

Raden Rafly Hanggaraksa Budiarto

Jakarta, Indonesia | 13522014@std.stei.itb.ac.id | portofolio-rafly-tau.vercel.app

linkedin.com/in/raflyhanggaraksa | github.com/raflyhangga

Education

Bandung Institute of Technology

August 2022 – October 2026

Bachelor of Science in Computer Science, GPA: 3.62/4.0

(Expected)

- **#1 Engineering school** in Indonesia
- **Relevant Coursework:** Operating Systems (AB), Artificial Intelligence (A), Web Development (A), Computer Architecture (B)

Research Interests

- **Distributed Systems** – Scalability, fault tolerance, and high-performance computing.
- **Operating Systems** – Kernel development, process management, and low-level optimizations.
- **Caching Mechanisms** – Efficient data retrieval, memory hierarchy, and performance tuning.
- **Machine Learning** – Scalable training, distributed inference, and system optimization.

Research Experience

Remote Research Developer - IO Logger Project

Mar 2025

With Assistant Professor Juncheng Yang (joining Harvard University, Fall 2025)

- **Designed and implemented eBPF-based IO tracing tools** for UNIX systems that capture detailed disk operations, network transfers, and page cache activity
- Currently working on **cross-platform implementations** for Windows, MacOS, and Android to enable comprehensive personal computing environment tracing
- Developed infrastructure to collect and analyze IO traces from **modern computing environments**, including cloud, virtualized, and AI/ML workloads

Systems and AI Research Training Program

Jan 2025

University of Chicago, Online

- **Selected as one of the top 50 students** in computer science and related fields for an international research training program led by Prof. Haryadi Gunawi.
- **Analyzed 60+ papers** from top CS conferences like OSDI, SOSP, and FAST, gaining insights into cutting-edge research.
- **Replicating and reproducing up to six publications** over the next months to validate findings and strengthen research skills.
- **Received intensive training** in research methodologies, technical writing, and engagement with top-tier research communities.

Projects

Simple Operating System [Project]

2024

- **Developed** a basic operating system kernel from scratch with support for **interrupts, keyboard input**, and **FAT32 file system management**, contributing **200+ LOC**.
- **Implemented** key filesystem operations, including navigation (cd, ls), file management (mkdir, cp, mv, rm), and process control (ps, kill, exec).
- **Designed** a command-line interface with essential utilities like clear, help, find, and echo for user interaction.
- **Tested and deployed** the OS using QEMU, ensuring functionality across various operations.

Arkavidia 9.0 Website [Website]

2025

- **Annual IT competition** organized by **Informatics Student Association of ITB**, engaging high school and college students through contests, workshops, and seminars.

- **Co-led** a team of **12 engineers** to develop the Arkavidia website, ensuring a seamless experience for **500+ users**, contributing **2000+ LOC**.
- Oversaw project planning and task delegation, maintaining alignment with deadlines and objectives.
- Conducted code reviews and mentored junior engineers, promoting best practices and technical growth.

Computer Vision Dashboard for MSL Autonomous Robot [Project] 2024

- **Developed** a dashboard to calibrate an autonomous robot based on its surroundings, contributing **900+ LOC**.
- Integrated **Nuxt** with the **Robot Operating System (ROS)** via Flask, enabling real-time data exchange.
- **Enabled** seamless communication and control between the Web interface and the robot sensors and actuators.
- **Optimized** system performance to ensure accurate and responsive robot calibration.

Honors & Awards

Web Development Competition IFEST 2024 [Certificate] [Project] 2024

- Achieved **9th place** out of 39 teams (up to 4 people per team). Contributed over **2,000 LOC**.
- Developed an **organizational money manager** with **multi-role access control**.
- Implemented **AI-powered OCR** for automated receipt processing, enhancing financial tracking efficiency.

Organization

Human Resource Lead - Robotics Club Regeneration Event (Sekolah URO ITB 17) Aug 2024 – Jan 2025

- Led a team of **10 members**, coordinating divisions and assigning tasks to ensure smooth event execution.
- Managed **performance evaluations** and designed **team bonding activities** to improve collaboration.
- Created the **Standard Operating Procedure (SOP) for SEKURO 17**, structuring event workflows.
- Served as the **liaison between divisions**, ensuring seamless communication and integration.

Public Relations - College Robotics Club (Unit Robotika ITB) Dec 2023 - Jan 2025

- **Led PR initiatives**, organizing events to **promote the club's activities** and increase **public engagement**.
- **Managed external communications** to **foster collaboration** with **industry partners** and other organizations.

Technologies

Programming Languages: C, C++, Python, Go, Java, TypeScript, Kotlin, Haskell, C#, PHP

Systems & Backend Development: Linux, MySQL, PostgreSQL, SQLite, MariaDB, Drizzle ORM

Operating Systems & Low-Level Development: QEMU, Robot Operating System (ROS)

AI/ML & Data Processing: scikit-learn, Flask (for ML APIs)

Infrastructure & DevOps: Docker, Supabase, Neon, Vercel, CMake, Ansible