Abdullah Ahmed Alzahrani

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SUMMARY

Machine Learning focused EE graduate from RPI with extensive experience in data science, statistical analysis, and software dev. through academic projects, and expanded EDA and model deployment skills at Tuwaiq Academy. Passionate about solving challenging problems, from programming on a quantum computer to exploring cutting–edge ML research, and eager to apply this expertise to impactful projects.

EDUCATION

Bachelor of Science in Electrical Engineering (Focus Area: Machine Learning)
Rensselaer Polytechnic Institute (RPI) · Troy, NY · Sep 2020 – Dec 2024
Relevant Coursework: ML · DL · RL · Probabilistic Graphical Models · Data Structures · Distributed Optimization · Comp. Algorithms

CORE EXPERTISE

Programming & Tools: Python · C++ · SQL · Git · Agile Development
Data Science & ML: Pandas · NumPy · Scikit-learn · PyTorch · TensorFlow · OpenCV · EDA · Matplotlib
Cloud & Deployment: AWS · Docker · Streamlit · FastAPI · HuggingFace
Soft Skills: Problem Solving · Collaboration · Effective Communication · Rapid Learning · Attention to Detail · Time Management

PROJECTS

Gharsa [Showcased @ The Garage, Riyadh] | OpenCV · SAM · CLIP (fine–tuned) · Few–Shot Learning · AWS
Tuwaiq Academy · abodeza.github.io/projects/gharsa/ · May 2025 – May 2025
· Created **Gharsa**, a site that enables novice plant owners to **identify plants, soil type, and detect plant diseases** under **limited labeled data**
· Built an **end-to-end computer vision pipeline** using OpenCV, Meta's SAM, and fine–tuned CLIP for **disease localization** & classification
· Developed a **color-masking stage** (HSV thresholds + morphology) and **bbox-clustering** to filter unwanted SAM masks
· **Fine-tuned CLIP (ViT–B/32) on ~500 leaf images**, achieving **>90% balanced accuracy** across all classes

Predictive Refrigerant Leak Modeling in VRF Systems [Capstone] | Agile Development · Scikit-learn · Pandas · C++
Rensselaer Polytechnic Institute, State Energy Agency, and a Private Energy Firm · Aug 2024 – Dec 2024
· Performed **exploratory data analysis** and **PCA** to distill 200+ HVAC diagnostic parameters into a compact, high–impact feature set
· **Simulated under–charge scenarios** (10–20% refrigerant loss) to model **data patterns** and trends associated with leaks
· Achieved **>95% recall** with **<5% false alarms** on unseen data; designed for **real-time inference** and **data driven analysis**
· Ran a **weekly agile feedback loop** across three organizations; earned **Outstanding Technical Progress in One Semester**

Quantum–Inspired ML Using Tensor Networks [CSCI–4961 Final Project] | Quantum Computing · Qiskit · TNs
Rensselaer Polytechnic Institute · May 2024 – Aug 2024
· Bridged **tensor networks** with classical ML, reproducing Google's low–rank approximation results with **98% MNIST accuracy**
· Optimized **parameterized quantum circuits** for binary classification, achieving **74% accuracy** despite **NISQ hardware constraints**
· Ran experiments on **RPI's IBM Quantum System One**, adapting algorithms to real quantum hardware limitations

BOOTCAMPS & CERTIFICATIONS

Bootcamp: Building and Developing AI Models
Tuwaiq Academy (In-Person) · Mar 2025 – May 2025
· Completed an intensive AI bootcamp on Machine & Deep Learning with hands-on projects in Computer Vision, NLP, and cloud-based tools

Databases and SQL for Data Science with Python
IBM: Sep 2024

Machine Learning Specialization
Stanford/DeepLearning.AI: May 2024