



KAUTSAR FARADIKA FAISAL

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Highly motivated Electrical Engineering student at Universitas Indonesia specializing in electronics and semiconductor technology. Deeply interested in the continuous advancements of integrated circuit design. Proven ability to learn quickly and adapt to technical challenges, seeking to contribute to innovative research and development in a dedicated laboratory setting.

Projects

Common-Source Amplifier - Depok

Mar 2026

Coursework Projects

Designed and simulated a common-source amplifier system focusing on specific gain targets and transistor-level optimization. The project utilized open-source Electronic Design Automation (EDA) tools to bridge theoretical circuit concepts with practical layout implementation.

- Conducted characterization of NMOS and PMOS transistors using Ngspice to determine optimal operating points and device sizing.
- Designed amplifier stages implementing various load configurations, including resistive, diode-connected, and current-source loads, to achieve desired gain metrics.
- Utilized Xschem and the Skywater 130nm PDK for schematic entry.

Selamat Sentosa Battery Charger - Depok

Aug 2025

Electronics Project

Designed and developed a smart Li-ion battery charger with an automatic cutoff feature to prevent overcharging. The system integrates multiple circuit blocks, including a pulse generator, voltage detector, and cutoff controller, to ensure safe and efficient battery charging.

- Implemented an IC 555 timer configured as an astable multivibrator to generate pulse charging signals.
- Designed a voltage detection circuit using a combination of operational amplifiers, Zener diodes, and transistors to monitor real-time battery voltage.
- Utilized an NPN transistor cutoff mechanism that pulls the 555 timer's reset pin to ground once the battery voltage reaches ~4.2 V, stopping the charging process automatically.

IoT-Based Smart Water Dispenser with Real-Time Monitoring - Depok

Jun 2025

Depok

Developed an automated water dispenser system using the ESP32 microcontroller and ultrasonic sensors to detect both the presence of a cup and the water level inside the tank. The system integrates real-time monitoring and logging through IoT platforms.

- Engineered a real-time hardware-to-cloud communication system using ESP32 and ultrasonic sensors.
- Developed firmware in C/C++ to process sensor data for accurate cup presence and tank level detection.
- Integrated MQTT protocols for real-time remote monitoring and logging.

Web-Based E-Voting System (Pemira FTUI 2025) - Depok

Dec 2025

Tech Lead

Designed and engineered a scalable, secure, and responsive web-based voting platform for the Faculty of Engineering, University of Indonesia (FTUI) Student Election (Pemira) 2025. The system was built to handle high-concurrency traffic during voting periods while ensuring data integrity and user verification.

- Developed a high-performance frontend using Remix and Tailwind CSS, coupled with a robust Express.js backend to handle complex voting logic.
- Containerized the application using Docker and managed deployment orchestration via Dokploy
- Successfully handled traffic from 2,900+ users and processed over 2,600 verified votes (approx. 90% turnout)

Education

Universitas Indonesia - Depok, West Java

Aug 2023

Bachelor of Electrical Engineering, 3.39/4.00

Experience

IC Design Laboratory - Depok

Jan 2026 - Present

Junior Researcher

Assisting the Head of Laboratory in advanced semiconductor research, focusing on the physical design of integrated circuits. Actively involved in the ongoing layout generation phase in preparation for an upcoming silicon tape-out using the IHP 130nm technology node.

- Utilize KLayout for the precise physical layouting of circuit designs to support the Head of Laboratory's research.
- Implement designs targeting the IHP 130nm Open PDK, ensuring strict adherence to foundry design rules (DRC) to prepare the layout for successful fabrication.

- Currently routing and optimizing layout topologies for area efficiency as part of the preparation for the final submission.

Electronics Laboratory Teaching Assistant - Depok

Sep 2025 - Present

Coordinator of Electronic Circuits Practicum (Computer Engineering)

As an Assistant Laboratory, I am responsible for coordinating and supervising the Electronic Circuits practicum for Computer Engineering students. My role includes managing the practicum schedule, preparing and updating lab manuals, guiding students during experiments, and ensuring that all activities comply with safety and procedural standards. I also assist students in understanding both the theoretical and practical aspects of analog and digital circuits through hands-on demonstrations and discussions.

- Coordinated practicum sessions for over 150 students each semester.
- Instructed experiments involving diodes, BJTs, FETs, and operational amplifiers.
- Developed and refined lab manuals to enhance student engagement and comprehension.
- Collaborated with lecturers and fellow assistants to improve practicum quality and learning outcomes.

AUAV - Tim Robotik Universitas Indonesia - Depok

Feb 2025 - Jan 2026

Fixed Wing Head of Programming division

Autonomous Unmanned Aerial Vehicle Universitas Indonesia (AUAV UI) is a multidisciplinary student research team at Universitas Indonesia focused on the development of unmanned aerial vehicle (UAV) technologies.

- Led the programming division of AUAV UI's Fixed Wing competition team, overseeing development of autonomous drone software systems.
- Spearheaded improvements to the Ground Control System, enhancing communication reliability and mission control efficiency.
- Initiated and led the development of an onboard image recognition system to support autonomous navigation and target detection.
- Collaborated cross-divisionally with electrical and mechanical teams to ensure seamless system integration and field readiness.

EXERCISE FTUI - Depok

Feb 2025 - Jan 2026

Vice Head of Software Engineering Division

A technology-focused student organization under the Department of Electrical Engineering, Universitas Indonesia.

- Led and coordinated multiple software development projects involving 10+ team members.
- Collaborated with UI/UX, Content, and Hardware divisions to deliver integrated and functional tech solutions.
- Facilitated task delegation, progress tracking, and peer reviews to ensure efficient and high-quality project outcomes.

Skills, and achievements

- **Soft Skills:** Work Ethic, Creativity, Honesty, Adaptability, Teamwork, Public speaking, Leadership and Critical thinking
- **Hard Skills:** Xschem, Klayout, Typescript, HTML, CSS, Tailwind CSS, React JS., Next JS, Python, MQTT, Supabase, OpenCV, Ardupilot, PLC, Figma, Canva, and Microsoft Office
- **Scholarship:** Jabar Future Leader Scholarship (Full Bachelor Scholarship)
- **Achievements:** 3rd Place – PKM-KC, OIM UI 2025
- **Achievements:** Kontes Robot Terbang Indonesia (KRTI) Finalist (2025) – Fixed Wing Division
- **Achievements:** 1st Place – PKM-KC, OIM FTUI 2025
- **Achievements:** Kontes Robot Terbang Indonesia (KRTI) Finalist (2024) – Fixed Wing Division
- **Achievements:** Technoskill 1.0 (2024), 2nd Place Fullstack Web Development, IME FTUI 2024