

# MÁRIO AFONSO

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<https://github.com/Mario2211-debug/>

## SUMMARY

Computer Engineer with practical experience in fullstack web development, automation, and IoT. I've worked on personal and academic projects involving machine learning, systems integration, and cloud computing, creating intelligent and scalable solutions. I strive to apply AI and automation to solve real-world challenges and improve business processes.

## EDUCATION

<b>Bachelor's degree in computer engineering</b>	2016 — 2021
Instituto Superior Politecnico Kalandula de Angola, Luanda, Angola	
Coursework: Software Engineering, Distributed Systems, Databases, Computer Networks, Artificial Intelligence, Cloud & IoT, Information Security, Project Management, Business Management	
<b>Master's Degree in Computer Engineering and Computing</b>	2024 — Current
University Portucalense, Porto	
Coursework: Cloud Infrastructure, Computer Networks, Databases, IoT Integration, Data Science, and AI-Driven Collaborative Projects	
<b>Software Engineering (Non-Traditional Education)</b>	Feb 2025 — Current
Escola 42 Porto	
Coursework: Algorithms, Data Structures, Computer Networks, Databases & Systems Programming, Collaborative Projects	
<b>Junior Full-Stack Bootcamp (Intensive / Project-Based)</b>	Sep 2025 — Nov 2025
Bytes4Future	
Coursework: HTML, CSS, JavaScript & TypeScript, React, Node.js, Next.js, Git, APIs, UX/UI Design & Prototyping	

## TECHNICAL SKILLS

**Programming Languages:** Python, TypeScript, C, Shell & Linux

**Frameworks & Tools:** React, Node.js, Next.js, Tailwind, Express, Docker, Git

**Programming Languages:** C, Python, Typescript

**Databases:** MongoDB, MySQL, influxDB

**IoT & Cloud:** EdgeX Foundry, MQTT, Linux, Grafana

**Design:** Figma

**Other:** API Integration, Machine Learning, System Automation

## PROFESSIONAL EXPERIENCE

<b>Angola Telecom, Benguela, Angola: Technical Assistant (Internship)</b>	May 2019 – Aug 2019
• Assisted in network and telecommunications operations, supporting equipment configuration, maintenance, and incident resolution.	
<b>CISP (Integrated Public Security Center), Benguela, Angola: Data Center Technician</b>	Apr 2020 – Aug 2023
• Managed and monitored critical IT infrastructure using <b>Linux</b> , <b>Zabbix</b> , and proprietary datacenter platforms. Performed system maintenance, troubleshooting, and uptime optimization in high-availability environments.	

## PROJECTS

(CLICKABLE TITLES LINK TO PROJECT REPOSITORIES)

<b>Blog and Portfolio Website - Personal Project (<a href="#">Go Live</a>)</b>	September 2023 - Current
Designed and developed front-end and back-end using Next.js, Node.js, and MongoDB to showcase skills, projects, and technical articles. Utilized AI-assisted development tools to enhance code quality and accelerate the development process.	
<b>Edge-Based Failure Prediction System - Academic Project (<a href="#">UPT</a>)</b>	December 2024 – April 2025
Designed and developed an intelligent edge-based failure prediction platform combining <b>IoT</b> , <b>edge computing</b> , and <b>machine learning</b> . The system integrates a Master-Slave architecture for sensor data collection, real-time processing, and predictive maintenance, with a custom web dashboard for live monitoring.	
• Implemented a Master-Slave architecture in <b>Python</b> for coordinated data acquisition and processing across multiple edge devices.	
• Built an <b>Edge IoT network</b> using <b>EdgeX Foundry</b> and <b>MQTT</b> for real-time sensor communication.	
• Applied machine learning techniques to predict system failures based on sensor data.	
• Developed a <b>real-time monitoring</b> dashboard from scratch using <b>Next.js</b> to visualize sensor metrics and system health.	

- Built the backend with TypeScript/Node.js and a MongoDB database.
- User authentication and management.
- Meeting creation, editing, and response.
- Dashboard with statistics and interactive calendar.
- Integration with email and Telegram for notifications.

**Milestone 1** - Academic Project (**42 Core Curriculum**)

2024

Fundamental low-level programming projects focused on **C language mastery, memory management, and Unix-based development**. This milestone established a strong foundation in modular design, pointer manipulation, and performance-aware coding.

- Reimplemented core libc functionalities (**libft**), strengthening understanding of memory allocation and pointers.
- Developed a line-by-line file reader and a formatted output function (**get\_next\_line, ft\_printf**).
- Gained strong experience with static variables, variadic functions, and low-level debugging.

**FarmAdm** - Internal Tool - Professional project (ArduMaker)

December 2025

Agricultural Field Management Web System designed to centralize and manage farm data efficiently. The platform provides full CRUD functionality, smart filters, and a modern, responsive UI, built with **Next.js, Express.js, MongoDB, TypeScript, TailwindCSS, and Framer Motion**, ensuring scalability and maintainability.

- Farm management: add, edit, view, and delete.
- Smart system and filters.
- Responsive interface with dark theme design and animations.