

IMDADULLAH RAJI

3rd Year Undergraduate Student, Department of Mechanical Engineering
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ABOUT ME

I am a mechanical engineering student with a strong interest in control and dynamical systems with a particular focus on data-driven modeling and learning-based control.

I am especially drawn to physical systems where dynamics matter—such as fluid flows, robotic systems—and I enjoy combining first-principles modeling with modern data-driven methods. My current interests include identification, control of nonlinear multiscale systems, and the use of machine learning tools to understand and control complex dynamical behavior.

EDUCATION

Bangladesh University of Engineering and Technology | Dhaka, Bangladesh November 2022- present
Bachelor of Science in Mechanical Engineering

Notre Dame College | Dhaka, Bangladesh 2019-2022
Higher Secondary School Certificate in Science

PROJECTS

Planned and Implemented a Autonomous Drone and Ground Swarm Coordination System

Electromechanical Systems Design Course, Third Year First Term of 2023-24

- Designed a drone capable of autonomous navigation enabled by computer vision using python, YOLOv8 nano and ROS employed on Raspberry pi 5.
- Built up a ground swarm system using readily available sensors and IoT devices.
- Established communication between drone and swarm to enable coordination to solve tasks like: collective movement and transport.

Mapping of Environment by LiDAR and Cameras mounted on a Hybrid UAV-UGV system

, Ongoing Collaboration with 4th year Seniors working Under HEAT-13116 Project

- Implemented stereo-vision using two Raspberry pi cameras.
- Configuring a Jetson Orin Nano with a 2D LiDAR to map surroundings.

SKILLS

PROGRAMMING C/C++, python(SciPy, NumPy, Pandas), Java,
Object Oriented Programming, Data Structures and Algorithms

**ROBOTICS
& CONTROL** ROS and Gazebo simulations; Embedded systems, RTOS; computer vision,
modeling PID/LQR/MPC in python, MATLAB and Simulink

MACHINE LEARNING Scikit-learn(clustering, classification, regression);
Neural Networks, PyTorch.

**MODELING
& SIMULATION** CFD: SimScale, Ansys, COMSOL;
Robotics: Gazebo

**OPERATING SYSTEMS
& TOOLS** Linux(ubuntu) command line and scripting;
Git, Docker, LaTeX

**DESIGN
& PRODUCTIVITY** Canva, Adobe After Effects,
Notion, NotebookLM

PUBLICATIONS

- Nafisa Anjum Tanisha, **Imdadullah Raji**, Anindya Guha, Nusrat Anita,
MuADDIBBS: A Hierarchical Outdoor Swarm System with Aerial Supervision Guiding Local Interaction —
International Conference on Mechanical Engineering 2025 [Publication Pending]

EXPERIENCE

Bangladesh Olympiad on Astronomy and Astrophysics | Bangladesh December 2021- present
Academic Team Member

- Training Bangladesh National Team for International Olympiad on Astronomy and Astrophysics (IOAA)
- Setting and evaluating problems for Regional, National olympiads and IOAA Team Selection Tests.

Team Interplanetary: BUET Mars Rover Team | BUET June 2025- present
Member, Software Subteam

- Helped set up simulation environment for ERC Remote 2025.
- Hands on experience on embedded systems, ROS, computer vision and edge AI on Jetson Nano.

Industrial Attachment at Banglalink | Dhaka, Bangladesh 16 - 20 November, 2025

- Exposure to network systems, telecom operations, automation workflows.

HONORS AND AWARDS

HONORABLE MENTION International Olympiad on Astronomy and Astrophysics (IOAA) 2021

BRONZE MEDAL Open World Astronomy Olympiad(OWAO) 2022

NATIONALIST Bangladesh Mathematical Olympiad(BdMO), 2018, 2019, 2020, 2021
