

MOHAMED AZIZ Jlassi

AI & Robotics Engineer · Autonomous Systems · Embedded AI

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Professional Summary

Computer Engineering graduate specializing in Autonomous Systems, Robotics, Embedded Systems, and Artificial Intelligence. Experienced in designing and implementing intelligent systems that combine hardware integration, real-time perception, and autonomous decision-making. Built end-to-end projects including a physically constructed autonomous drone using ROS2 and PX4, computer vision pipelines using YOLO and Deep Learning, and distributed IoT and Big Data platforms. Graduated with **Highest Honors**. Strong focus on bridging embedded systems, AI, and real-world deployment.

Education

Bachelor's Degree in Computer Engineering

Institut Supérieur d'Informatique de Mahdia (ISI Mahdia), Tunisia

Graduated with Highest Honors

Final Year Project (PFE)

Autonomous Drone — Full Physical Build & Software Stack

ISI Mahdia

- Physically constructed a fully autonomous drone from hardware components (frame, motors, ESCs, flight controller, onboard computer)
- Integrated ROS2 and PX4 flight stack for autonomous mission execution and real-time flight control
- Developed a computer vision pipeline using YOLO for onboard object detection and environment perception
- Implemented autonomous navigation, waypoint following, and mission logic without human intervention
- Built a ground station interface for telemetry monitoring and mission control
- Technologies:* ROS2, PX4, Python, C++, YOLO, OpenCV, onboard embedded compute

Projects

Alzheimer's MRI Classification System

Big Data / Deep Learning / Healthcare

- Classified 6,400 brain MRI scans into 4 Alzheimer stages using MobileNetV2 transfer learning, achieving >90% accuracy
- Built an Apache Spark ETL pipeline for distributed data processing, MongoDB Atlas for cloud storage, and a Streamlit dashboard for visualization
- Integrated an AI chatbot (DeepSeek via OpenRouter) specialized in Alzheimer Q&A
- Technologies:* TensorFlow/Keras, Apache Spark, MongoDB Atlas, Streamlit, Python

Distributed LoRa IoT Environmental Monitoring

IoT / Embedded / Cloud

- Designed a two-node LoRa32 system monitoring gas, temperature, and humidity in infrastructure-free industrial zones over a 1-2 km range
- Applied a three-level security model: physical, communication (AES-128, CRC), and cloud (Firebase rules, token authentication)
- Technologies:* LoRa32, Firebase, MQTT, AES-128, CRC

Gym Security — AI Multi-Angle Facial Recognition System

Computer Vision / Full-Stack

- Built a real-time biometric access control system using DeepFace VGG-Face with 5-angle face training achieving >95% recognition accuracy
- Implemented live webcam scanning, member management CRUD, JWT authentication, admin dashboard, and audit logging — scalable to 10,000+ members
- Technologies:* Python (Flask), DeepFace, Node.js, Express.js, SQLite, JWT

ArcFace Real-Time Face Recognition

Computer Vision / AI

- Implemented real-time face recognition using ArcFace (InsightFace) with 512-dimensional embeddings and cosine similarity matching
- Built a full data augmentation pipeline (flip, brightness, rotation, noise) for robust recognition under varied conditions
- *Technologies:* Python, OpenCV, ONNX Runtime, InsightFace

Al Baraka Bank Tunisia — Front Leasing Platform

Hackathon — Forum Cheikh Mokhtar Sallemi

- Built a full-stack web and mobile leasing financing request platform for banking clients
- Integrated with the bank's Information System via REST APIs (WSO2 API Gateway) and built a callback API for financing decisions (Accepted / Refused / Complement Requested)
- Built post-approval features: amortization schedule display and installment payment tracking
- Designed production-grade architecture: Angular frontend, Spring Boot backend in Docker, PostgreSQL cluster (Patroni + HAProxy + ETCD, 3 nodes), NGINX reverse proxy, WAF, TLS/HTTPS
- *Technologies:* Angular, Spring Boot, PostgreSQL, Docker, NGINX, WSO2, HAProxy, Patroni

Mahdia Blue & Green — Sustainable Economy Web Platform

Full-Stack Web

In collaboration with Ordre des Ingénieurs Tunisiens (OIT Mahdia)

- Built a full-stack platform promoting sustainable blue, green, and circular economy initiatives in Mahdia in partnership with OIT Mahdia
- REST API with article and event management, JWT authentication, contact system, and a React 19 frontend
- *Technologies:* React 19, Vite, Node.js, Express.js, MongoDB, JWT

