

# Tanvir Hossain

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## Education

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**Islamic University of Technology**, Gazipur, Bangladesh

*January 2020 – June 2024*

B.Sc. in Mechanical Engineering

**CGPA: 3.90/4.00** (class position **3rd**)

## Research Experience

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- Undergraduate Thesis: *Optimization of Clamp Numbers and Positions to Mitigate Flow-Induced Vibration in High-Speed Fluid Flow Through a Pipe Elbow*** *January 2024- ongoing*  
Supervisor: *Dr. Md. Zahid Hossain*
    - Contributed to the research by analyzing the vibration using FFT in python and Excel and validating the work
    - Comparing the acceleration and displacement data from the simulation to determine the optimal number and positions of standard clamp for vibration reduction for the pipe
    - Creating a model using dimensional analysis that includes, clamp numbers and positions and fluid properties to determine optimal clamps required for a general pipeline used in industrial boiler connection.
  - Experimental Study on Non-linear Vibration of Sandwich Composite Specimen*** *August 2023-December 2023*  
Supervisor: *Dr. Md. Zahid Hossain*
    - Fabricated 2 sandwich composite specimens of different lengths. Specimens include stainless steel core sandwiched by two rubber layers.
    - Designed a simple 3DOF linear sandwich system in MATLAB-Simulink
    - Extracted data from the experimental setup and performed Fast Fourier Transformation (FFT) to plot the dynamic behavior the system
    - Compared the dynamic behavior of the specimen with the linear setup in Simulink to decide the nature of the composite structure
  - Novel Power Cycle – Supercritical Brayton Cycle with Ejector Cycle and VAR System*** *January 2024-ongoing*  
Supervisor: *Dr. Mohammad Monjurul Ehsan*
    - Designed the power cycle layout for improved performance
    - Reviewed literatures on ejector cycle

## Other Experience

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- Tutored students of class XI-XII on math and physics.

*February 2020-January 2021*

## Research Interest

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| 1. Legged Robots      | 4. Mechanical Vibration |
| 2. Controller Design  | 5. Humanoids            |
| 3. Dynamic Locomotion | 6. Robot Manipulation   |

## Projects

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- **4 degrees of freedom robotic arm for picking and sorting objects** *Jan 2023-January 2024*  
*Undergraduate Capstone Project supervised by Dr. Md. Rezwanul Karim*
  - Designed one of the prototypes of the arm
  - Finalized the control system algorithm for the arm
  - Created a GUI interface for manually controlling the arm
  - Wrote the code for forward and inverse kinematics of the arm
- **Chassis of 'Musafir' – Mars rover of Project Altair** *June 2023-January 2024*  
*European Rover Challenge 2023, Kielce, Poland*
  - Designed the mars rover chassis on SOLIDWORKS
  - Tested the load carrying capacity and structural dynamics using ANSYS
  - Manufactured the chassis
- **Electric Box of 'Musafir' – Mars rover of Project Altair** *June 2023-January 2024*  
*European Rover Challenge 2023, Kielce, Poland*
  - Designed a reconfigurable electric box for the rover on SOLIDWORKS for ERC 2023
  - Tested the load carrying capacity and structural dynamics using ANSYS
  - Manufactured the electric box

## Skills and Interests

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- **Design and Simulation:** SOLIDWORKS, ANSYS
- **Programming:** ROS, C, Python, Arduino
- **Control and Automation:** MATLAB, LABVIEW, Ardupilot, LINUX
- **Others:** MS Office, PowerPoint, Excel
- **Language:** English, German (A1)
- **Others:** Violin, Acting

## Leadership Activities

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- **Chief Editor** - IUT Robotics Society *October 2023-July 2024*
- **Chassis Design Architect** - Project Altair *June 2023 – May 2024*
- **Senior member of software** - Project Altair *June 2023 – January 2024*
- **Chief of Robotics** - IMechE IUT Student Chapter *August 2023 – May 2024*
- **Executive: Autonomous System** - ANTS Aerial Systems *February 2021 – July 2021*

## Achievements

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- **International Rover Challenge 2024 -Best Science Team**, India (Team Achievement) 2024
- **International Rover Challenge 2024 - 6<sup>th</sup> position**, India (Team Achievement) 2024
- **European Rover Challenge 2023 -17<sup>th</sup> position**, Poland (Team Achievement) 2023
- **International Rover Design Challenge 2022 - 13th position**, virtual (Team Achievement) 2022
- **European Rover Challenge 2021 - 10th position**, virtual (Team Achievement) 2021
- **OIC Partial Scholarship**, Bangladesh 2020

## Certification

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- **Supervised Machine Learning: Regression and Classification** June 2024  
*Stanford Online, Coursera*
- **ERC Space and Robotics Industry standard practice Program** September 2023  
*European Space Foundation*
- **Industrial Training Course** June 2023  
*BPDB, Rajshahi, Bangladesh*

## References

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### 1. Dr. Md. Zahid Hossain

Professor of Mechanical Engineering  
Islamic University of Technology,  
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### 2. Dr. Md. Rezwanul Karim

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