

Mohammad Khalife

Junior Software Engineer | R&D Software Engineer | C++ / Python / Laravel / IoT

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Summary

Recently graduated M2 in Computer Science & IoT, with a research internship at FEMTO-ST on distributed C++ algorithms for modular-robotics simulation. Experienced in backend development, IoT integration, applied machine learning, and automation. Seeking a junior software engineering or R&D role involving C++, Python, backend systems, IoT, simulation, or applied ML. Available immediately.

Professional Experience

- Research Intern**, FEMTO-ST Institute – Montbéliard, France
March 2026 – August 2026
 - Designed and implemented distributed C++ algorithms for self-reconfigurable 3D modular robots (catoms) in the VisibleSim simulator.
 - Developed bio-inspired coiling strategies (dodder plant) to enable modular swarms to explore and occupy constrained spaces using only local interactions.
 - Evaluated coordination logic through simulation experiments measuring module propagation, geometry adaptation, and space discovery.
- Automation & ERP Developer**, Zaza Woods – Germany (Remote)
August 2024 – June 2025
 - Developed custom Odoo modules and automation scripts to synchronize inventory and operational data with a Shopify storefront.
 - Automated data-entry and reporting workflows using programmed solutions and Excel VBA, reducing manual effort in revenue and inventory analysis.

Technical Projects

- Lawen Wasel – Carpooling Platform**
Laravel / PHP
 - Architected a RESTful PHP web application with 30+ endpoints, secure user authentication (Laravel Sanctum), and a relational database.
 - Integrated the OpenRouteService API to calculate and optimize efficient path sequencing for multi-passenger trips.
- Leader Election & Shape Recognition for Modular Robots**
C++ / Distributed Systems
 - Implemented distributed leader election logic in C++, achieving coordinated decision-making across 14,764 independent simulated modules.
 - Built a decentralized coordinate propagation system, enabling modular swarms to calculate relative (x, y) positions and perform global template matching.
- Deye Inverter IoT Integration**
Dart / Android
 - Wrote a native Dart library to poll real-time telemetry from Solarman IoT loggers via raw local network sockets.
 - Built a dedicated Android application to monitor local grid status and trigger live system alarms.

Education

- M2** **Université Marie et Louis Pasteur** – Montbéliard, France, Master in Internet of Things (IoT) – Graduated
2025–2026
 - IEEE Publication:** Co-author of a published paper (MENACOMM 2026) on [fine-tuning open-source LLMs \(Gemma, LLaMA\) for dialectal Arabic](#).
 - Applied ML Coursework:** Deployed XGBoost/LightGBM for urban noise forecasting; built NLP pipelines using spaCy and BERT; developed time-series predictors (LSTM/GRU).
- M1** **Lebanese University** – Beirut, Lebanon, Master 1 in Computer Science
2024–2025
- BS** **Lebanese University** – Beirut, Lebanon, Bachelor in Computer Science
2021–2024

Technical Skills

Programming: C++, Python, PHP, Dart, JavaScript, Java, SQL, Bash
Backend & Web: Laravel, Next.js, REST APIs, React, Node.js, Odoo, Shopify API
Systems & Tools: Linux, Ubuntu, Docker, Git, VisibleSim, REST API testing
AI & Data: PyTorch, TensorFlow/Keras, HuggingFace, XGBoost, LightGBM, Pandas, spaCy, Jupyter
Databases & Cloud: MySQL, PostgreSQL, Microsoft SQL Server, AWS Certified Cloud Practitioner

Certifications & Languages

AWS Certified Cloud Practitioner (2024) | **CS50 Python** (Harvard, 2023) | **IELTS** Band 6.5 (2024)
Arabic: Native | **English:** Professional working proficiency