

# Ahmed Radwan

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## SKILLS

**Languages:** Python, Java, SQL

**Technologies & Tools:** Git, Arduino, JAX, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, PyTorch, TensorFlow, Keras, Transformers, Hugging Face, YOLO, NLTK, SpaCy, OpenAI APIs

**Machine Learning & Deep Learning:** Distributed Training, Autoregressive Models (e.g., Transformers), Supervised, Unsupervised, and Self-Supervised Learning, CNNs, RNNs, Transfer Learning, Time-Series Data Processing, Model Optimization, Data Augmentation Techniques, Exploratory Data Analysis, Feature Engineering

## EDUCATION

### M.Sc Computer Science

*York University*

**3.96/4.0 GPA.**

Toronto, Canada

### B.Sc Computer Science

*King Abdulaziz University*

**4.98/5.0 GPA.**

## PROFESSIONAL EXPERIENCE

### Applied Machine Learning

*Vector Institute*

2025 – Present

Toronto, Canada

- Completed literature review and drafted a system design for interpretability and explainability in agentic AI, including a policy-aligned explanation schema and guidelines.
- Building a video understanding benchmark for fairness, completed literature review, engineered a YouTube data pipeline, built a human-in-the-loop annotation tool, and parsed videos into text, audio, and visual modalities.
- Reviewed current multi-agent frameworks and implemented recent releases through replications, producing working prototypes and practical comparisons.

### Research Assistant

*York University*

08/2024 – Present

Toronto, Canada

- Developed and deployed self-supervised models for time-series human activity recognition using Wi-Fi sensing signals, enabling scalable training without labeled data.
- Developed tailored data preprocessing pipelines for WiMANS, UT-HAR, and SignFi time-series datasets, ensuring clean and structured inputs for activity recognition models.
- Designed and implemented data augmentation strategies—including masking, noise injection, and dimensionality reduction—to enhance model robustness across domains.
- Built few-shot learning frameworks that reduced labeled data requirements by up to 90%, enabling rapid adaptation to new tasks with minimal supervision.
- Developed a joint time-series compression and prediction pipeline that improved inference time 17x, reduced model size by 20%, and maintained over 90% signal similarity, supporting real-time performance on resource-constrained devices.

### Research Engineer

*Asas.Ai*

09/2023 – Present

- Developed a Context-Aware Story generation framework using Large Language Models (LLMs), integrating multimodal input via the GPT-4 Vision API.
- Enhanced language understanding and task-specific performance through instruction-tuning on Arabic datasets for various creative writing tasks.

### Research Engineer

*King Abdullah University of Science and Technology (KAUST)*

05/2024 – 08/2024

- Designed a real-time Rak'ah tracking algorithm utilizing smartphone IMU sensors to recognize prayer motions accurately.
- Developed motion recognition models optimized for real-time sensor data, ensuring high accuracy and low latency performance.
- Deployed a fully functional Android application with real-time accuracy monitoring and error detection to assist users in reducing prayer-tracking mistakes.

## Research Assistant

02/2024 – 10/2024

King Abdullah University of Science and Technology (KAUST)

- Developed energy-efficient NLP models for sentiment classification on edge devices, leveraging TinyML techniques such as quantization and model compression to reduce memory and computation while maintaining high accuracy.
- Applied Split Learning to enhance data privacy in decentralized NLP systems, demonstrating improved efficiency and resilience in noisy wireless environments compared to traditional Federated Learning.

## Artificial Intelligence Intern

07/2023 – 08/2023

King Abdullah University of Science and Technology (KAUST)

- Selected among the top 100 out of 10,000 applicants for an elite, fully funded AI program.
- Built and optimized generative models for deep unsupervised learning, focusing on scalable real-world applications.
- Applied advanced NLP methods for sentiment analysis and machine translation across multilingual datasets.
- Gained practical experience in reinforcement learning through hands-on implementation.

## PROJECTS

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### Context-Aware Recommender for Fairness Requirements Engineering

- Implemented the ReFAIR framework for fairness-aware requirements engineering.
- Validated reproducibility and documented findings to support fairness research.

### Fairness-Aware Medical Imaging

- Implemented adversarial and balanced fine-tuning methods to mitigate demographic bias in chest X-ray classification.
- Achieved improved fairness across race, gender, and insurance subgroups without sacrificing clinical performance.

### Compact Multimodal Threat Detection System

- Designed a cyclist safety system using audio-visual threat detection on Arduino Nano.
- Ensured low-latency performance for real-time hazard alerts.

## PUBLICATIONS

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### A Tutorial-cum-Survey on Self-Supervised Learning for Wi-Fi Sensing: Trends, Challenges, and Outlook

*IEEE Communications Surveys and Tutorials*

**Radwan, A. Y.**, Mustafa Y., Navid H., Hina T., & Shahrokh V.

### TinyML NLP Approach for Semantic Wireless Sentiment Classification

*2025 EuCNC & 6G Summit - AI4C*.

**Radwan, A. Y.**, Shehab, M., & Alouini, M.S.

### SARD: A Human-AI Collaborative Story Generation

*HCI International 2024*

**Radwan, A. Y.**, Alasmari, K. M., Abdulbagi, O. A., & Alghamdi, E. A. (2024).

### Addressing Bias Through Ensemble Learning and Regularized Fine-Tuning

*Preprint*

**Radwan, A.**, Zaafarani, L., Abudawood, J., AlZahrani, F., & Fourati, F. (2024).

## AWARDS

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### 1st Place Winner for 2024 Student Games

*Organized By International Society of Automation and Sponsored by Aramco*

### 1st Place Winner at Sehah Thon

*Ministry of Health with Ministry of Hajj and Umrah*

## COURSES

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### TinyML Course

*King Abdullah University of Science and Technology (KAUST) in collaboration with UNESCO*

### Mathematics for Machine Learning and Data Science Specialization

*DeepLearning.AI*

### Machine Learning Specialization

*DeepLearning.AI*