

## EDUCATION

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- **North Carolina State University** Dhaka, Bangladesh  
*PhD in Mechanical and Aerospace Engineering* August 2025 - present  
Thesis supervisor: Dr. Susmita Sarkar
- **Bangladesh University of Engineering and Technology** Dhaka, Bangladesh  
*B.Sc. in Mechanical Engineering; GPA: 3.80/4.00* Feb 2020 - March 2025  
Thesis supervisor: Dr. Md. Ashiqur Rahman

## INTERESTS

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- Thermoacoustics
- Thermal Transport
- Mechanics of Materials
- Mechatronics
- Energy Conversion & Storage
- Fluid Mechanics

## RESEARCH EXPERIENCE

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- **Desalination of Water via Combined Multistage Wet Traveling Wave Thermoacoustic Engine and Refrigeration**  
*Supervisor: Dr. Md. Ashiqur Rahman, Professor, ME, BUET* Dec 2023 - Present
  - This experimental work includes the designing and manufacturing of a device capable of desalinating water by employing the principle of phase change thermoacoustics. The device comprises a thermoacoustic engine and a refrigerator, where the engine generates an acoustic wave that initiates the refrigeration process. This process enables evaporation and condensation to occur, resulting in water desalination through distillation.

## PROJECTS

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- **Designing and manufacturing a shell and tube heat exchanger with three zonal baffle (Technical report)**  
*Supervisor: Priom Das, Lecturer, ME, BUET* May 2023-Nov 2023
  - Designed the prototype for manufacturing.
  - Modified the design for optimum fluid flow inside the shell using CFD simulation.
  - Manufactured the prototype according to design and performed pressure test.
- **Detection of Mosquito-breeding Sites Using an Unmanned Aerial Vehicle (Presentation)**  
*Supervisor: Dr. Kazi Arafat Rahman, Assistant Professor, ME, BUET* Dec 2022-Feb 2023
  - Assembled the UAV with proper combination of the components.
  - Used an open-source object detection algorithm (YOLO V5) for image processing.
- **Design and manufacture of a formula student car components**  
*Supervisor: Dr. Md. Ashiqur Rahman, Professor, ME, BUET* Dec 2021-Feb 2023
  - Designed the undertray of the car and optimized it using CFD simulation.
  - Performed an aerodynamic analysis of the car using ANSYS.

- **Stress Analysis of a Concrete Mixer ([Presentation](#))**

*Supervisor: Shahriar Alam, Assistant Professor, ME, BUET*

*May 2023-Oct 2023*

- Analyzed the impact forces experienced by different components of a concrete mixer .
- Performed structural analysis on key components including the shaft, bevel gear, bolts, V-belt, and bearings.

- **CFD Simulation Through a Centrifugal Pump**

*Coursera Project Network*

*Oct 2024*

- Independent Project Work
- set up a CFD pump simulation and post-processed the results

## WORK EXPERIENCE

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- **Provided tutoring services to college students in physics, chemistry, and mathematics.**
- **Industrial attachment at Shahjalal Fertilizer Company Limited.**

## TECHNICAL SKILLS

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- **Simulation Software:** Ansys Workbench, Pc-Tas, SOLIDWORKS Flow Simulation, HTRI
- **Modelling Software:** AutoCad, SOLIDWORKS
- **Developer Tools:** MATLAB, LaTeX
- **Programming Language:** Basic C, Python, Arduino IDE
- **Microsoft Office:** Word, Excel, Powerpoint
- **Graphing and Statistics:** Tecplot 360

## ACHIEVEMENTS AND AWARDS

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- **Dean's List Scholarship from BUET**
- **University Merit Scholarship from BUET**
- **Government Board Scholarships in HSC, SSC, JSC, PECE**

## GRANTS

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- Received the **RISE (Research and Innovation Centre for Science and Engineering) Student Research Grant** of **BDT 99,000** for my undergraduate thesis titled '**Desalination of Water via Combined Multistage Wet Traveling Wave Thermoacoustic Engine and Refrigeration**'. ([Grant proposal](#))

## EXTRACURRICULAR ACTIVITIES

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- Secured **2nd position** in a **Student Project Competition** at the **Energy Conference 2023**, held at **BUET**. ([Presentation](#))
- Secured **3rd position** in **Inter University Poster Presentation Competition, 2024** held by **Mechanical Engineering Association, BUET**. ([Poster](#))
- Secured **1st position** in **Book Reading Competition, 2011** organized by **British Council Resource Centre**.
- Secured a place in **Divisional Round in Spelling Bee, 2013**.