

FIRIZQI ADITYA MULYA

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Areas of Interest

Software Engineering, Autonomous Systems, Robotics, Computer Vision, Artificial Intelligence
Interested in intelligent software and autonomous systems, with experience spanning machine learning, computer vision, robotics, and full-stack development.

Education

B.Sc. in Informatics, Universitas Sebelas Maret uns.ac.id *Aug 2024 – Present*
◦ GPA: 3.80/4.00
◦ **Relevant Coursework:** Artificial Intelligence, Data Structures and Algorithms, Linear Algebra, Statistics and Probability, Computer Organization, Numerical Methods

Research and Work Experience

RoboBoat Team Leader, Bengawan UV Team *May 2026 – Present*
◦ Lead a 16+ member team across software, electronics, mechanical, management, administration, and sponsorship functions.
◦ Direct project planning, technical strategy, and system integration for international RoboBoat competitions.
◦ Contribute hands-on to software and autonomous systems development while coordinating cross-functional team operations.

Autonomous Surface Vehicle (ASV) and Remotely Operated Vehicle (ROV) Programming Division Staff, Bengawan UV Team *Dec 2024 – May 2026*
◦ Developed ASV real-time perception and tracking systems for RoboBoat autonomous missions using Python, YOLO, and OpenCV.
◦ Implemented ASV autonomous mission logic and GPS waypoint navigation using Python and ROS.
◦ Developed and tested ROV control system using pymavlink, ArduSub, PID control, and PyQt5.

ASV Programming Intern, Bengawan UV Team *Nov 2024 – Dec 2024*
◦ Developed basic navigation and tracking algorithms for real-time execution using Python.
◦ Implemented object detection using OpenCV-based color segmentation and YOLOv5 on an Intel NUC.
◦ Applied MAVLink communication with Pixhawk and tested software components on a real ASV prototype.

Teaching Assistant, Universitas Sebelas Maret *Mar 2026 – Present*
◦ Object-Oriented Programming (Sep 2026 – Present).
◦ Data Structures and Algorithms; Computer Organization and Architecture (Mar 2026 – Jul 2026).

Community Writer, IDNtimes.com *Dec 2021 – Present*
◦ Wrote and published 50+ articles on film and entertainment, reaching over 100,000 total readers.
◦ Crafted engaging content combining storytelling, analysis, and entertainment.

Achievements

Top 3 — Technical Report, Video, and Website *Feb 2026*
RoboNation — International RoboBoat Competition
1st Place & Best Essay — Essay Writing *Aug 2025*
PT. Cakap Riset Inovasi & Universitas Widya Mataram — SINEC 2025
2nd Place — Autonomy Challenge *Mar 2025*
RoboNation — International RoboBoat Competition

Beasiswa Unggulan 2024 Awardee
Kementerian Pendidikan, Kebudayaan, Riset dan Teknologi

7th Place — Most Viral Articles
IDN Times — 50,000+ views

1st Place — Poetry Writing
Romansa Sastra UVBN

Oct 2024

May 2024

Jul 2023

Technical Reports

RoboBoat 2026: “Mandakini Raiden” Technical Design Report <i>RoboNation</i> <i>Co-author; International RoboBoat Competition</i>	2026
RoboBoat 2025: “Mandakini Zenith” Technical Design Report <i>RoboNation</i> <i>Co-author; International RoboBoat Competition</i>	2025

Projects

Autonomous Surface Vehicle (ASV) Autonomy Stack - Developed an autonomous navigation stack for an ASV, integrating perception, waypoint navigation, obstacle avoidance, and vehicle control. - Integrated GPS, IMU, camera, and LiDAR telemetry with Pixhawk-based control through MAVLink and ArduPilot. Tools Used: Python, ROS, MAVLink, ArduPilot, Pixhawk, Linux.	<i>Bengawan UV Team</i>
YOLO Edge Benchmarking on ASUS NUC 15 Pro - Evaluated and benchmarked real-time inference latency, throughput (FPS), and power efficiency of YOLO models deployed on an ASUS NUC edge computer for marine vision tasks. - Optimized detection pipelines for low-power edge hardware to ensure robust identification of buoys and obstacles under variable aquatic conditions. Tools Used: Python, YOLO, PyTorch, OpenCV, ASUS NUC, Edge AI.	github.com/YOLO-AsusNUC15Pro
HaloMBG: AI-Powered School Nutrition Monitoring Platform - Architected a decoupled full-stack platform containerized via Docker Compose to monitor school meal distributions, menu compliance, and kitchen accountability. - Integrated Google Gemini Vision API for automated meal photo inspection/nutrition validation, sentiment analysis on feedback, and WebRTC for live camera capture. Tools Used: React, Vite, Tailwind CSS, Laravel, PostgreSQL, Docker Compose, Google Gemini API, WebRTC.	github.com/praktikum-rpl-a-02
Automawow: Interactive Automata Simulator - Created an interactive web-based state machine visualizer for Theory of Computation, supporting dynamic DFA and NFA graph construction and step-by-step string simulation. - Deployed as a high-performance web app with intuitive graphical state manipulation and real-time state transition evaluation. Tools Used: React, TypeScript, Vite, Tailwind CSS, Vercel.	automawow.vercel.app
Folder Crawler: Directory Traversal Engine - Engineered a filesystem exploration utility implementing recursive tree/graph traversal algorithms (DFS and BFS) to systematically index and search local file structures. - Optimized directory parsing routines and memory management when scanning deep and nested directory hierarchies.	github.com/DSA-Team-Project

- **Tools Used:** Java, Object-Oriented Programming, Data Structures & Algorithms.

PanggonFATISDA: Desktop Room Booking System

github.com/PBO-Team-Project 

- Developed a desktop classroom management application featuring schedule conflict detection and room availability visualization for FATISDA UNS.
- Implemented persistent local storage using SQLite with clean MVC-inspired architecture and an intuitive Java Swing graphical interface.
- **Tools Used:** Java, Java Swing, SQLite, JDBC, Object-Oriented Design.

NHANES Stroke Risk Predictive Modeling

github.com/NHANES-Stroke-Dataset 

- Designed an end-to-end machine learning pipeline on CDC NHANES health records to analyze clinical risk factors and predict stroke probability.
- Executed data preprocessing, feature engineering, and class imbalance mitigation, evaluating classification models using ROC-AUC and Precision-Recall metrics.
- **Tools Used:** Python, Scikit-Learn, Pandas, NumPy, Matplotlib, Seaborn.

Organizations

Forum Beasiswa Unggulan UNS
Design & Creative Division Staff

Mar 2025 – Present

Studi Ilmiah Mahasiswa UNS
Member

Oct 2024 – Present

Festival Ilmiah Mahasiswa 2025
Event Division Staff

Nov 2024 – Apr 2025

Technologies

Languages: Python, Java, PHP, C/C++, TypeScript, JavaScript, SQL, Shell (Bash), HTML/CSS

Robotics & Embedded Software: ROS / ROS2, MAVLink, MAVROS, ArduPilot, ArduSub, Pixhawk, Gazebo, GStreamer

AI, Computer Vision & Data: PyTorch, YOLO (Ultralytics), OpenCV, Scikit-Learn, Pandas, NumPy

Frameworks, Databases & DevOps: React, Vite, Laravel, Tailwind CSS, PyQt5, pyqtgraph, PostgreSQL, SQLite, Docker, WebRTC, Git, Linux (Ubuntu)