

# Adam Bouafia

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## Education

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### Vrije Universiteit Amsterdam

Sept 2024 – Dec 2025

Master's in Global Software Engineering (GSEEM) in Computer Science

- Specialization: Software Engineering & Green IT
- Thesis: Towards Greener Clouds: Evaluating Hybrid Log Management System

### Università degli Studi dell'Aquila

Sept 2023 – June 2024

Master's in Global Software Engineering in Computer Science

### Higher Institute of Computer Science of Mahdia

Sept 2019 – June 2022

Bachelor's in Computer Science in Software Engineering & Information System

- Final Grade: 15.2/20
- Thesis: Flutter Mobile Security App 'M3ak'

## Experience

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### Software Developer

Mahdia, Tunisia

Atomic IT-Pro

Jan 2022 – June 2022

- Developed Flutter mobile security application called 'M3ak'
- App reached top 5 on PlayStore with 10,000+ downloads with high ratings

### Software Developer

Paris, France

Euromed Organization

July 2022 – Dec 2022

- Developed Dhayen, a mobile security app for a national campaign
- Contributed to the Algerian national awareness campaign: 'Dhayen, Yakfi, Stop!'

### Researcher

Pescara, Italy

Vivieb

Nov 2023 – Feb 2024

- Optimized energy efficiency in Kubernetes clusters
- Visualized metrics using Grafana, utilized KubeGreen

### Master's Thesis Researcher

Amsterdam, Netherlands

Vrije Universiteit Amsterdam

Mar 2025 – Dec 2025

- Designed and evaluated a hybrid log management system combining MySQL, ELK, and IPFS for improved integrity, performance, and energy efficiency in cloud computing.
- Applied content based algorithm (CBR) and reinforcement learning (Q-learning and A2C) for intelligent log routing, addressing regulatory compliance (GDPR, HIPAA) and sustainability in data centers.
- Delivered a reproducible, containerized pipeline for testing routing strategies, focusing on latency and energy consumption.

## Projects

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### LCT - LLM Comparative Tool with Energy Profiling

Oct 2025

- Developed open-source framework for evaluating 500,000+ HuggingFace LLMs across 17 research-backed algorithms (BLEU, ROUGE, BERTScore, G-Eval, HumanEval, GSM8K) with 15+ integrated datasets, featuring real-time energy profiling via CodeCarbon and hardware-level RAPL counters.

- Architected multi-evaluation system combining traditional NLP metrics, semantic embeddings (Sentence-BERT), LLM-as-judge approaches, and task-specific benchmarks (code generation, mathematical reasoning, safety alignment) with full environmental impact tracking across 35+ global regions.
- Built containerized deployment with Docker (CPU/GPU variants) and automated CI/CD pipeline using GitHub Actions for multi-version testing (Python 3.9-3.12), Docker builds, and continuous deployment to Docker Hub, supporting reproducible experiments with CSV exports and carbon footprint analytics (tokens/joule, kg CO2).

#### **CO2 Consumption Monitor — GNOME Shell Extension**

*2025-9*

- Developed an open source GNOME Shell extension available on Gnome Store to estimate real-time CO2 emissions based on system usage, using pure JavaScript/GJS.
- Integrated various online carbon intensity providers (ElectricityMaps, Smart Auto) and built features for auto country detection and live data updates.
- Implemented advanced UX features like per-application CO2 tracking, historical data export, and intuitive preferences for end-users.

#### **Think Before You Save (Green Waves Hackathon Winner at TU Delft)**

*2025-1*

- Developed a Chrome extension to calculate and display CO2 emissions from cloud file storage, promoting sustainable digital practices.
- Awarded winner at the Green Waves Hackathon at TU Delft University for innovative approach to environmental impact awareness.
- Implemented features including file emissions estimation, history tracking, interactive eco-tips, and user notifications using JavaScript, Chrome Extensions API, and @tgwf/co2.

#### **Create a Serverless Kubernetes-based Resource Manager**

*2024-11 - 2025-1*

- Designed a serverless Kubernetes control plane using on-premise solutions like Knative
- Benchmarked system performance under real-world Kubernetes deployment patterns
- Evaluating scalability and elasticity using latency, throughput, and resource usage metrics

#### **Comparative Evaluation of Energy Efficiency in LLMs**

*Oct 2024*

- Analyzed energy consumption across LLM versions
- Utilized Experiment Runner and DeepEval tools

#### **Smart Fan Project**

*Sept 2024*

- Controlled environmental conditions in real-time
- Used MQTT, InfluxDB, Grafana for data processing

#### **GramApp-Detect-API**

*July 2024*

- Developed API for grammar checking and sentiment analysis
- Leveraged NLP techniques for efficient text analysis

#### **Vehicle Routing Problem Optimization**

*Dec 2023*

- Solved VRPHLB using MILP for delivery optimization
- Applied network optimization techniques

#### **Gas Monitoring System**

*Feb 2024*

- Built a gas monitoring system using Node-RED and InfluxDB
- Integrated Telegram notifications for safety alerts

## **Certifications**

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**JNCIA-DevOps (Juniper Networks Certified Associate - DevOps)**

*Nov 2024*

**IELTS Academic - English B2**

*May 2023*

## Skills

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**Programming Languages:** Python, Java, JavaScript, C++, Dart

**Containerization and Orchestration:** Kubernetes, Knative, Docker

**Serverless and Cloud Technologies:** Serverless architecture, AWS Lambda, Knative

**Distributed Systems:** Consistency, fault tolerance, performance benchmarking

**Benchmarking and Performance Evaluation:** Experiment Runner, DeepEval, latency, throughput analysis

**Data Monitoring and Visualization:** InfluxDB, Grafana, Node-RED

**Optimization and Algorithms:** Mixed-Integer Linear Programming (MILP), Network optimization

**Natural Language Processing (NLP):** Grammar checking, sentiment analysis, API development

**IoT and Real-time Control:** MQTT, environmental control systems, data processing

**Frameworks & Libraries:** Flutter, Spring Boot, Node.js

**Tools & Technologies:** API Development, NLP, IoT, ML frameworks

## Languages

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**Arabic:** Native

**French:** Intermediate

**English:** Fluent

**Italian:** Proficient