

Omar AlShatti

EDUCATION

San Diego State University
Bachelor of Science in Computer Engineering

- Graduated Magna Cum Laude

San Diego, CA
Aug. 2018 – Aug. 2022

New York University
Master of Science in Computer Engineering

New York, NY
Jan. 2023 – Aug. 2024

EXPERIENCE

Instructional Assistant
American University of Kuwait

Salmiya, KW
Sep. 2026 – Present

- Teach undergraduate laboratory sections for Embedded System Design (CPEG 340L), Microprocessors & Interfacing (CPEG 330L), Electronics (ELEG 270L), and Signals & Systems (ELEG 320L).
- Guide students through hands-on experiments involving FPGA-based embedded systems, microcontrollers, electronic circuits, and signal processing.
- Support students in hardware implementation, circuit analysis, software simulation, and experimental testing across computer and electrical engineering laboratories.

Lab Instructor
American University Of The Middle East

Eqaila, KW
Dec. 2024 – Aug. 2026

- Taught Verilog and ASIC design to over 150 junior and senior students.
- Selected to design and deliver a workshop on Convolutional Neural Networks (CNNs), covering theoretical foundations and hands-on TensorFlow implementation for a university AI competition.
- Created study and lab materials including circuit diagrams, lab handouts, and slides, overhauling most lab assignments.
- Produced video walkthroughs for labs, serving as reusable reference material for over 150 students.
- Taught introductory Python concepts such as dictionaries, lists, and object-oriented programming.

TECHNICAL SKILLS

Languages: Verilog, MIPS Assembly, C/C++/C#, SQL, HTML/CSS, Python

AI / ML: PyTorch, TensorFlow, Keras, scikit-learn, NumPy

Developer Tools: QGIS, CUDA, Quartus, VS Code, Visual Studio, Atmel Studio, MySQL, Eclipse, PlatformIO

Productivity Tools: Microsoft Excel, PowerPoint, Word

PROJECTS

Multispectral Land Use Segmentation for Kuwait (Ongoing) | QGIS, PyTorch Dec. 2025 – Present

- Developing an end-to-end geospatial deep learning pipeline to classify land use using Sentinel-2 multispectral imagery.
- Prepared model-ready datasets in **QGIS** through raster alignment, mask correction, class re-labeling, and spatial tiling.
- Implementing semantic segmentation models including **U-Net** and **DeepLabV3 with a ResNeXt backbone** in PyTorch.
- Applying focal loss to address class imbalance and improve segmentation performance.
- Investigating self-supervised pretraining methods to enhance feature learning for remote sensing data.

Predicting Future Frames Using V-JEPA | PyTorch Jan. 2024 – May 2024

- Implemented a V-JEPA encoder for deep learning-based video feature representation to support classification and detection tasks.
- Adapted a U-Net architecture for semantic segmentation, improving spatial interpretation through modified connectivity.
- Developed a neural network for sequential video frame prediction using a sliding window of 11 frames.

Assessing the Impact of Population Size and Game

Properties on PBRL Effectiveness in Zero-Sum Games | *Ray, Weights & Biases* Aug. 2023 – Dec 2023

- Conducted a comparative analysis of Population-Based Reinforcement Learning (PBRL) across three zero-sum games under consistent training conditions.
- Evaluated agent performance against Self-Play and PBRL models with varying opponent pool sizes (2, 4, 6) to measure resilience to adversarial strategies.
- Observed that games with broader strategic diversity benefited more from PBRL, while simpler games such as Connect Four showed limited gains.

SRAM Built-In Self-Test (BIST) Engine for

Memory Fault Detection | *Verilog, RTL Design*

Jan. 2023 – May 2023

- Designed and implemented a modular BIST engine for a 256×4-bit SRAM to enable automated memory fault detection using industry test patterns.
- Architected controller, counter, decoder, comparator, and memory modules while applying pipelining to satisfy setup timing constraints.
- Reduced clock cycle time by 190 ps and validated functionality through a comprehensive testbench verifying read/write behavior and self-disable operation.

PID-Controlled Microwave Press | *MATLAB, KiCad, LTspice*

Aug. 2021 – May 2022

- Developed a PID controller to regulate the heating curve of sintered metals.
- Designed a level-shifter circuit to drive the magnetron On/Off switch.
- Implemented the controller in MATLAB and built a GUI to visualize heating curves and simplify system operation.

2-bit Full Adder Using Pass Transistor Logic Design | *Cadence Virtuoso*

Jan. 2022 – May 2022

- Designed a 1832.8 μm^2 adder using TSMC transistors.
- Applied pass transistor logic to reduce area and cost.
- Developed both schematic and layout designs using Cadence Virtuoso.