Mohamed Mehdi Zmantar

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Arabic (Native) · French (C1) · English (B2)

Education

École Polytechnique de Sousse — Sousse, Tunisia
Engineering Degree in Computer Engineering — Data Science — *Sep. 2021 – June 2026*

Technical Skills

Languages: Python, Java, TypeScript, Go, C, C++, SQL (PostgreSQL)
AI & Machine Learning: PyTorch, TensorFlow, NumPy, pandas, Matplotlib, OpenCV, LangChain
Robotics & Embedded Systems: ROS 2, Gazebo, SLAM, autonomous navigation, Bash/Linux
Web & Backend: React, Node.js, Three.js, Django, FastAPI, MongoDB
Cloud & DevOps: Docker, Kubernetes, AWS (Kinesis, Lambda, S3, EC2), GitHub Actions, Git

Experience

Embedded AI & Computer Vision Engineer, Intern — Feb. 2026 – June 2026
ANAVID — *Sfax, Tunisia*

- Developed a real-time facial recognition system running entirely on-device on a Raspberry Pi 5, combining YOLOv8-Face detection, ArcFace embeddings, and FAISS vector search to enable fully offline identification
- Secured the pipeline with encrypted local storage, eliminating any transfer of biometric data to the cloud and ensuring full data privacy
- Optimized the model under hardware constraints via structured L1 pruning and quantization (PTQ, QAT) with ONNX/HEF export, reducing median inference latency by 40.5% (40.33 to 23.98 ms) and increasing throughput by 68.3% (24.79 to 41.71 images/s), for a final model size of 3.4 MB

Robotics & Simulation Engineer, Intern — June 2025 – July 2025
Enova Robotics — *Sousse, Tunisia*

- Designed a 3D web simulator of the UR10 collaborative robot using Three.js and React, integrated with ROS 2 to render its kinematics and supervisory states in real time, enabling remote visualization without physical access to the hardware

Web Development Engineer, Intern — Aug. 2024 – Sep. 2024
ENVAST — *Sousse, Tunisia*

- Architected a restaurant reservation web platform with Laravel and MySQL following an MVC architecture, exposing a RESTful API for future third-party integrations
- Implemented online payments, secure authentication, and role-based access control, simplifying reservation management for staff and customers

Projects

NAUTILUS-X | *Modular Autonomous Underwater Vehicle (AUV) Platform* | Site — 2024 – Present

- Designed and built an autonomous submarine for inspection, monitoring, and environmental tracking missions in constrained marine environments, with a modular architecture of interchangeable sensors and mission modules: hydrostatic and propulsion studies, complete onboard electrical architecture
- Programmed the real-time embedded software on Raspberry Pi, handling inertial and pressure data fusion, PID control of heading and depth, mission-mode management via a state machine, and long-range telemetry over LoRa

SMSentinel | *Multilingual Fraudulent Message Detection* | GitHub — 2025

- Fine-tuned XLM-RoBERTa for fraudulent SMS classification on a corpus of 5,574 messages, achieving 96% accuracy on the evaluation set, with hyperparameter optimization via Optuna
- Industrialized an end-to-end MLOps pipeline (DVC, MLflow, ZenML, Docker, GitHub Actions), with PSI-based drift detection and a FastAPI endpoint deployed on Microsoft Azure

Awards & Leadership

Founder — AquaFair Project, an automated valve system for regulating water pressure and flow, in partnership with SONEDE for a planned pilot deployment in M'saken, funded by a $9,500 USD IEEE Tech4Good grant — *Nov. 2025 – Present*

2nd Place — Arab IoT and AI Challenge, Regional Final, Dubai (International) — NAUTILUS-X Project — *Oct. 2025*

1st Place — Tunisia IoT and AI Challenge — NAUTILUS-X Project; 2 additional national 1st-place awards and Top 3 at IEEE TSYP congresses — *2023 – 2026*

Founder, Vice President — IEEE Robotics and Automation Society Student Chapter, École Polytechnique de Sousse; grew the chapter through workshops, hackathons, and industry partnerships (5 awards in two years) — *2023 – 2026*