

WILDAN ALFA RAEZEL

Junior IoT / Embedded Systems Developer

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SUMMARY

Computer Engineering undergraduate (S1 Teknik Komputer) at Universitas Amikom Yogyakarta, focused on Internet of Things (IoT) and embedded systems. I build complete IoT products, from ESP32 firmware and hardware assembly through to backend, web, and mobile apps; three of them are installed and running daily in schools and on campus. Won 1st place at ARCADIA 2026 (IoT Product) and 2nd at AMICTA 2026 (IoT), listed co-creator of a registered Indonesian software copyright (HKI), and certified across the full Cisco CCNA track plus Network Security. Open to junior IoT and embedded roles, internships, and freelance work; willing to relocate.

TECHNICAL SKILLS

Microcontrollers & Boards: ESP32, ESP8266, Arduino (Uno/Mega/Nano), Raspberry Pi Pico, STM32, NodeMCU

Firmware & Languages: C/C++, MicroPython, Python, JavaScript, Dart

Protocols & Connectivity: MQTT, HTTP/REST, WebSocket, Bluetooth Low Energy (BLE), Wi-Fi, GSM/NB-IoT, LTE-M, Modbus, RS-485, Ethernet (W5500)

Sensors & Modules: energy metering (PZEM-004T), RFID (RC522), environmental and motion sensors, relays, displays, RTC, SD card, power modules (TP4056, solar panel), and others

Hardware & Motion Control: soldering, perfboard and custom PCB assembly, component-level wiring, field installation; GRBL configuration, G-code generation, stepper/PWM tuning

Backend & Cloud: Flask, Firebase Realtime Database, Firebase Firestore, Socket.IO, MySQL, PostgreSQL, Mosquitto, HiveMQ, Microsoft Azure App Service, Blynk, ThingSpeak

Mobile: Flutter, Riverpod, GoRouter, Firebase Cloud Messaging (FCM)

Tools: Git/GitHub, Docker, PlatformIO, Arduino IDE, EAGLE, EasyEDA, Fritzing, VS Code

EXPERIENCE

Laboratory Assistant - Data Acquisition Systems (IoT Concentration)

Feb - Jul 2026

Universitas Amikom Yogyakarta | Computer Laboratory

- Guided students through sensor reading, data logging, and telemetry on ESP32 in weekly practicum sessions.
- Prepared practicum materials and debugged student wiring and firmware issues during lab work.

Laboratory Assistant - Hardware Development

Feb - Jul 2025

Universitas Amikom Yogyakarta | Computer Laboratory

- Guided students through GRBL parameter configuration, steps/mm calibration, and converting vector files into G-code for the 2D plotter project in weekly practicum sessions.
- Prepared the practicum modules and G-code sender software, and helped debug students' X-Y axis motion commands and pen-lift PWM signals during lab sessions.
- Coached students on serial-communication troubleshooting, feed-rate tuning, and integrating the controller firmware with the plotter mechanics.

Commissioned IoT Developer (Freelance) - VIBRADoor

Apr - Jun 2025

Independent | Yogyakarta

- Built a wireless vibrating doorbell for deaf students; one bell-unit and wearable pair deployed at SLB Damayanti Sleman and in daily use since 2025.
- Owned the ESP32 firmware (Arduino framework) and hardware assembly of both devices, communicating over a self-hosted MQTT (Mosquitto) broker with a pub/sub topology that scales to multiple wristbands.
- Designed for field maintenance with a modular custom PCB and LiPo + TP4056 power; total bill of materials Rp 366K per pair.

