproduced the results from Google's paper** by applying tensor networks for low-rank approximation in ML, achieving 98% accuracy on MNIST.
· **Explored parameter optimization for quantum circuits**, achieving 74% accuracy on two digits.
· **Utilized RPI's IBM Quantum System One** to run the tests on a real quantum computer, managing the shortcomings of NISQ hardware.