

FAAIQ MASTYAGA

ROBOTICS & CONTROL SYSTEMS ENGINEER

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PROFESSIONAL SUMMARY

Engineering Physics graduate (S.T., ITB — CGPA 3.91/4.00, ranked 3rd in cohort) specializing in robotics, control systems, and industrial IoT. Experienced designing and deploying control algorithms (MPC, LQR, PID, Kalman Filter) and vision-based localization across simulation and hardware — from 6-DOF robot arms and SCARA manipulators to PLC-based automation systems. Co-designer and co-creator of 2 registered intellectual property works: an industrial design and a copyright registration.

EDUCATION

Bandung Institute of Technology (ITB)

August 2022 – August 2026 (Graduated)

Bachelor of Engineering (S.T.), Engineering Physics — CGPA: 3.91/4.00, ranked 3rd highest in cohort

Undergraduate Thesis: Trajectory Tracking Control for a 6-DOF Robot Arm using an Optical Tracking-Based 3D Task Space Estimator

Publication: Co-author, "Tracking and Sway Control of Gantry Crane Using Zero-Vibration-Derivative Input Shaping and Partial Feedback Linearization," presented at ASCC 2026.

Relevant Coursework: Robotics & Mechatronics; Multivariable Control; Nonlinear & Adaptive Control; Measurement Systems; AI for Autonomous Systems; Signal Processing; Industrial IoT

WORKING EXPERIENCE

Research and Development Engineer | Nakayama – ITB deLabo, Bandung

Mar 2025 – Present

- Architected a battery monitoring system integrating BMS with Raspberry Pi/Jetson Nano and PLC via Modbus TCP/RTU, MQTT, and FTP for reliable industrial data transmission.
- Built a conveyor belt load-rate measurement system using an OAK-D Pro depth camera, starting from volumetric scanning to estimate material flow in real time.
- Built a real-time dashboard for data visualization and automated logging, improving system observability for the research team.

Teaching Assistant, Discrete Control Systems | Bandung Institute of Technology, Bandung

Sep 2025 – Jan 2026

- Designed laboratory modules on DC motor control dynamics and mentored students on PID controller implementation and discrete system analysis.
- Programmed ladder logic for industrial automation scenarios using Mitsubishi PLC.

Robotics Engineer Intern | Formulatrix, Bandung

Jul 2025 – Sep 2025

- Engineered a collision-detection algorithm with a gentle-release mechanism for a SCARA robot gripper, reducing damage risk to delicate microplates during handling.
- Developed an input-shaping control strategy to suppress residual liquid-slosh vibration in moving containers, validated via smoothed particle hydrodynamics (SPH) simulation in Python.
- Implemented forward and inverse kinematics solvers to optimize SCARA trajectory execution and motion precision.

Robotics Software Engineer | Unit Robotika ITB – Dagozilla Soccer Robot Team, Bandung

Aug 2023 – Aug 2025

- Deployed a real-time object and line detection system (YOLO) integrated with the robot's ROS navigation stack.
- Engineered strategic motion-planning algorithms for autonomous setplay scenarios and optimized the C++/Python codebase for low-latency communication.

Laboratory Assistant Coordinator | Bandung Institute of Technology, Bandung

Feb 2025 – Jul 2025

- Led a team of 20 assistants delivering Engineering Physics Lab II (embedded systems) experiments for 80+ students; refined curriculum and lab modules on microcontroller architecture and interfacing.

IoT Engineer Intern | Kedaireka.id, Bandung

Jun 2024 – Dec 2024

- Engineered a dual-axis solar tracker system with SolidWorks-designed schematics and control panel assemblies; integrated sensor networks with control algorithms for real-time monitoring.

KEY PROJECTS

Trajectory Tracking Control for a 6-DOF Robot Arm (Undergraduate Thesis)

Mar 2026 – Jun 2026

Stack: ROS2, Model Predictive Control (MPC), Kalman Filter, Optical Tracking Camera

Result: Achieved sub-millimeter trajectory tracking accuracy and low-latency state feedback in dynamic environments while respecting joint and velocity constraints.

AruNav — ArUco-Based Localization for Automated Guided Vehicles

Sep 2025 – Jan 2026

Stack: ROS2, OpenCV, Python, Raspberry Pi, Web Development

Result: Achieved indoor positioning accuracy within 3 cm and built a web-based interface for live trajectory tracking.

Self-Balancing Robot: Simulation to Hardware Implementation

May 2025 – Jun 2025

Stack: MATLAB, Simulink, Simscape, ESP32, LQR, PID

Result: Designed a hybrid LQR/PID control architecture handling non-linear dynamics; achieved stable balancing with responsive joystick control on embedded hardware.

Autonomous Underwater Vehicle (AUV) — SAUVC 2025

Nov 2024

Stack: Pixhawk, BLDC Motors, Bidirectional ESCs

Result: Engineered propulsion and a hardware fail-safe kill switch as part of the 12-member team led project (see Leadership section).

Other Projects: Micro-Hydro & Wind Turbine Simulation Tool (ESP32 PLC, Node-RED, MQTT); Rebuild Jacobi robot (STM32 + ROS teleoperation); Dam Cleaner Simulation (Gazebo, path planning).

ORGANIZATION & LEADERSHIP

Team Leader, AUV Project — Skullers BORO | ITB, Bandung Nov 2024 – Mar 2026

- Led a 12-member cross-functional team (mechanical, electrical, software) to design and build an autonomous underwater vehicle, successfully qualifying for the Singapore AUV Challenge (SAUVC) 2025.
- Concurrently served as Initiatives Manager (HMFT ITB, Jun 2024 – Mar 2025), drafting proposals and frameworks that secured approval and funding for reviving the BORO robotics community.

HONORS & INTELLECTUAL PROPERTY

Dean's List Award 2026 — Faculty of Industrial Technology, ITB

Best Design Award — Soccer Robot Car Project, FTI Cup, Engineering Physics Laboratory II, ITB, 2024 (Rp 2,000,000 prize)

Industrial Design (Co-Designer): “Turbin Angin dengan Ekor Kujang” (Reg. No. IDD000077003)

Copyright (Co-Creator): “Alat Peraga Edukasi PLTB Kecepatan Rendah” (Reg. No. 000825603)

SKILLS & CERTIFICATIONS

Programming, Robotics & Control: Python, C/C++, JavaScript, ROS/ROS2, Gazebo, MoveIt, MATLAB/Simulink (MPC, LQR, PID, Kalman Filter)

Hardware, Automation & IoT: Raspberry Pi, Jetson Nano, ESP32, PLCs (Keyence, Mitsubishi, Omron), SolidWorks, Onshape, Eagle, Modbus TCP/RTU, EtherNet/IP, MQTT, I2C, SPI

Certifications: SOLIDWORKS CAD Design Professional (CSWP); SOLIDWORKS Mechanical Design Associate (CSWA); Self Driving and ROS 2 – Learn by Doing! Map & Localization (Udemy), Simulink Onramp (MathWorks), MATLAB Onramp, Flight Data Analysis 101/201