

Abdelrahman Elborgy

Software Engineer

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Villa T10, The Square Compound

New Cairo, Egypt

Innovative Embedded Systems Engineer with 8+ years of experience in firmware, IoT, and microcontroller-based design. Skilled in optimizing IoT and real-time embedded applications. Recently expanded into AI integration, specializing in LLM-based applications, edge AI, and agentic systems. Hands-on building intelligent AI assistants, fine-tuning models (LoRA), and deploying scalable inference pipelines using vLLM, FastAPI, and Langchain for real-world automation and business operations.

Core Skills

Embedded C, Microcontrollers interfacing, IoT, RTOS, Communication protocols, Git Tools, C, C++, C#, Data structure, Python, Java, AI, LLM, UART, I2C, SPI, BLE, AI agent, PyTorch, vLLM, FastAPI, Langchain, HuggingFace

Work Experience

Freelance AI & LLM Solutions Developer

Jun 2024 - Present

Self-Employed / Remote

- Implemented scalable inference using vLLM and Hugging Face Transformers, supporting multi-user, multi-model, and persistent memory serving in production environments for Pyrforos.io.
- Fine-tuned open-source LLMs (e.g., LLaMA, Mistral) using LoRA (Low-Rank Adaptation) to create specialized, lightweight models optimized for specific business tasks.
- Designed and deployed custom AI agent workflows using Langchain, n8n, and RAG for businesses across industries.

Senior IoT Engineer

Oct 2025 – Present

Sandbase, Karmsolar | Maadi

- Developing the device domain of Sandbase unified energy platform using DDD.
- Contributing to platform architecture, implementing scalable backend components with Python, FastAPI.
- Integrating AI-driven automation for device discovery, validation, and anomaly insights within the platform.

Senior Embedded Software Engineer

Sep 2022 – Aug 2025

Engineering Office for Integrated Project EOIP | Maadi

- Led a team of 8 engineers to develop embedded software for over 10 commercial IoT products.
- Provided technical mentorship to the team and code reviews.
- Developed IoT solutions leveraging RF, NFC, BLE, Wi-Fi, and BLE Mesh technologies to enhance smart meter connectivity, real-time monitoring, and remote-control functionalities.
- Led the development of the FM RDS (Unified Azaan) system to broadcast synchronized prayer times across Cairo via FM radio.
- Reduced development cycle by 25% by modularizing firmware libraries.

Embedded Software R&D Engineer

Sep 2020 - Sep 2022

Engineering Office for Integrated Project EOIP | Maadi

- Experienced in ARM and RISC-V microcontrollers and various meter protocols like DLMS, IEC62056.
- Implemented communication protocols for various IoT meters and sensors.
- Successfully developed and deployed several firmware updates for existing products.

Production Engineer

Aug 2017 - Aug 2020

Alyossr for Engineering & Electronics AEE

- Developed and implemented new production processes and procedures, resulting in improved product quality and a reduction in defects.
- Worked closely with cross-functional teams to ensure successful product launch and ongoing production.
- Led production line improvement to increase production efficiency and reduce waste.

Electrical Engineer

Nov 2015 - Aug 2017

Alyossr for Engineering & Electronics AEE

- Designed and developed PCB layouts for LED lighting drivers and LED stripes, as well as small embedded systems devices.

Internship

Jun 2014 - Aug 2014

High Food for Food Industry | 10th of Ramadan city

- Supported staff members in their daily tasks, reducing workload burden and allowing for increased focus on higher-priority assignments.
- Analyzed problems and worked with teams to develop solutions.

Internship

Aug 2011 - Aug 2011

El Sewedy Electrical Solutions | 10th of Ramadan city

- Design and build low and medium-voltage switchgear and control units.

Education

Higher Technological Institute

May 2015

Bachelor of Science in Electrical Engineering

Additional

- AI Agents Fundamentals - Hugging Face (2025)
- German Language Course (A2) – Goethe Institute (2016)
- Infant Incubator – Graduation Project (2015)
- Home Automation System – Project (2014)
- International Robotics Challenge (IRC) – Participant (Mar 2014)
- PLC Applications – Summer Course – Jeilecom Egypt, Ain Shams University (May–Jul 2013)
- PIC Microcontroller & Applications – Summer Course (Jun–Jul 2012)
- Remotely Operated Vehicle (ROV) Competition – Team Leader (2012)

Languages Arabic (Native), English (Fluent), German (Good)