LEBAILI Mohamed Ouail

Professional summary

Computer Science engineering student (ESI-SBA) with hands-on experience in embedded systems, IoT, real-time systems, full-stack web development and applied machine learning. Proven track record building end-to-end projects — from microcontroller firmware and sensor simulation to backend services, dashboards and ML-based analytics. Experienced in datathons and industrial internship (ALNAFT). Strong collaborator and open-source contributor.

Education

Higher School Of Computer Science Sidi Bel Abbes (ESI) September 2023 – P
State Engineer & Master's Degree in Computer Science — Computer Systems Engineering (ISI) *Sidi Bel Abbes,*
Relevant coursework: Computer Networks, Embedded / IoT Systems, Real-Time Systems, Cloud Computing, Advanced AI, Operational Research, Database Systems, Machine Learning, Cybersecurity & Cryptography

Higher School of Computer Science (ESI-SBA) — Preparatory Cycle September 2021 – June 202
Preparatory cycle in Computer Science *Sidi Bel Abbes, Algeri*
Data Structures, Algorithms, Object-Oriented Programming, Computer Architecture, Discrete Mathematics, Probability, Linear Algebra, Statistics

Baccalaureate in Mathematics — With Honors June 2021
High School Diploma *Algiers, Algeria*

Experience

National Agency for the Valorization of Hydrocarbon Resources (ALNAFT) September 2024 – S
Fourth-Year Internship — Computer Science Department
- Gained exposure to enterprise workflows across technical teams and departments in a national agency.
- Observed and participated in data handling, departmental collaboration and project management practices.
- Assisted with internal tools, data flows and learned operational procedures used in large organizations.

Freelance Software Developer 2023 – Present
Remote / Self-employed
- Delivered tailored software solutions to clients: requirement gathering, design, implementation and deployment.
- Managed full development lifecycle and coordinated with stakeholders to meet project goals.

Selected Projects

AI-Powered Botnet Attack Detection on IoT Devices *Python, PyTorch, ns-3, scikit-learn*
- Collected and processed IoT network traffic (pcap/traces); engineered time-series features and trained temporal models for anomaly detection.
- Implemented evaluation pipelines (detection rate, false positive rate, F1-score) and validated models on simulated and real traces; improved detection F1 via feature engineering and model tuning.
- Reproducible experiments with Docker and CI, enabling automated training and testing.

Raspberry Pi Face Recognition Attendance System *Python, OpenCV, TensorFlow Lite, Django*
- Deployed an optimized face recognition model on Raspberry Pi with on-device inference; applied pruning and quantization to reduce latency and memory footprint.
- Integrated device with Django backend for logging and dashboard; designed end-to-end data pipeline and REST API endpoints.

School Inventory & Material Management System *Node.js, Express, PostgreSQL, Docker*
- Designed and implemented RESTful APIs for inventory operations and role-based access.

- Packaged services with Docker Compose and documented APIs with Swagger; included unit and integration tests.

Realtime Chat Application *MERN, WebSocket*
- Full-stack real-time chat application using MongoDB, Express, React and Node; implemented WebSocket messaging, authentication and responsive UI.
- Showcases real-time communication patterns and scalable data handling.

Promptopia *Next.js, Server Actions, Google Auth*
- Platform for sharing AI prompts with authentication, searchable feeds and profile editing.
- Implemented secure Google OAuth flows and client-server interactions using modern Next.js features.

MagFlow — Store Management (Backend) *Node.js, REST API, PostgreSQL*
- Backend services for MagFlow: inventory tracking, order management and real-time updates for web and mobile.
- Contributed to API design, database schema and integration testing as part of a multidisciplinary project.

Industrial IoT Machine Monitoring & Control System *MQTT, Node.js, Dashboard*
- System for monitoring industrial machines using sensors (simulated or real), MQTT telemetry and real-time dashboard analytics.
- Designed data ingestion and alerting logic for operational metrics.

IoT Fleet Management & Tracking *Device simulation, REST API, Frontend Dashboard*
- End-to-end fleet tracking system: device simulation for telemetry, backend APIs, and a front-end dashboard for monitoring locations and statuses in real time.

MERN Movie Recommendation *MongoDB, Express, React, Node*
- Developed a movie recommendation platform with user profiles, recommendation algorithms and searchable catalog.
- Prototype for a dynamic recommender intended to adapt to user activity.

Botnet Attack Detection — Backend *Python / Node, Data Pipelines*
- Backend for detecting botnet-like behavior on IoT networks: collection, preprocessing and detection logic (rule-based or ML).
- Supports alerts and logging for downstream visualization/analysis.

Technical Skills

- **Languages:** Python, JavaScript (Node.js), C/C++ (basic), Java
- **Embedded & IoT:** Raspberry Pi, Arduino simulation (Wokwi / Tinkercad), MQTT, sensor data acquisition, on-device inference (TensorFlow Lite)
- **AI & Data Science:** PyTorch, TensorFlow, scikit-learn, LSTM, feature engineering, model compression (pruning, quantization), evaluation metrics (F1, precision, recall)
- **Simulation & Networking:** ns-3, OMNeT++, Cooja, IEEE 802.15.4, network KPIs (PDR, latency, jitter)
- **Backend & Databases:** Django, Express, REST API design, PostgreSQL, MongoDB
- **DevOps & Tools:** Docker, Docker Compose, Git/GitHub, CI (GitHub Actions), Swagger/OpenAPI, Postman
- **Methodologies & Modeling:** UML/BPMN, agent-based concepts, experiment design, Agile/TDD

Languages

- Arabic — Native
- French — Proficient
- English — Proficient

Engagements & Achievements

- Scientific Club — Alphabit Club: President (1 year), Finance Team (1 year), Dev Team (1 year)
- Participated in: 2 Datathons, 2 Hackathons and 1 CTF competition
- Winner — SecAI Datathon 2024 (in collaboration with the Algerian Spatial Agency)