MUHAMAD RAIHAN RAMADHAN

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PROFILE SUMMARY

5th-semester Mechatronics and Artificial Intelligence student specializing in IoT and embedded systems. Hands-on experience developing ESP32-based automation systems, including a full Egg Incubator Control System with real-time sensor monitoring, web dashboard integration, and actuator control for poultry farmers. Skilled in sensor–actuator integration, HTTP/MQTT communication, and hardware–software co-design. Additional exposure to industrial control using Omron PLC (CX-Programmer) with pneumatic and hydraulic trainer systems, and experience in leading technical projects such as the UPI Purwakarta Virtual Campus Tour.

EDUCATION

Universitas Pendidikan Indonesia - Purwakarta
Sep 2023 – Present

Undergraduate Student in Mechatronics & Artificial Intelligence, GPA 3.49/4.00

- Participated in faculty-level Community Service activities with lecturers in the creation of the Egg Incubator Control System (2025).
- Participated in faculty-level Community Service activities with lecturers in the creation of the UPI Purwakarta Virtual Campus Tour (2025).

Relevant Coursework: Embedded Systems, Control Systems, PLC Programming, Electronics, IoT, Computer Vision, Machine Learning

PROJECT EXPERIENCES

Egg Incubator Control System - IoT & Hardware Engineer
Jun 2025 - Aug 2025

Tech: ESP32, DHT22, Wi-Fi HTTP, LCD, thermostat logic, relay control

- Developed real-time temperature and humidity monitoring using DHT22 and ESP32, with data transmitted to a custom web dashboard via Wi-Fi (HTTP).
- Implemented adjustable temperature threshold control to automate heating via built-in thermostat logic.
- Configured motorized egg roller mechanism with customizable rotation count and interval timing.
- Co-designed hardware wiring and independently built the entire IoT communication and dashboard pipeline.
- Deployed system to support local poultry farmers in improving hatch rates and operational monitoring.

Virtual Campus Tour - Subteam Lead & 360° Content Developer
Jun 2025 - Sep 2025

Tech: Insta360 X4, Lapentor, Website Integration

- Led the subteam responsible for building the Virtual Campus Tour (VCT) structure using Lapentor for UPI Purwakarta's accreditation needs.
- Captured and processed 360° images, then developed the interactive tour interface including navigation flow, hotspot mapping, and building/room transitions.
- Designed and implemented most of the VCT platform build while coordinating with teammates for content preparation.
- Collaborated with the university website team and faculty members to align VCT integration with institutional requirements.

Industrial Automation Practice (PLC, Pneumatics, Hydraulics) - Engineer Trainee
Jun 2025

Tech: Omron CX-Programmer, pneumatic/hydraulic trainer kits

- Designed ladder logic and HMI configurations for multiple automation scenarios including water tank control, automatic conveyor, and 4-floor lift simulation.
- Built pneumatic motion sequences using dual-cylinder systems for pushing and cutting mechanisms.
- Developed multi-step hydraulic control logic with start/stop loop cycles, emergency stop, and timed transitions.
- Configured wiring, sensors, and actuator routing for PLC-based trainer systems.

Firefighting Line Follower Robot - Computer Vision & IoT Developer
Dec 2025

Tech: Python, OpenCV, MQTT, ESP32, TCRT sensors

- Developing flame detection module using OpenCV for vision-based fire identification.
- Designing MQTT communication flow between the detection unit and the firefighting line-follower robot.
- Implementing robot control logic and early-stage wiring/block diagram for system integration.
- Supporting IoT warning system for fire event notification.

CERTIFICATION

- Introduction to Cloud — Cognitive Class / IBM Developer Skills Network — May 2025

Credential ID : f8314cb190be4598b62206c67fb6ccd5

TECHNICAL SKILLS

- **Embedded & IoT:** ESP32, Arduino (UNO/Nano), sensor/actuator integration, PWM, HTTP communication, MQTT basics
- **Automation & PLC:** Omron CX-Programmer, ladder logic (basic), relay-based control systems, pneumatic & hydraulic trainer system
- **Data & AI Tools:** Python, Pandas, NumPy, Matplotlib
- **Prototyping & Electronics:** Breadboarding, soldering, Fritzing, Eagle PCB design
- **Simulation & Design:** Proteus, Tinkercad
- **Development Tools:** VS Code, Git/GitHub
- **Documentation:** Microsoft Word/Excel, technical reporting

SOFT SKILLS

- Technical Problem Solving
- Documentation & System Thinking
- Team Collaboration
- Project Coordination