

STEFEN SUTANDI

Electrical Engineering | System Integration | Intelligent IoT and Embedded Systems | Data-Driven Engineering
Bandung, Indonesia | +62 813 3610 6610 | stefensutandi@gmail.com | [LinkedIn](#) | [Portfolio](#)

PROFESSIONAL PROFILE

My work has gradually moved from building individual electronic and software components to integrating complete engineering systems. Through JumpX, HUMA, connected-device operations, network data products, and speech-data research, I have worked where hardware, software, data, and field execution meet. I am strongest when a project needs more than an isolated prototype: translating requirements into architecture, connecting devices and services, reproducing failures, validating end-to-end workflows, and documenting the result so others can operate and continue it. This background supports roles in system integration, testing and automation, intelligent IoT, embedded and edge systems, and data-driven engineering.

CORE CAPABILITIES

System architecture and integration; embedded and IoT development; REST API and backend integration; operational testing and failure analysis; data pipelines, dashboards, and automation; reproducible experimentation; technical documentation; and cross-functional coordination.

EDUCATION

Institut Teknologi Bandung (ITB)

Expected Aug 2026

Bachelor of Engineering in Electrical Engineering

- Bachelor final project: Competition Core and field-integration architecture for JumpX, an integrated automated long-jump judging and measurement system.
- Academic foundation across embedded systems, computer architecture, electronics, communications, control, signal processing, software integration, and engineering experimentation.

Tomsk State University

Mar-Apr 2025

Exchange / International Engineering Program

- Completed multidisciplinary project work in English within an international Electrical, Electronics, and Communications Engineering environment.

PROFESSIONAL AND RESEARCH EXPERIENCE

Research Assistant - Speech Dataset Preparation and Annotation | STEI ITB

Jun 2026-Present

- Prepare and audit English and Indonesian speech datasets for future ASR experiments, including metadata preparation, transcript normalization, alignment analysis, candidate syllable boundaries, and reproducible smoke tests.
- Compare methods against available evidence and document limitations, dependency blockers, and unsupported outputs so later experiments begin from validated data rather than assumed ground truth.

System Engineer | Oppstar Teknologi Indonesia

Jul 2025-Jun 2026

- Worked on API communication, transaction workflows, software-device integration, and operational testing for a connected management system.
- Reproduced failures across entry and exit workflows and translated findings into practical implementation and validation actions while respecting project confidentiality.

Data Product Engineer Intern | Telkomsel

Jun-Aug 2025

- Developed KQI and NPS dashboards, automated insights and alerts, city-level network root-cause analysis, and executive reporting for service-quality and customer-experience monitoring.
- Connected large technical datasets with operational interfaces so findings could be reviewed and acted on by different stakeholders.

Engineer | Workshop HME-ITB

Oct 2023-Jun 2026

- Built multidisciplinary prototypes spanning embedded firmware, web applications, device integration, electrical wiring, testing, and technical documentation.
- Frequently closed the integration gap between separate hardware and software contributions until the combined system was demonstrable, testable, and maintainable.

RTL / High-Level Synthesis Engineer | Freelance - Germany Remote

Feb-Apr 2025

- Researched cryptographic hardware acceleration using C/C++, Intel Quartus, and Xilinx Vivado; developed and verified software- and hardware-oriented implementations and evaluated correctness, performance, and implementation trade-offs.

TECHNICAL SKILLS

Programming and software: Python, C/C++, TypeScript, JavaScript, REST APIs, Flask, Node.js, React, Next.js

Embedded and digital systems: ESP32/ESP32-S3, Raspberry Pi, Arduino IDE, VHDL, FPGA, Intel Quartus, Xilinx Vivado, HLS

Engineering and validation: Embedded systems, IoT architecture, system integration, instrumentation, control systems, PCB design, testing, technical documentation, reproducible experimentation

SELECTED ENGINEERING PROJECTS

JumpX - Integrated Automated Long-Jump Judging and Measurement System | Bachelor Final

2025-2026

Project

- Designed and implemented the Competition Core, backend core service, operator dashboard, and Raspberry Pi Field Agent integration for attempt orchestration, official result handling, and evidence audit.
- Integrated foul detection, vision-guided measurement, a motorized gauge, laser distance measurement, REST APIs, result storage, official score sheets, and a real-time competition display into one operational workflow.
- Validated the end-to-end foul and measurement workflows against timing and accuracy requirements, while preserving per-attempt evidence so decisions, device states, failures, and recovery actions remained traceable.

HUMA - IoT-Based Weather and Soil Monitoring System | Field Monitoring Project

Jun-Jul 2026

- Developed HUMA as a field data-collection system that combines local weather monitoring, soil measurements, and offline-first data entry for agricultural observations.
- Built ESP32-S3 firmware and a local IoT dashboard, integrated a Python bridge for USB soil-sensor data, and documented wiring, API endpoints, deployment, and testing procedures.
- Kept essential acquisition and entry functions available during connectivity loss, then synchronized the stored data when a connection became available.

Multi-Objective Workforce Rostering Optimization | Optimization Project

2026

- Developed a constraint-aware optimizer using hybrid differential evolution and local search to balance total cost, fairness variance, preference mismatch, and expected absence.
- Implemented feasibility constraints, deterministic seeds, checkpoint recovery, dominance validation, and multiprocessing benchmarks so long-running results remained reproducible and independently checkable.

WARP - Gamified Virtual Workspace Prototype | Software Project

Jun-Jul 2026

- Developed role-based workflows for members, coordinators, and owners, including task management, project timelines, avatars, and virtual rooms.
- Implemented the prototype with Next.js, React, TypeScript, and Phaser, translating an open-ended collaboration concept into an interactive system with distinct responsibilities and operational flows.

AWARDS AND LANGUAGES

Awards: Ganesha Awards 2025; Most Unique and Authentic Business Model, EL4062 Engineering Innovation and Entrepreneurship; 2nd Place Best Final Project Report, TUSUR Winter School 2025.

Languages: Bahasa Indonesia (native); English (professional working proficiency).