

DZAKY ALFITRA

Electrical Engineering · Machine Learning Enthusiast

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Jakarta, Indonesia

PROFILE

Electrical Engineering and AI/ML engineer focused on building and deploying generative AI applications and IoT system. Experienced in building IoT with ESP32 framework, serving for real world projects and developing LLM-based conversational agents with LangChain and the OpenAI SDK, serving open-source LLMs and vision-language models (VLMs) for real research use cases, and integrating AI models into FastAPI and Streamlit based applications. Background in deep learning research (PyTorch, computer vision) provides a strong foundation in AI/ML fundamentals, data pipelines, and model evaluation. Comfortable working across the AI stack, from prompt engineering and API orchestration to deployment on local GPU servers and edge devices.

PROJECTS

Jeski, Conversational AI Assistant – *Self Initiated Project*

- Built a context-aware chatbot using LangChain and the OpenAI SDK, with a custom memory system supporting multi-turn conversations.
- Designed and iterated on prompts to shape assistant behavior, tone, and response quality.
- Deployed the assistant through a self-hosted, publicly accessible web interface

Self-Hosted LocateAnything (Vision-Language Model) – *Self Initiated Project*

- Deployed NVIDIA's LocateAnything VLM on a local RTX 6000 Ada GPU server.
- Built a Streamlit interface for remote, cross-device access over a public network.
- Gained hands-on experience with GPU server infrastructure and API/package routing for serving large AI models without cloud dependency.

Face Recognition Attendance System - *Team Leader*

- Led AI integration: deployed and connected a face-recognition model to cloud infrastructure using IoT system and microcontroller hardware.
- Achieved 98% recognition accuracy under proper lighting conditions, with an average processing time of 3 seconds.

Hydroponic Monitoring System IoT – *Team Leader*

- Led IoT Integration: assemble and deployed IoT hardware for hydroponics at Ismulia Farm and boost monitoring inspection without going to the farm location.
- Achieved Hak Cipta certificate.

RESEARCH EXPERIENCE

AI Researcher of Coffee Bean Grading System - *Syiah Kuala University*

Aug 2025 - Present

- Built a full deep learning pipeline in Python/PyTorch for automated defect detection, including a self-built auto-labeling tool used to annotate 11,000+ images.
- Trained and benchmarked YOLO, Faster-RCNN, and RetinaNet, reaching over 94% training mAP and 85%+ testing mAP on dense defect classification.
- Proposed Mosaic Packed Augmentation, a novel data augmentation method that improved performance over standard mosaic augmentation.
- Author of 3 research papers, 1 accepted at AIMS (AJT Press), 1 under review at Computer and Electronics (Elsevier), 1 in submission.

LEADERSHIP & MENTORING EXPERIENCE

Vice Leader - KROENG (Community of Robotics & Electrical Engineering) - *Syiah Kuala University* Feb 2024 - Feb 2025

- Oversaw planning, training coordination, and competition preparation for a student robotics and engineering community.

Electronic Laboratory Assistant - *Syiah Kuala University*

Sept 2023 - Present

- Guided 100+ students through electronics, instrumentation, and circuit troubleshooting; reviewed practical reports and managed lab schedules.

Mentor of Innovate with IoT – *Banda Aceh, Indonesia*

Oct 2024

- Innovate with IoT is a program held by Kejar Mimpi Aceh to introduce technology IoT technology, giving basic knowledge about IoT and mentored them to create project on their own
- Delivered IoT basics to 50+ participants, mentored 5 in IoT Projects, guided in creating functional prototypes

Participant of Kontes Robot SAR Indonesia – *Banda Aceh, Indonesia*

May 2024

- Collaborated on designing and building a functional Search-and-Rescue (SAR) robot, competing against 98 teams from other universities to achieve the best performance in simulated rescue arena

Mentor of Robotics in MAN 1 Pidie – *Pidie, Aceh, Indonesia*

Sept 2024

- Guided students in understanding robotics fundamentals as a mentor and speaker. focused on teaching basics programming logic in C++ to students at MAN 1 Pidie, Aceh.
- Mentored 13+ Students in Robotic, focusing on C++ programming and logics development.

EDUCATION

SYIAH KUALA UNIVERSITY - *Syiah Kuala University*

Aug 2022 - Present

Bachelor, Electrical Engineering – GPA: 3.70

- Relevant coursework: Control System, IoT Application, Machine Learning.

SKILLS & TOOLS

- Programming & APIs: Python · REST APIs · FastAPI · C/C++ · Bash/Shell Scripting
- Generative AI / LLM: LangChain · OpenAI SDK · Prompt Engineering · Agentic Workflows · Multi-Agent Orchestration
- AI & Deep Learning: PyTorch · Computer Vision · Model Training & Evaluation · Data Augmentation
- Deployment & Infrastructure: Streamlit · OpenWebUI · Ollama · Cloud & Edge Deployment basics · Linux/Unix
- Tools: Git · GitHub · VS Code

PUBLICATIONS

- Alfitra, D. et al. (2026). Comparative Study of Object Detection Models for Dense Coffee Bean Defect Detection Using YOLOv11, Faster R-CNN, and RetinaNet. Accepted - AIMS 2025, AJT Press.
- Two additional papers on Mosaic Packed Augmentation and the Coffee Grading System are currently in submission/review.