Muhammad Farhan Imanudin

Senior IoT Engineer

Bandung, Indonesia • https://inahrafm.my.id/ • inahrafm@gmail.com •

Summary

Senior IoT Engineer with 4+ years of experience delivering end-to-end IoT systems, from embedded firmware and edge computing to cloud integration and web platforms. Proven track record leading 20+ deployed projects across Smart Infrastructure, Environmental Monitoring, Precision Agriculture, and Wildlife Monitoring for government agencies (KAI, KOMINFO, Diskominfo, Ditjenbun) and research institutions. Strong background in embedded systems (ESP32, Raspberry Pi), industrial communication protocols (LoRa, Modbus RTU, MQTT, GSM/LTE), and system architecture design.

Technical Skills

- **Embedded & Hardware:** ESP32, Raspberry Pi, PCB Design (KiCad), Firmware Development, Sensor & Actuator Integration
- **Communication Protocols:** MQTT, LoRa, Modbus RTU, GSM/LTE, TCP/IP, CoAP, HTTP
- **Networking:** CCNA (Switching, Routing, Wireless Essentials)
- **Software & Web:** Python, JavaScript, MySQL, Docker, Front-End Development, Data Visualization
- **Cloud & Systems:** Edge-to-Cloud Architecture, IoT Dashboards, System Integration & Deployment
- **Other:** System Architecture Design, Technical Mentoring, Field Testing & Debugging

Experience

Senior IoT Engineer Sep 2026 – Present

PT Layanan Cerdas Indonesia — Bandung, Indonesia

- Lead system architecture and technical delivery for IoT projects across Smart Infrastructure, Environmental Monitoring, and Precision Agriculture
- Own technical scope end-to-end, from requirements analysis through deployment and long-term system optimization
- Provide technical direction on edge-to-cloud architecture using ESP32, Raspberry Pi, LoRa, GSM/LTE, Modbus RTU, and MQTT
- Mentor junior engineers and coordinate cross-functional teams on system design and delivery

Research Assistant Sep 2024 – Aug 2026

Institut Teknologi Bandung — Bandung, Indonesia

- Supported faculty-led research projects in IoT and AI applications for wildlife monitoring, environmental sensing, and precision agriculture
- Developed hardware prototypes and embedded systems for 11+ research-funded IoT initiatives, including wildlife tracking and air quality monitoring systems
- Co-developed supporting software platforms for research data collection and visualization

IoT Engineer Jan 2023 – Aug 2024

PT Layanan Cerdas Indonesia — Bandung, Indonesia

- Delivered 12 IoT projects across Smart Infrastructure, Smart City, and Precision Agriculture for government agencies including KAI, KOMINFO, Diskominfo, and Ditjenbun
- Developed firmware and embedded software for IoT sensors, controllers, and field devices
- Designed and implemented communication systems using MQTT, Modbus RTU, LoRa, and cellular networks
- Integrated sensors, actuators, and embedded devices with cloud platforms and monitoring dashboards
- Supported system integration, debugging, field testing, and deployment across all project stages

IoT Engineer Oct 2022 – Dec 2022
Smart City and Community Innovation Center — Bandung, Indonesia

- Contributed to applied R&D initiatives under the Smarter World Living Lab program, focusing on urban-scale sensing and smart infrastructure systems
- Designed embedded firmware and reliable IoT communication pipelines for smart waste management and environmental monitoring platforms
- Integrated heterogeneous sensor networks into centralized dashboards, improving data consistency, reliability, and operational visibility

IoT Engineer Intern Jun 2022 – Jul 2022
Smart City and Community Innovation Center — Bandung, Indonesia

- Developed Proof of Concept (PoC) IoT systems for biological and environmental risk monitoring through water quality analysis
- Designed, built, and tested embedded hardware prototypes, validating sensing accuracy and cloud-based data reporting
- Supported field testing, system documentation, and technical demonstrations for stakeholder evaluation

Selected Projects

Full portfolio (30+ projects): https://inahrafm.my.id/

- **MIRRA / Bridge SHMS** — Structural health monitoring system for bridge infrastructure (2025–2026)
- **Kukang Enclosure Tracker** — Wildlife monitoring system for slow loris enclosure (2026)
- **TANCAP** — Precision agriculture field node & web platform for sustainable palm oil productivity; National Palm Oil Hackathon Special Category Winner (2025)
- **Smart Waste Bin (V1–V3, Flagship)** — LoRa-integrated smart bin system for volume monitoring, deployed with Diskominfo Kota Bandung
- **Air Quality Monitoring System (AQMS)** — Ground station, wall node, and portable environmental sensing units (2025)
- **Automatic Weather Station (AWS)** — Deployed across Subang, Lumajang, Pekalongan, and Bone for Ditjenbun
- **Rail Point Diagnostics** — R&D system for PT Kereta Api Indonesia (KAI) (2023)
- **Broadcast Station Tracker** — Infrastructure monitoring system for KOMINFO (2023)

Education

Bandung Institute of Technology (ITB) Sep 2024 – Sep 2026
Master of Electrical Engineering - GPA (3.87/4)

- Thesis: *Adaptive Data Delivery System Based on Temporal Confidence Score Patterns for Fire Detection in Multimedia IoT*
- Recipient — Anugerah Citra Ganesha ITB 2025 (Ganesha Karsa)
- Special Category Winner — National Palm Oil Hackathon 2025 (TANCAP)
- 1st Place — Adiwidya Hackfest 2024 (IoT and AI-based agricultural land optimization)
- Published Paper — ICISS 2025: *Sensing as a Service in the Age of AI from Philosophy of Science Point of View*
- Published Paper — ICICyTA 2024: *Enhancing Urban Waste Management: An IoT and LoRa-Integrated Smart Bin System for Volume Monitoring and Analysis*

Bandung State Polytechnic Jul 2019 – Jul 2023
Bachelor of Electrical Engineering - GPA (3.47/4)

- Final Project: *Pest Prediction System Using Naïve Bayes Method for Crop Failure Anticipation Based on IoT*
- Participated in PIMNAS 35 and national student research programs (PKM-KC 2021, PKM-KI 2022)
- Published Paper — ICISS 2023: *Implementation of the Naïve Bayes Algorithm in Pest Prediction Systems*

Certifications

- PCB Design with KiCad — Udemy (2025)
- Fundamentals of JavaScript Programming — Dicoding (2025)
- Fundamentals of Web Programming — Dicoding (2025)
- Intro to Front-End Development — Dicoding (2024)
- Docker Course — Udemy (2024)
- Learn Python With Projects — Udemy (2024)
- Learn MySQL — Udemy (2024)
- Internet of Things (Comprehensive) — MySkill (2024)
- CCNAv7: Switching, Routing, and Wireless Essentials — Cisco Networking Academy (2023)
- Data Visualization — Dicoding Indonesia (2022)
- Basic Python Programming — Dicoding Indonesia (2022)