

# MUHAMMAD DANIYAL JAVED CHOUDHARY

## Embedded IoT & Automation Engineer

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## PROFESSIONAL SUMMARY

Embedded IoT & Automation Engineer with production-grade client experience building cloud-connected IoT systems for industrial automation, greenhouse control, and smart energy monitoring. Skilled in embedded C/C++ firmware (ESP32, STM32, Raspberry Pi), MQTT-based communication, PID control logic, Node-RED automation, and full-stack IoT pipelines from hardware to cloud dashboard. Ships reliable, scalable, maintainable solutions under real-world client constraints. Graduating July 2026.

## CORE TECHNICAL SKILLS

**Languages:** Embedded C, C++, Python, MicroPython, MATLAB

**MCUs & SBCs:** ESP32, STM32 (F103/F4), Raspberry Pi (3/4/5/Pico W), Arduino

**Protocols:** MQTT (v3/v5), I2C, SPI, UART, Modbus RTU/TCP, HTTPS, BLE, Wi-Fi, Ethernet

**IoT & Automation:** Node-RED, ThingsBoard, AWS IoT Core, Grafana, PID Control, Docker

**Storage & Cloud:** InfluxDB, MySQL, PostgreSQL, REST APIs, Google Sheets (Apps Script)

**Tools:** Git/GitHub, PlatformIO, STM32CubeIDE, ESP-IDF, VS Code, Logic Analyzer, Oscilloscope

## PROFESSIONAL EXPERIENCE

**Embedded IoT Developer** | **CloudTech Automation** | Nov 2025 – Feb 2026 — Lahore, Pakistan

- Architected scalable IoT systems using ESP32, STM32, and PLCs with MQTT and ThingsBoard for real-time data acquisition and remote device control across distributed edge nodes.
- Built event-driven automation and alerting logic; collaborated cross-functionally to reduce MQTT communication latency and improve multi-node system stability in production.

**Embedded IoT Intern** | **Embinx (SMC-Private) Limited** | Jul – Aug 2025 — Faisalabad, Pakistan

- Developed ESP32 firmware in C/C++ (ESP-IDF), implementing I2C, SPI, UART, BLE, and MQTT protocols for sensor interfacing and secure cloud-connected IoT communication.
- Deployed live ThingsBoard dashboards with threshold alerting; maintained GitHub version control and JIRA task tracking throughout the development cycle.

**Freelance IoT & Automation Engineer** | **Upwork / Fiverr** | 2024 – Present — Remote

- Delivered 10+ production IoT solutions for international clients — greenhouse climate control, industrial monitoring, RFID access systems, and business workflow automation.
- Built Dockerized Node-RED platforms, custom SPI hardware expansion nodes (MCP23S17, MCP3008), and HubSpot–Google Sheets / HubSpot–Jira integrations via REST APIs and webhooks.

## KEY PROJECTS

**Multi-Room Greenhouse Automation System** | Freelance — Fiverr

- Delivered a full-stack commercial greenhouse IoT system controlling grow lights (600W/room), climate (temp/humidity/CO2), exhaust fans (0–100% PWM via MQTT RPC), AC, dehumidifier, and CO2 generator across multiple independent rooms.
- Implemented PID-based climate control, UI scheduler/timer with persistent state recovery on reboot, fault-tolerant retry logic (1/min), alarm escalation after 10 failures, and a safety kill-switch for extreme temperature events.
- Designed modular, scalable Node-RED architecture — hundreds of rooms duplicable via a single config node edit — with InfluxDB logging and Grafana dashboards for real-time and historical monitoring.

**Stack:** Node-RED, MQTT v5, InfluxDB, Grafana, Dashboard 2.0, Docker, PID Control, Shelly Devices

**LinerVAC+ Industrial Monitoring Platform** | Freelance — Fiverr

- Built Dockerized Node-RED platform on Raspberry Pi 5 integrating live camera feeds, MQTT sensor/actuator pipelines, InfluxDB logging, and custom SPI hardware nodes — enabling centralized remote monitoring for the client.

**Stack:** Node-RED, Docker, MQTT, Raspberry Pi 5, InfluxDB, SPI, MCP23S17, MCP3008

**RFID Attendance & Access Control System** | Freelance — Fiverr

- Smart attendance and door access system using Raspberry Pi Pico, RFID/NFC card detection, MQTT relay control, and Node-RED dashboard with real-time tracking and timestamped logging.

**Stack:** Raspberry Pi Pico, RFID/NFC, MQTT, Node-RED

**Smart Energy Meter** | Personal Project

- Real-time energy monitoring with ESP32, ACS712/ZMPT101B sensors, MQTT streaming, InfluxDB logging, and Node-RED dashboard with threshold-based alerting.

**Stack:** ESP32, Embedded C, MQTT, Node-RED, InfluxDB

**Automated Batch Mixer System** | Final Year Project — PIEAS

- PLC and embedded controller-based industrial batch mixing system with closed-loop sensor feedback, automated sequencing, and real-time Node-RED monitoring dashboard via MQTT.

**Stack:** PLCs, Embedded Controllers, Sensors & Actuators, Node-RED, MQTT

## EDUCATION

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**B.Sc. Electrical Engineering** | Pakistan Institute of Engineering and Applied Sciences (PIEAS), Islamabad | Expected: July 2026