Musabbir Al Momit

Jamalpur, Bangladesh.   Email: almomit3@gmail.com
LinkedIn Website   Mobile: +8801721522190

RESEARCH INTERESTS

- Control Engineering   • Robotics   • Machine Learning   • Optimization   • Automation   • Aerodynamics

EDUCATION

Khulna University of Engineering & Technology   Khulna, Bangladesh
- *Bachelor of Science in Mechanical Engineering (B.Sc. in ME)*   January, 2019 — March, 2024
  Project Title: Design and Development of a Mechanized Wastewater Cleaning System   **Cumulative GPA:** 3.01/4.00
  - Investigated and tested different mechanical drive trains and gear configurations.
  - Implemented a modular design that allows for height adjustment and easy maintenance.
  - Developed and tested a conveyor system with corrosion-resistant materials to enhance durability in harsh drainage environments.

RELEVANT PROJECTS

- **Design and Simulation of UAV Controllers**   2024
  Developed and simulated a Robust Model Predictive (MPC) Attitude Controller and a Feedback Linearization Position Controller for a UAV using ROS and Gazebo.
- **Sensor Fusion using Kalman Filtering**   2024
  Designed and simulated a sensor fusion system using Kalman Filtering for enhanced data accuracy and reliability.
- **LEO Rover Navigation Simulation**   2022
  Simulated the navigation of a LEO Rover using a stereo depth camera and a UR3 robot arm in ROS and Gazebo.
- **Autonomous Vehicle Control**   2020
  Implemented and simulated a PID Longitudinal Controller and a Pure Pursuit Lateral Controller for a self-driving car in the Carla simulator.

RESEARCH EXPERIENCE

- **Development of a Multi-Sensor System for Agricultural Land and Crop Monitoring in Bangladesh using Remote Sensing and UAV Technology.**
  UGC funded project (Cat 2, Serial No. 17, 2022-2023)
  Project Director: Assistant Prof. Fahim Islam Anik
  Role: Research Assistant

SUBMITTED/ UNDER PEER-REVIEW

- Anik, F. I., **Momit, M. A.**, Ahmed, S., Islam, M. T. & Khabir, L. (2024). Development of an Automated Solid Waste Collection Device for Water Bodies: A Mathematical Approach. (Under Review)

RESEARCH IN PROGRESS

- **Development of an automated water quality measurement system with electrochemical sensors and IoT**
  - *Developing an intelligent system to analyze water quality in real-time using data from 7 electrochemical sensor-measured properties.*
  - *Designing a user-friendly mobile app to display water quality insights and recommendations.*

PROFESSIONAL AND LEADERSHIP EXPERIENCE

Self Start-ups   2020 — Present
- *AimReach: Worked on strategic solutions for over 600 blockchain projects, including data analysis, relevant app development, automation, and hosting online events.*

Team Kilo Flight (A formula student racing car team)   2019 — 2024
- *Deputy Captain: Co-lead the team in Formula Student Japan 2023, becoming the first ever team from Bangladesh to pass technical inspection.*

○ *Electrical & Safety System Lead: Designed and constructed the BSPD (Brake System Plausibility device) and integrated all electrical components and sensors for an ECU-controlled fuel injection (FI) engine, ensuring compliance with FSUK and FSAE regulations through necessary adjustments.*
○ *Workshop: Conducted a 15-day long workshop on Formula Student Vehicle design.*

Team Phoenix (A mars rover team)   2021
○ *Simulation: Simulated navigation of a LEO Rover using a stereo depth camera and a UR3 robot arm in ROS and Gazebo for ERC 2021 Remote.*

Team Durbar (A mars rover team)   2020
○ *AI Sub Team: Developed the rover URDF for ROS simulation.*
○ *Mechanical Sub Team: Designed a MOXIE like device with Science Sub Team.*

SKILL SUMMARY

- **Programming Languages:**   Python, C++, Java Script, Solidity
- **Robotics Tools:**   ROS, Gazebo
- **CAD & 3D Printing Tools:**   SolidWorks, AutoCAD, Ultimaker Cura
- **CAE Tools:**   Ansys (Mechanical APDL, Fluent), Abaqus CAE
- **Circuit & PCB Design:**   Protius, EasyEDA
- **Hands-on Skills:**   Soldering, Welding, 3D Printing, Lathe, Milling and other hand tool operations
- **Web & App Development:**   React JS, Next JS, Flask, PyQT
- **Database Software:**   PostgreSQL, SQLite, Pandas
- **Documentation & Data Analysis:** Microsoft Office, Python, Latex
- **Soft Skills:**   Self Learning, Problem Solving, Leadership, Project Management

STANDARDIZED TEST SCORES

GRE: 312 (Overall score)

| **Quant:** 164 | **Verbal:** 148 | **AWA:** 2.5 |

IELTS (Academic): 7 (Overall score)

| **Listening:** 7 | **Reading:** 7.5 | **Speaking:** 6.5 | **Writing:** 6.5 |

CERTIFICATION

- Introduction to Power Electronics, University of Colorado Boulder (Coursera)   2023
- Ethereum and Solidity: The Complete Developer's Guide, Stephen Grider (Udemy)   2022
- Autonomous Robots: Path Planning, Daniel Stang (Udemy)   2022
- Introduction to Self-Driving Cars, University of Toronto (Coursera)   2020
- Python for Everybody Specialization (4 Courses), University of Michigan (Coursera)   2020

AWARDS AND ACHIEVEMENTS

- Technical Scholarship, Department of Mechanical Engineering, KUET   2020 — 2024
- 30th out of 77 teams, Formula SAE Japan   2023
- 33rd out of 50 teams, Formula Student UK   2021
- 9th out of 27 teams, International Planetary Aerial Systems- IPAS Challenge   2021
- 10th out of 26 teams, Indian Rover Design Challenge   2020