

# OMAR AL ETHAMAT

## AI & robotics engineer

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[Portfolio](#) | [Github](#) | [Linkedin](#)

Ai, Computer Vision, Robotics, and Embedded Systems Engineer with practical experience in computer vision, autonomous systems, robotic software development, embedded programming, and AI-powered perception. Experienced in designing and developing computer vision pipelines, robotic applications, and embedded solutions using ROS 2, Gazebo, OpenCV, PyTorch, YOLO, microcontrollers, and modern AI frameworks. Worked on projects involving UAVs, UGVs, satellite technologies, intelligent monitoring systems, and autonomous inspection platforms. Passionate about building intelligent systems that combine perception, autonomy, and real-world deployment.

## PROFESSIONAL EXPERIENCE

### Embedded Software Engineer, AI-Rhim Sat . Part-time | Amman, Jordan Nov 2025 - Present

Developing embedded software for a student-led 1U CubeSat selected for launch through United Nations Office for Outer Space Affairs (UNOOSA) and Exolaunch initiative  
Programming the On-Board Computer (OBC), handling data processing and satellite communication functions  
Designing and implementing microcontroller-based systems for wildlife tracking using LoRa technology in real-world environments

### Computer Vision Engineer , Qynerva . Full-time | Amman, Jordan April 2025 - Present

- Developed multi-stage deep learning pipeline (segmentation, classification, XAI)
- Achieved 96.77% accuracy (F1: 0.9679) across 4 tumor classes (100% on normal)
- Built segmentation model with 98.98% voxel accuracy (Dice up to 0.78)
- Designed explainable AI using visual heatmaps
- Developed end-to-end platform with backend + chatbot
- Applied generative AI techniques to synthesize MRI data

### AI Engineer Intern, Orange Jordan . Internship | Amman, Jordan Feb 2026 - May 2026

- Applied Computer Vision and image preprocessing techniques for real-world AI applications
- Developed an end-to-end Speech-to-Text (STT) service, including model development, backend APIs, and production deployment
- Built and optimized scalable backend and data systems, including RAG pipelines, database integration, and large-scale data processing using Apache Spark

### Machine Learning Virtual Intern , Intern Intelligence . Internship | Remote Feb 2025 - March 2025

- Developed 3+ ML/NLP models (cybersecurity, healthcare, text classification) achieving up to 98% accuracy in spam detection and 96%+ in medical classification
- Built end-to-end pipelines including preprocessing, TF-IDF/LSTM modeling, and hyperparameter tuning (GridSearchCV), improving model performance by 10–15%
- Deployed interactive apps using Streamlit for real-time prediction and moderation, handling multi-class classification with 87% accuracy

### NLP Engineer , High Yield Medicine . Freelance | Amman, Jordan Feb 2025 - March 2025

Developed an NLP-based medical research retrieval system, achieving 100% recall (no missed relevant studies) and 79% precision when benchmarked against expert annotations  
Integrated LLMs and external APIs to improve search relevance, reaching an F1-score of 0.88 and increasing the accuracy of literature discovery

## EDUCATION

### B.Sc. in Artificial Intelligence and Robotics Oct 2022 - Oct 2026

Al-Balqa Applied University (BAU)

### Software Engineering & Computer Science Core Curriculum Aug 2025 - Oct 2026

42 Amman

## CERTIFICATIONS

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<b>Mastering ROS 2 for Robotics Programming Specialization</b>   Packt <a href="#">Show credential</a>	May 2026
<b>Deep Learning for Computer Vision Specialization</b>   MathWorks <a href="#">Show credential</a>	May 2026
<b>Deep Learning Specialization</b>   DeepLearning.AI <a href="#">Show credential</a>	May 2026
<b>Machine Learning Specialization</b>   DeepLearning.AI <a href="#">Show credential</a>	May 2026
<b>Azure Fundamentals</b>   Microsoft <a href="#">Show credential</a>	Mar 2025

## SKILLS

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**Computer Vision:** OpenCV, Image Processing, Image Analysis, YOLO, MediaPipe, Feature Extraction, Object Detection

**Machine Learning & AI:** PyTorch, TensorFlow, Deep Learning, NLP, Reinforcement Learning

**Programming:** Python, C++, C

**Robotics & Embedded Systems:** ROS 2, Gazebo, RTOS, Raspberry Pi, Arduino, ESP32, Microcontrollers

**Tools:** Linux, Git, Docker, Azure

## PROJECTS

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### **EduVision — Smart School System — Graduation Project** | [Link](#)

- Developed a multi-modal AI system for real-time student monitoring using integrated Camera, Smartwatch, and Academic Performance modules.
- Built a YOLOv8-based Computer Vision model for classroom engagement and behavior analysis, achieving 77% mAP@50.
- Implemented a MediaPipe Face Mesh pipeline for focus and distraction analysis using head-pose and facial movement tracking.
- Developed smartwatch stress detection and academic prediction modules, achieving 91% and 89% accuracy respectively.
- Designed live dashboards, historical analytics, and AI-generated reporting with chatbot integration for real-time educational insights.
- Conducted end-to-end system validation using custom ground-truth evaluation, achieving an overall framework accuracy of 82.33%.

### **SolarGuard – Autonomous UAV–UGV Solar Farm Inspection System (In Progress)** | [Link](#)

- Designing a distributed multi-robot system using ROS 2 and Gazebo for autonomous solar farm inspection.
- Developing UAV–UGV cooperative workflows including task allocation, inter-robot communication, and autonomous mission execution.
- Integrating Nav2, computer vision, and AI-driven fault analysis to enable end-to-end inspection and maintenance reporting.

### **OrbitCV — Satellite Image Processing Tool** | [Link](#)

- Developed an end-to-end satellite imaging pipeline combining SDR-based satellite signal acquisition, image reconstruction, classical computer vision, and deep learning analysis.
- Built a C++/OpenCV application for image preprocessing, enhancement, feature matching, and geometric alignment using SIFT, ORB, and RANSAC.
- Designed a PyTorch-based multi-task deep learning model (EfficientNet-B4 + UNet) for simultaneous cloud segmentation and multi-label classification of satellite imagery.
- Captured and processed real satellite data from the Meteor-M N2-4 weather satellite using a custom V-dipole antenna and SDR workflow.
- Achieved 75.4% classification accuracy, 0.606 Dice Score, 0.438 IoU, and 0.766 F1-score.

### **MiniShell — System Programming Project** | [Link](#)

- Built a Unix-like shell in C, implementing core Bash functionalities including pipes, redirections, and environment variable expansion.
- Designed a custom lexer and parser to handle command tokenization, quoting, and syntax interpretation.
- Managed process execution using fork/execve, file descriptors, and signal handling (Ctrl-C/D), ensuring stable multi-process behavior.

### **ft\_irc — IRC server in C++** | [Link](#)

- Built a robust IRC server in C++98 using a fully non-blocking poll() architecture, supporting multiple concurrent client connections.
- Implemented channel management, authentication, messaging, and core IRC protocol features compatible with HexChat, and designed an event-driven networking system focused on scalability, reliability, and efficient communication.