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Asem Ameen Qaid

Electrical Engineering Student | Embedded Hardware for Control & Energy Systems

PROFILE

Third-year Electrical Engineering student at Universitas Islam Indonesia (CGPA 3.75/4.00, FGLS scholar) who builds and tests electronic hardware for control and energy applications. Led a four-person team at the ANGEL Innovation Hackathon 2026 that developed an industrial energy monitoring platform (ESP32, RS485/Modbus, MQTT, anomaly detection). Hands-on experience taking designs from simulation to soldered PCB, with structured testing and root-cause debugging. Seeking internship or research opportunities in hardware design, embedded systems and control.

EDUCATION

B.Sc. Electrical Engineering, Universitas Islam Indonesia, Yogyakarta

Expected 2028

- CGPA 3.75 / 4.00 · Future Global Leaders Scholarship (FGLS), 2024 – present
- Relevant coursework: Computer Systems and Microprocessors, Digital Logic Circuits (FPGA), Embedded Systems, Measurement and Instrumentation, Control Systems, Machine Learning, Artificial Intelligence

ENGINEERING PROJECTS

Smart Electrical Panel Protection and Emergency Alert System

2026

Embedded Systems · final project

- Three-state (Normal, Warning, Emergency) protection system on an Arduino Nano that monitors temperature (DHT11), smoke/gas (MQ-2) and flame, and disconnects the load through a relay.
- Taken from breadboard to soldered PCB; passed all six structured test scenarios, with load disconnection within one 2-second polling cycle and SMS alerts via a SIM800L GSM module.
- Traced false flame alarms to relay switching noise and SIM800L brown-outs to ~2 A transmit bursts; fixed by separating sensor and actuator power domains and adding a 1000 µF buffer capacitor.

Tools: Arduino Nano, DHT11, MQ-2, IR flame sensor, SIM800L, relay, 2N2222

Industrial Energy Efficiency Copilot

Oct – Nov 2026

ANGEL Innovation Hackathon 2026 · Sustainable Energy track

- Led Team PowerTech (four students, with a faculty supervisor) and was responsible for system integration, the dashboard and the MQTT data pipeline of a multi-site industrial energy monitoring platform.
- Software prototype with baseline-based anomaly detection, energy-intensity (IKE) analysis and forecasting; detected 3 of 3 inserted anomalies with no false alarms on a synthetic 30-day dataset.
- Acquisition unit (ESP32 with a PZEM energy meter over RS485/Modbus) designed and firmware written; hardware not yet validated.

Tools: ESP32, RS485/Modbus, MQTT, Python

Speed Estimation Using the MPU6050 Accelerometer and Gyroscope

2026

Measurement and Instrumentation · final project part 2 (pair project)

- MPU6050 over I2C with a 21 Hz on-chip low-pass filter, a complementary filter ($\alpha = 0.98$) and automatic start-up calibration of all six axes.
- Benchmarked two methods against 15 reference trials each: step counting achieved an RMSE of 0.161 m/s against 1.106 m/s for acceleration integration, explained by integration drift.

Dryer Control System Using the 8086 Microprocessor

Jan 2026

Computer System and Microprocessor · final project

- Temperature control (LM35) and over-pressure alarm (MPX4115A) written in 8086 assembly, with analog inputs digitised by an ADC0804.
- Configured an 8255 PPI in Mode 0 (control word 8AH) and used bit-masked writes so inputs and outputs could share Port C; behaved as specified in all 15 simulated test cases at 30 °C and 100 kPa (Proteus).

Tools: Intel 8086 assembly, 8255 PPI, ADC0804, Proteus

EE Studio: Interactive Virtual Engineering Laboratory

2026

Personal project · ee-studio-red.vercel.app

- 37 interactive labs across 7 modules, including power systems, control systems and renewable energy; every model verified numerically before implementation and covered by 485 automated backend tests (AI-assisted development under my direction and review).

IoT-Based Flood Early Warning System 2026

Disaster Mitigation · project

- ESP32 breadboard prototype that classifies flood risk into three levels with LED and buzzer alerts and publishes readings over MQTT to a Mosquitto broker and a Node-RED dashboard.

MQ135 Gas Sensor for CO_2 and Ethanol Concentration Measurement 2025

Measurement and Instrumentation · final project part 1

- Calibrated MQ135 (24-hour preheat, 20 kΩ load, averaged R_0) with a Python live display; measured CO_2 at 15 campus locations, from about 376 to 2,172 ppm.

LEADERSHIP

President, UII Global 2026 – present

International student organisation, Universitas Islam Indonesia

- Lead the executive board and cross-functional teams that run cultural, educational and networking programmes for international students across multiple faculties, coordinating with the university administration, academic departments and international partners.

Team Leader, Team PowerTech · ANGEL Innovation Hackathon 2026 Oct – Nov 2026

- Ran weekly progress reviews, a shared task board, Git-based peer review and a risk register.

Marketing Team Member, UII Global 2024 – 2026

- Event promotion, digital communications, social media marketing and international student engagement.

TECHNICAL SKILLS

Programming and Firmware	C, C++, Python, Intel 8086 assembly, Arduino IDE
Microcontrollers and Digital Hardware	ESP32, Arduino (Nano), Intel 8086, 8255 PPI, ADC0804, digital logic design in Quartus Prime (FPGA tools), PCB assembly and soldering
Electronics, Instrumentation and Interfaces	Sensor interfacing, analog-to-digital conversion, I2C, UART, RS485/Modbus, MQTT, GSM (AT commands), relay and transistor switching, isolated power-domain design
Engineering Software and Simulation	MATLAB, Simulink, Proteus, Quartus Prime, Node-RED
Testing and Engineering Analysis	Structured test scenarios, sensor calibration, digital filtering, error analysis (RMSE), simulation-based verification, numerical verification of models

HONOURS, MEMBERSHIPS AND LANGUAGES

- First Medal, Faris Al-Ilqaa Public Speaking Competition, Riyadh (2020)
- Founding Member, Jogja SWUG (SolidWorks User Group) · Member, Google Developer Group (GDG)
- Languages: Arabic (native), English (professional working proficiency), Indonesian (intermediate)