Hussein Fadhel

Control & Automation Engineer | IoT Specialist

hussein.alali80163@gmail.com 07830117210 Al Bahadria, Martyr Iyad Abdullah School

2004 hussein-fadhel-ahmed Single https://hussein-fadhel-ahmed.github.io/portfolio/

Profile

Forward-thinking Control & Automation Engineer with specialized expertise in Industrial IoT (IIoT), embedded systems, and automation control theory. Over 2 years of hands-on experience designing, implementing, and optimizing smart industrial solutions. Skilled in integrating embedded platforms (ESP32, Raspberry Pi) with cloud and SCADA/DCS systems to enable real-time monitoring, diagnostics, and predictive maintenance. Strong proficiency in control modeling (PID, LQR), PLC programming, and industrial communication protocols (Modbus, RS485).

Professional Experience

2024 – present
Basra, Iraq

Siraj Al-Maarefa Company
IoT Engineer
Developed ESP32 Web Server for real-time control and integrated Kivy/KivyMD GUIs on Raspberry Pi for data visualization.

2019 – Present (Freelance)
Basra, Iraq

Digital World Company
Technical Support Specialist – Rugged Devices
Here's the description in English:
Worked as a **Technical Specialist**, responsible for reviewing the specifications of **explosion-proof (EX) devices** and ensuring the alignment of certifications with the requirements of industrial environments to guarantee performance compatibility with harsh conditions.

07/2024 – 08/2024
Basra, Iraq

South Refineries
SCADA & DCS Intern
Tuned DCS controllers, calibrated instruments, and developed HMI dashboards for alarms and process monitoring.

07/2023 – 08/2024
Basra, Iraq

South Electricity Distribution Company
SCADA & DCS Intern
Configured RTUs, Modbus networks, and HMI systems

Basra, Iraq

OTHER EXPERIENCE
Automotive Maintenance Technician – 4 years
Handled tire services, wheel alignment, engine tuning, and electrical troubleshooting. Conducted mechanical diagnostics and repairs in both workshop and freelance settings, building hands-on expertise in vehicle systems.

Education

2021 – 2025
Basra, Iraq

Bachelor of Control & Automation Technology
Southern Technical University
Focused on control systems such as PID, LQR, and state-space, and embedded systems. Worked with PLCs, SCADA/DCS platforms, and industrial communication protocols like Modbus over RS485. Final project involved integrating LLMs into predictive maintenance within ICS environments.

Languages

English — Proficient

Arabic — Native/Bilingual

Skills

Multi-system Architecture — Proficient
Linux (Debian/Ubuntu), Windows, Android

Embedded Systems — Expert
ESP32, Raspberry Pi, Arduino, Omega

Python Programming — Proficient
Kivy, scikit-learn , numpy, OpenCV, TensorFlow, ect..

Large language models (LLMs) — Competent
Prompt engineering, Fine-Tuning, AI Agent

Engineering Design Tools — Proficient
AutoCAD, Fusion 360

PLC Programming — Proficient
Ladder, FBD, Statement List (ST)

Modeling & Simulation — Competent
MATLAB/Simulink, factoryIO, Multisim, Wokwi

HMI & UI/UX Design — Proficient
Figma, Node-RED, Kivymd, VS.Net

Database & API — Proficient
Firebase, APIs, ect..

Web Developer — Proficient
HTML, CSS (Tailwind, Bootstrap) , JavaScript (Vue.js)

Certificates

Growth with AI - Google/Zain
Dec 18, 2024

C++ Fundamentals - Sololearn
Nov 19, 2024

IoT Fundamentals - Maarifa
Jun 19, 2022

Python Advanced - Sololearn
Nov 30, 2024

Web Development - Webe
Sep 10, 2023

Arduino Essentials - Edraak
Dec 2, 2021

Projects

Smart Automation Projects
- Developed an Industrial **Home Automation** System using ESP32 and Vue.js.
- Built an **autonomous Smart Irriga**tion System
- **Dual-Axis Solar Tracker** using sensors and microcontrollers for environmental control.
- Designed an Advanced **Traffic Light** Controller **using PLCs and HMI** for traffic management.

LLM-based Predictive Maintenance Device (ChatGPT API)
Created a predictive maintenance system using LLMs to analyze sensor data and fault codes from OBD2 and RS232/RS485, improving diagnostics by 30% and reducing maintenance costs by 25%.

ANN-based Water Potability Prediction
Trained and deployed an Artificial Neural Network model to determine water potability using physicochemical data. Achieved 72% accuracy, the highest among models tested on the same dataset.

Smart IoT Connectivity & Configuration Platform
A simplified platform for IoT device setup and connectivity using a user-friendly GUI, supporting auto-reconnection. Reduces setup time by 95% for users and 50% for developers, enabling fast, secure deployment with minimal technical requirements.

Autonomous Warehouse Robot with Path Tracking
Built an autonomous robot using **Arduino UNO R4** and **Wi-Fi**, with **ultrasonic sensors** for obstacle avoidance and **path tracking encoders** for precise navigation in **warehouse environments**.