Cloud Infrastructure Automation Platform

DevOps / Infrastructure as Code / Private Cloud

- Engineered an automated private cloud provisioning platform using Terraform and Proxmox VE to deploy production-ready Linux virtual machines with minimal human intervention
- Built modular Infrastructure-as-Code templates supporting cloud-init, dynamic networking, SSH key injection, storage allocation, and scalable multi-VM deployments
- Automated post-deployment configuration for containerized environments including Docker installation, Kubernetes-ready infrastructure, and CI/CD integration
- Applied Infrastructure-as-Code best practices including reusable modules, state management, secure API authentication, version control, and environment parameterization
- Reduced infrastructure deployment time from manual provisioning to fully automated deployments completed in a few minutes
- **Stack:** Terraform, Proxmox VE, Cloud-Init, Docker, Linux, Git, REST API, HCL

Technical Skills

Programming Languages	Python, Java, JavaScript, TypeScript, C, CUDA, Bash, SQL, VHDL
Robotics & Autonomous Systems	ROS2, PX4, MAVLink, Mission Planner, ArduPilot, Gazebo, sensor fusion, drone hardware integration
AI & Machine Learning	YOLO (Ultralytics), PyTorch, OpenCV, TensorFlow, Keras, MobileNetV2, ArcFace, DeepFace, ONNX, NumPy, CUDA GPU programming
Hardware & Low-Level	STM32, ESP32, Raspberry Pi, LoRa32, VHDL, FPGA design (Xilinx toolchain), AXI4-Stream, SoC integration, MQTT, Modbus TCP, BLE
Full-Stack Development	React (Vite), Next.js, Angular, Node.js (Express), FastAPI, Spring Boot, REST, Web-Socket, Socket.io, event-driven architecture
Databases & Messaging	PostgreSQL (RLS, indexing, query tuning), MongoDB, Redis, SQLite, RabbitMQ, Firebase RTDB, Supabase
Big Data & Cloud	Apache Spark, MongoDB Atlas, Firebase, ETL pipelines, Streamlit, Oracle Cloud, LXC Containers
DevOps & Monitoring	Docker, NGINX, Terraform, Proxmox VE, Git, GitHub Actions CI/CD, HAProxy, Prometheus, Grafana, Resilience4j, Node-RED
Security	JWT, RBAC, TLS/HTTPS, AES-128, OTP, WAF, WireGuard, Zero-KYC systems, BTCPay Server, Stripe, VLAN isolation
Technical Writing	LaTeX, academic paper writing, technical specification documents

Internship

Embedded IoT Gateway — NF E 60-182 Compliance

2nd Year Internship

C.S.T, Tunisia ·

- Developed an embedded IoT Gateway for real-time machine performance monitoring compliant with French industrial standard NF E 60-182 (TRS/OEE)
- Collected sensor data via MQTT, Modbus TCP, HTTP, and BLE; computed OEE/TRS indicators on-device and published results to a central platform
- Built a local real-time web dashboard for machine KPI visualization
- *Technologies:* Raspberry Pi, ESP32, Python (FastAPI), MQTT, Modbus TCP, Chart.js

Languages

Arabic — Native English — C1 French — B1 German — A2

Key Attributes

- **Autonomous Systems Engineering:** Experienced in designing intelligent robotic systems by integrating embedded hardware, ROS2, PX4, computer vision, and autonomous mission planning into complete end-to-end solutions.
- **Full-Stack Engineering:** Capable of developing complete software ecosystems, from embedded firmware and AI inference pipelines to REST APIs, cloud services, databases, and modern web applications.
- **Artificial Intelligence & Computer Vision:** Practical experience building deep learning solutions using YOLO, TensorFlow, MobileNetV2, ArcFace, and OpenCV for real-world perception and decision-making.
- **Infrastructure Automation:** Skilled in Infrastructure as Code using Terraform and Proxmox, automating virtual machine provisioning, cloud infrastructure deployment, and scalable development environments.
- **System Architecture:** Strong understanding of distributed systems, modular software design, API architecture, embedded communication protocols, and scalable engineering practices.
- **Problem Solving:** Able to transform complex engineering challenges into practical, reliable, and production-oriented solutions across robotics, AI, cloud, and embedded domains.
- **Research Mindset:** Passionate about learning emerging technologies, evaluating engineering trade-offs, and applying research concepts to real-world industrial projects.
- **Self-Directed Engineering:** Independently designed and implemented multiple multidisciplinary projects, demonstrating initiative, ownership, and the ability to learn unfamiliar technologies rapidly.

· References and full project documentation available upon request.