

IMTIAZ AHMED

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Education

- **Master of Science in Robotics and Mechatronics Engineering** Apr 2024 - Present
University of Dhaka, Bangladesh
CGPA: **3.96/4.00**- Rank 2nd (Thesis defense pending)
Dissertation:Multi-Sensor Fusion for Controlling a Soft Pneumatic Hand Exoskeleton
Supervisor: Dr. Md Mehedi Hasan
- Relevant Coursework:**
- Bio Robotics
 - Computational Human-Robot Interaction
 - Computer Vision
 - Internet of Things
 - Automotive Control and Simulation
 - Industrial Automation
- **Bachelor of Science in Robotics and Mechatronics Engineering** Jan 2019 - Mar 2024
University of Dhaka, Bangladesh
CGPA: **3.62/4.00**
Dissertation:Designing A Biomimetic Fish Robot With Fluidic Actuation
Supervisor: Dr. Shugata Ahmed
- Relevant Coursework:**
- Introduction to Robotics
 - Artificial Intelligence
 - Introduction to Machine learning
 - Object Oriented Programming
 - Digital Signal Processing
 - Digital Image Processing and Robot Vision
 - Power Electronics and Drives
 - Advanced Mechatronics Engineering
 - Linear Algebra
 - Mathematical Analysis
- **Higher Secondary Certificate Examination,2017** 23 July, 2017
Notre Dame College, Dhaka
GPA: **5.00/5.00**
- **Secondary School Certificate Examination,2015** 30 May, 2015
Kushtia Zilla School,Kushtia
GPA: **5.00/5.00**

Research Interests

Machine Learning, Bio-medical Signal Processing, Wearable and Assistive Devices, Soft Robotics.

Training

- **Training Program:** Modular Production System (MPS®) and CIROS Software
Organizer: Sincos Engineers Ltd.—Sincos Automation Technologies Ltd.
Location: Dhaka University
- Installation and commissioning of the Festo MPS system
 - PLC programming on the Siemens platform

Experience

- **Undergraduate Research Assistant, Dr. Md Mehedi Hasan** Sept 2023 - Mar 2024
- data collection and analysis for projects
 - Participated in experimental setup and testing procedures
- **Undergraduate Research Assistant, Dr. Shugata Ahmed** Jan 2023 - Dec 2023
- Contributed to biomimetic fish robot design and fluidic actuation research

- Supported data collection and analysis for performance evaluation

■ Math Instructor, 10 Minute School

Mar 2023 - June 2025

- Best Doubt Solver of the Month (Aug,2023)

■ Student Activity Secretary(2022)

IEEE Electron Device Society (EDS) Student Branch Chapter, University of Dhaka

Aug 2021 – Sept 2022

- Organised several webinars, interactive sessions, and expert talks

- Collaborated with other IEEE societies across the country

■ Academic Team Mentor

Bangladesh Robot Olympiad

Sep 2020 – Aug 2021

- Developed questions for the National Robotics Olympiad and organized workshops

Projects

■ Multi-Sensor Fusion for Controlling a Soft Pneumatic Hand Exoskeleton

Sept 2024 - Nov 2025

Topic: Real-Time Machine Learning Application & Soft Robotics

- Designed and optimized Ecoflex-based soft pneumatic actuators using FEA, achieving a high bending angle of 288.79° with external thread reinforcement.
- Developed a real-time gesture recognition system using an armband with ADXL335 and IMU sensors to control the exoskeleton.
- Implemented and compared ML models (XGBoost, Random Forest, SVM), with Random Forest achieving 93.01% accuracy for reliable actuator control.

■ Designing A Biomimetic Fish Robot With Fluidic Actuation

Jan 2023 - Jan 2024

Topic: Soft Robotics

- Designed a fish robot incorporating fluidic actuation for biomimetic underwater movement.
- Developed and tested soft actuators with varying numbers of chambers to study their deformation behavior.
- Conducted a comparative analysis to evaluate how the number of chambers influences actuation performance.

■ Enhancing GRE Vocabulary Learning through Interactive Sessions with Nao Robot

Aug 2023 - Nov 2023

Topic: Human-Robot Interaction

- Developed an interactive vocabulary learning system using the NAO robot to assist with GRE preparation.
- Programmed the robot to teach word meanings, explain usage, and provide sentence examples.
- Integrated a comprehensive GRE word list to ensure broad vocabulary coverage.

Other Projects

■ Pneumonia Detection from Chest X-rays

Jun 2023 - Aug 2023

Topic: Medical Image Analysis & Deep Learning

- Developed a CNN-based model to classify chest X-rays as normal or pneumonia-infected
- Achieved 92% accuracy using transfer learning with data augmentation techniques
- Implemented Grad-CAM visualization to highlight regions influencing the diagnosis

■ House Price Prediction System

Mar 2023 - May 2023

Topic: Machine Learning & Regression Analysis

- Built a regression model using Random Forest and XGBoost to predict housing prices
- Performed feature engineering and hyperparameter tuning to improve model performance
- Created an interactive web interface for real-time price predictions

■ Build a Smart ESP32 GPS Tracker with SIM800L and NEO6M Module

Topic: Microcontroller and PLC lab

- Combines ESP32 dual-core processing with NEO-6M GPS and SIM800L GSM modules for reliable cellular-based location tracking that works anywhere with mobile coverage, eliminating Wi-Fi dependency
- Utilizes the GeoLinker cloud platform to provide instant data visualization without complex server setup, offering an accessible and powerful tracking solution through a user-friendly dashboard

■ PM10 PM2.5 Pollution Analyzer

Topic: Sensor System

- Arduino-based system with dust sensor and OLED display to detect and show real-time PM2.5 and PM10 pollution levels
- Allows users to set safety limits for both particle types and triggers buzzer/LED alerts when levels exceed thresholds

■ Personalized CNC Wood Engraving System

Topic: CNC Programming Lab

- Automated G-code generation for custom text and pattern engraving on wood surfaces
- Precision CNC control to accurately carve letters and designs with clean finishes

Awards and Scholarships

- National Education Board Scholarship (General Scholarship, Awarded for outstanding result in Secondary School Certificate (S.S.C) examination), Bangladesh, 2015
- National Education Board Scholarship (Talent Pool Scholarship in Junior School Certificate (J.S.C) examination), Bangladesh, 2012
- National Education Board Scholarship (Talent Pool Scholarship in Primary School Certificate (P.S.C) examination), Bangladesh, 2009

Technical Skills

- **Programming Languages:** Python, C/C++, MATLAB, LaTeX
- **Machine Learning:** Scikit-learn, TensorFlow, Keras, OpenCV, Pandas, NumPy
- **3D Printing:** Ultimaker Cura, PrusaSlicer
- **Frameworks & Libraries:** Arduino, ESP32
- **IoT & Embedded Systems:** Microcontrollers, Sensors, Actuators, IoT Protocols
- **Robotics:** Robot Kinematics, Control Systems, Sensor Integration
- **Tools:** Comsol Multiphysics, SolidWorks, Git, AutoCAD, Fusion 360
- **PCB Design and Circuit Simulation:** Proteus, EasyEDA, KiCad
- **Professional:** Technical Writing, Research Methodology, Project Management

References

■ Dr. Md Mehedi Hasan

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Faculty of Engineering and Technology, University of Dhaka

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■ Dr. Shugata Ahmed

Assistant Professor and Chairman, Dept. of Robotics and Mechatronics Engineering

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