Shahinur Hasnat Rahat

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Linkedin | GrabCAD | Certifications | CAD portfolio

Research Interests

Composites, Additive Manufacturing, Smart Materials

EDUCATION

- ✓ **Bachelor of Science in Mechanical Engineering** *01/2019 – 04/2024*
  - Khulna University of Engineering and Technology(KUET) *CGPA : 2.98/4.00*
    - **Thesis:** Investigation on thermal and fire properties of sodium silicate-treated jute fiber reinforced epoxy composites
    - **Supervisor:** Dr. Md. Arifuzzaman

RESEARCH IN PROGRESS

- ✓ **Investigating Mechanical Properties of a 3D-Printed Biomimetic Structure through Three-Point Bending Test and Design Optimization Using Machine Learning.** *In progress*
  - Designed and 3D printed a sandwich structure using PLA plus material, inspired by the bamboo cell structure.
  - Conducted a series of mechanical tests to evaluate the properties of the biomimetic structure.

PUBLICATIONS AND CONFERENCES

Journal……...

- ✓ M. A. I. Shaikot, C. Biswas, Ahammad, **S. H. Rahat, "The role of sodium silicate on the thermo-mechanical and fire resistance of novel sandwich structures."** Journal of Sandwich Structures and Materials, 2025. Vol. 0(0) l-24, **DOI** : https://doi.org/10.1177/10996362251357088.
  - develop lightweight, fire-resistant sandwich structures using Hybrid Fiber Reinforced Sodium Silicate Composites (HSC) and Jute Fiber Reinforced Epoxy Composites.
  - optimizing sodium silicate concentration to enhance strength, insulation, and fire resistance for multifunctional applications.
- ✓ **Investigation on thermal and fire properties of sodium silicate-treated jute fiber reinforced epoxy composites.** *In preparation*
  - Mechanical properties of jute fiber-reinforced epoxy composites using various sodium silicate solution concentrations with the hand lay-up technique.
  - Evaluated the impact of sodium silicate treatment on the composite's thermal conductivity, fire resistance, hardness, and impact strength through standardized testing methods.

PROJECT EXPERIENCE

- ✓ **Design and Manufacturing of a Formula Student Car: Team Kilo Flight** | *Designer & Mechanical Control Expert* *05/2020-01-2024*
  - Led the design and fabrication of the **steering and suspension systems** of a formula student car with the Kilo Flight, optimizing vehicle stability and handling.
  - Conducted gear assembly simulations of the steering system under stress conditions using **ANSYS**, evaluating stress distribution.
- ✓ **Design of a drone for wildfire Detection and wildlife management: NASA Space Apps Challenge 2023** | *Team Leader & Mechanical Designer* *09/2023-11/2023*

- Led the design of a **drone for wildfire detection and management**, integrating wildlife detection and **real-time data** collection systems. Developed a **conceptual design for water contamination detection** using advanced sensor technology.
- **Collaborated with team members** to address environmental challenges and managed a cross-functional team throughout the design process

✓ **Vaccine-Carrying Drone Development: Cognizance, IIT Roorkee, India** *04/2021- 05/2021*
| *Mechanical Designer*

- During the COVID-19 pandemic, led the design and development of a drone capable of **autonomously** loading and unloading **vaccines** without human interference.
- Performed load capacity simulations using **ABAQUS** to ensure operational efficiency.

SKILLS

CAD & Rendering: Solidworks(CSWP), Siemens NX, Fusion 360, Autocad, Keyshot **Programming:** C, Python **Soft Skills:** Microsoft Excel, Microsoft PowerPoint, Microsoft Power BI **Simulation:** ABAQUS, ANSYS **3D Printing Skills**: Ultimaker Cura **Other Expertise:** Generative Design, AM

ACHIEVEMENTS

- **Global Nominee, 1st Runner up in regional round:** NASA International Space App Challenge 2023
- **Galactic Problem Solver:** NASA International Space App Challenge 2023
- **1s Runner up :** Cognizane'2021, IIT Roorkee, India
- **SOLIDWORKS Champion**: SOLIDWORKS Champions program 2022
- **Team Ranking - 33/57, Formula Student UK 2021:** As a designer and mechanical control Expert of Kilo Flight, I successfully participated in Formula Student UK 2021.
- **Team Ranking - 53, Formula Student SAE Japan 2023:** As a senior member of Kilo Flight, I successfully participated in Formula Student SAE Japan 2023.

AFFILIATIONS

✓ **Former Chief Policy Analyst of CADers, KUET** *01/2020-01/2024*

- This is a renowned club of kuet, to foster an engineering language and produce quality designers. I organized seminars and conducted workshops on professional CAD software to enhance the skills of participants.

✓ **Former Designer and Mechanical Control Expert of Team Kilo Flight** *06/2020-01/2024*

- I played a pivotal role in the development of a Formula Student car with Kilo Flight, a dedicated team of driven individuals.

PROFESSIONAL EXPERIENCE

✓ **Shyamoli Textile Engineering College |** Dhaka, Bangladesh *08/2024-09/2024*
| **Lecturer,** Department of Mechanical Engineering

- Delivered interactive Lectures (Fundamentals of Mechanical Engineering, Engineering Materials) and assessed student performance.

✓ **Midas Safety Bangladesh Ltd** | Chattogram, Bangladesh **| Maintenance Engineer** *05/2025-Present*

- I perform routine maintenance and inspections on mechanical systems, diagnose and resolve issues with accuracy and efficiency, and implement preventive maintenance programs.

REFERENCE

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