PROJECTS

Presensi SMPN 2 Paliyan - IoT School Attendance System

Apr - Jul 2026

Team project with SMPN 2 Paliyan as partner school | presensi-smpn2-paliyan.my.id

- RFID + keypad attendance device installed at the school gate and used for daily attendance, with a real-time admin dashboard and a public parent portal.
- Developed the ESP32 firmware, assembled the gate hardware (RC522 RFID, keypad, LCD, DS3231 RTC, W5500 Ethernet, SD card, UPS), and built the Flask + Firebase Firestore backend serving as the single data gateway.
- Engineered fault tolerance: SD-card store-and-forward through network outages, UPS backup through power cuts, and watchdog + scheduled reboots for unattended 24/7 operation.

EIAS - Emergency Input & Alert Station

May - Jul 2026

Team project | 2nd place, AMICTA 2026 | github.com/alfa219/eias

- Integrated campus emergency-alert system: an ESP32 station (panic button, 4x4 keypad, I2C LCD) sends alerts over HTTPS to a Flutter app used by on-duty officers, with push notifications that arrive even when the app is closed.
- Built the firmware, hardware, Flutter app, and backend; routed the push chain through a Supabase Edge Function (Deno) and cron into Cloud Firestore and Firebase Cloud Messaging, keeping the whole system on free-tier services at zero infrastructure cost.
- Implemented admin-editable category routing (panic, quick, phone, room, badge), automatic escalation for unhandled critical alerts, OpenStreetMap location and routing, and a full handling history.
- Registered as an Indonesian software copyright (HKI), DJKI reg. no. 001273262, as a listed co-creator.

PAYCAY - Smart EV Charging Station (IoT + Web)

Sep 2025 - Feb 2026

Solo build | github.com/alfa219/paycay

- Won 1st place, IoT Product category, at ARCADIA 2026 (Faculty of Computer Science, Universitas Amikom Yogyakarta).
- Built every layer myself: ESP32 firmware (PZEM-004T energy metering, RFID tap-to-start, AC relay control), Flask backend with a real-time Socket.IO dashboard and Firebase Realtime Database; deployed live on Azure App Service with GitHub Actions CI/CD.
- Implemented automatic balance deduction from kWh readings and a complete REST API covering the full charging-session lifecycle.

PAYCAY Mobile - Flutter Companion App

May - Jul 2026

Solo build | github.com/alfa219/app-paycay

- Dual-role (user/admin) app with real-time station monitoring via Firebase RTDB, a digital wallet using atomic Firestore transactions, and session recovery that survives the app being killed mid-charge.

EDUCATION

Universitas Amikom Yogyakarta - S1 Teknik Komputer (Computer Engineering)

2023 - Present

Concentration: Internet of Things | Expected graduation 2027

CERTIFICATIONS

- Network Security - Cisco Networking Academy, Jul 2026 (ID: 60d09bd7-c26a-4dc0-b021-3df0fd043c7e)
- CCNA: Enterprise Networking, Security & Automation - Cisco Networking Academy, Jul 2025 (ID: 59fcddb5-bfce-44ef-8d7d-b431c87be388)
- CCNA: Switching, Routing & Wireless Essentials - Cisco Networking Academy, Mar 2025 (ID: f8e80bd1-e91e-4cf0-919f-0840ed7bcd1)
- CCNAv7: Introduction to Networks - Cisco Networking Academy, Aug 2024 (ID: 6bd505b3-7acc-4f70-b5ba-05424ae229f1)

AWARDS & INTELLECTUAL PROPERTY

- 2nd Place, Internet of Things - AMICTA 2026, Faculty of Computer Science, Universitas Amikom Yogyakarta (winning entry: EIAS), Jul 2026.
- Registered Software Copyright (Hak Cipta / HKI) - "Emergency Input & Alert Station (EIAS) v1.0", listed co-creator; DJKI reg. no. 001273262, Jun 2026.
- 1st Place, IoT Product - ARCADIA 2026, Universitas Amikom Yogyakarta (winning entry: PAYCAY), Feb 2026.
- Honorable Mention (Juara Harapan II), IoT category - Indonesia National IT Competition (INDONERIS) 2025, Universitas Amikom Purwokerto, Dec 2025.