

# IMDADULLAH RAJI

3rd Year Undergraduate Student, Department of Mechanical Engineering  
Bangladesh University of Engineering and Technology(BUET), Dhaka, Bangladesh

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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 4<sup>th</sup> 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