Ega Luthfi Rais

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Education

Institut Teknologi Bandung — Bandung, Indonesia
Bachelor of Engineering in Computer Science — *2024 – 2028*

Honors & Awards

ICPC Asia Jakarta Regional Contest — Jakarta, Indonesia
Honorable Mention (Regional Finalist) — *Nov 2025*
- Qualified for the prestigious Southeast Asia regional finals, competing against top-tier university teams.
- Demonstrated mastery in C++ and algorithms under high-pressure contest environments.

Hology Competitive Programming — Malang, Indonesia
1st Runner Up (National Level) — *Oct 2025*
- Secured 2nd place in a national-level contest, solving complex optimization problems under strict deadlines.

Competitive Experience

Algorithmic Problem Solving | *Codeforces, AtCoder, CSES, LeetCode, UVa*
- Solved over 800+ algorithmic problems across major competitive platforms (Codeforces, AtCoder, CSES, TLX).
- Active participant in global contests, maintaining a disciplined training regimen to sharpen debugging and logic skills.

Technical Projects

Scalable CP Performance Analytics System | *Python, React, Postgres, System Design*
- Architected an end-to-end performance tracking system from scratch, designing a scalable database schema to handle long-term submission history and granular metrics.
- Engineered a robust data ingestion pipeline capable of parsing and normalizing complex logs from multiple online judges without relying on external APIs.
- Optimized backend query performance for generating real-time heatmaps, solving latency issues caused by large-scale historical data aggregation.

High-Performance Document Search Engine | *C++, Linear Algebra, STL*
- Built a high-speed Latent Semantic Analysis (LSA) engine using **C++**, deliberately choosing a low-level stack over Python to maximize runtime efficiency.
- Implemented Singular Value Decomposition (SVD) from scratch, managing manual memory allocation to process matrix operations faster than standard library solutions.
- Achieved the **highest grade in the cohort**, recognized for creating the most performant implementation among peers.

Monolithic Operating System Kernel | *C, Assembly, QEMU*
- Led the implementation of a UNIX-like kernel in C, successfully integrating Assembly-based bootloaders with high-level kernel logic.
- Delivered core OS subsystems including a FAT32 filesystem and Round-Robin scheduler by strictly adhering to low-level hardware specifications.
- Served as the primary contributor (hypercarry) in a team environment, ensuring code stability and feature completeness within the deadline.

Technical Skills

Languages: C++, Python, Java, SQL
Systems & Infrastructure: Docker, Git, Linux/Unix, PostgreSQL, Redis
Frameworks: FastAPI, Flask, React, RESTful APIs
Core Competencies: Algorithms & Data Structures, System Design, Low-Level Optimization

Interests

Quantitative Finance, Market Microstructure, Macroeconomic Analysis