

Hamza Ahmed Abushahla

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EDUCATION

American University of Sharjah

MSc. Machine Learning – CGPA: 3.65/4.0

Aug. 2024 – Present

Sharjah, UAE

American University of Sharjah

BSc. Computer Engineering; Minor in Engineering Management – CGPA: 3.41/4.0

Sep. 2020 – July 2024

Sharjah, UAE

Senior Design Project: *Cognitive Radio Spectrum Sensing & Allocation: A Low-Complexity Deep Learning Approach*

PUBLICATIONS

- **H. A. Abushahla**, D. Varam, and M. I. AlHajri, “Cognitive Radio Spectrum Sensing on the Edge: A Quantization-Aware Deep Learning Approach.” **Published: IEEE Communications Letters, 2025.**
- **H. A. Abushahla**, R. Gharaibeh, L. Elmugamer, A. R. Sajun, and I. A. Zualkernan, “Real-Time Student Engagement Monitoring on Edge Devices: Deep Learning Meets Efficiency and Privacy.” **Published: IEEE EDUCON 2025.**
- **H. A. Abushahla***, A. J. N. Panopio*, L. Al-Khairulla*, and M. I. AlHajri, “Different Strokes for Different Folks: Writer Identification for Historical Arabic Manuscripts.” **Submitted: International Journal on Document Analysis and Recognition (IJ DAR).**

**Denotes joint first authorship.*

RESEARCH EXPERIENCE

American University of Sharjah

Graduate Research & Teaching Assistant – Advised by: Dr. Mohamed Alhajri

Aug. 2024 – Present

Sharjah, UAE

- Researching quantized neural networks for efficient, privacy-preserving deployment on resource-constrained edge devices and microcontrollers.
- Supervising computer science and engineering lab sessions, guiding students through hands-on projects, and resolving technical issues to support practical learning.
- Grading assignments and exams, and providing detailed feedback to improve student understanding and academic performance.

American University of Sharjah

Undergraduate Research Assistant – Advised by: Mr. Ali Reza Sajun

June 2024 – Aug. 2024

Sharjah, UAE

- Developed and deployed TinyML models on embedded platforms including the Sony Spresense, enabling on-device inference for edge AI applications.
- Contributed to multiple Machine Learning research projects by implementing and testing Deep Learning models, including CNNs, for tasks like image recognition and sensor data analysis.

eBrain Lab, New York University Abu Dhabi

Visiting Machine Learning Researcher – Advised by: Dr. Alberto Marchisio

May 2024 – Aug. 2024

Abu Dhabi, UAE

- Worked with the TinyCL continual learning hardware accelerator, assisting in developing and validating optimizations, including approximate multipliers, and benchmarking for performance improvements.
- Implemented embedded continual learning algorithms for autonomous mobile robots, focusing on perception and vision using the TinyCL architecture.

PROFESSIONAL EXPERIENCE

Dolphin Energy Limited

Automation and Industrial IT Intern

May 2023 – Aug. 2023

Abu Dhabi, UAE

- Developed a comprehensive understanding of the Oil & Gas sector, including upstream and downstream operations.
- Gained hands-on experience with Supervisory Control and Data Acquisition (SCADA) and Industrial Control Systems (ICS), focusing on network device integration and maintenance procedures.
- Carried out preventive maintenance procedures on SCADA cabinets, remote Cisco switches, and ICS maintenance laptops, ensuring network reliability and system security.

HONORS AND AWARDS

- **UAE Presidential Scholarship** Recipient
- **Dean’s List** Recipient, Spring 2022, Spring 2023, and Spring 2024
- **2nd Place**, AUS College of Engineering Senior Design Projects Competition
- Member of the **IEEE-Eta Kappa Nu International Honor Society**
- Named to the **Top 100** high school graduates list across the UAE for 2020

SKILLS

Programming:	C/C++, Python, Java, Swift, JavaScript, MATLAB, Verilog.
Tools:	Visual Studio Code, Eclipse, Xcode, Pandas, Numpy, TensorFlow, Keras, Git, \LaTeX , Bash, Microsoft Office, Adobe Photoshop, Fusion 360.
Operating Systems:	Linux, Apple Ecosystem (iOS, MacOS, etc.), Windows, Android.
Soft Skills:	Analytical Reasoning, Critical Thinking, Problem Solving, Communication, Presentation, Teamwork, Leadership, Research Writing.
Languages:	English (Fluent), Arabic (Native).

RESEARCH PROJECTS

A Deep Learning Approach to Arabic Handwriting Recognition [\[Code\]](#)

Sep. 2024 – Dec. 2024

Developed an end-to-end deep learning-based CNN-BiLSTM Handwritten Text Recognition (HTR) system for Arabic script using the KHATT Dataset, trained with CTC loss. Our approach effectively addresses the complexities of Arabic cursive handwriting using a segmentation-based model, and is enhanced with KenLM language modeling for post-processing, achieving acceptable Character Error Rate (CER) and Word Error Rate (WER).

A Low-Complexity Deep Learning Approach for Spectrum Sensing [\[Code\]](#)

Sep. 2023 – May. 2024

Researched and developed a low-complexity CNN-based algorithm using Keras and TensorFlow for spectrum sensing in cognitive radio systems, including WiFi and LTE signals. Applied quantization techniques to compress the model for efficient deployment. Implemented and tested the solution on hardware platforms including Raspberry Pi, Arduino, and sensor nodes with antennas.

RELEVANT COURSEWORK

Graduate

Machine Learning: Adv. Machine Learning - Generative Deep Learning - Data Mining - Adv. AI

Undergraduate

Major Electives: Intelligent Autonomous Robotics - AI - Computer Security - Modern Computer Organization

Mathematics: Calculus (I, II) - Linear Algebra - Probability & Statistics - Discrete Mathematics - Differential Equations

Computer Science & Engineering: Data Structures & Algorithms - Operating Systems - Computer Architecture - Microcontrollers - Embedded Systems - Circuits - Electronics - Advanced Digital Systems

Engineering Management: Management for Engineers - Engineering Project Management - Engineering Economy

EXTRACURRICULAR COURSES

• Data Manipulation with Python [Certificate] Coursera (Optima)	May 2025
• Machine Learning [Certificate] Coursera (Stanford University)	Jan. 2025
• Mathematics for Machine Learning and Data Science [Certificate] Coursera (DeepLearning.AI)	Jan. 2025
• Python for Data Analysis: Pandas & NumPy [Certificate] Coursera (Coursera Project Network)	Dec. 2023
• Python Functions, Files, and Dictionaries [Certificate] Coursera (University of Michigan)	Dec. 2023
• Python Data Structures [Certificate] Coursera (University of Michigan)	Dec. 2023