**Research Experience:**

1. **Undergrad Thesis and Project: June 2022 - May 2023**

“*Design and Fabrication of a Horizontal Tensile Testing Machine for Flexible Materials with Large Elongation*.”

* SOLIDWORKS software was employed to facilitate the design process and generate a three-dimensional (3D) representation of the various components of the machine. This included the frame, gripping system, load cell mounting, and the testing machine itself. Special attention was given to meeting the specific criteria for testing flexible materials during the design phase.
* Based on my interpretation of the Power Screw chapter in “Shigley's Machine Design” book, the lead screw has the capacity to support a load of 8.5 tons, taking into account a safety factor of 2.
* The implementation of ANSYS Workbench enabled a thorough assessment and evaluation of stress, strain, and deformation in the lead screw, ensuring structural integrity, meeting specifications, and optimizing performance.
* Utilized welding, drilling, boring, and slotting techniques to effectively join structural components, generate essential holes, and create grooves for seamless integration of components and accessories.

1. **Control Engineering research work December 2022- Present**

*“Development of a P, PI, and PID-controlled device for regulating velocity relative to concentration in a T-shaped cavity with cylindrical obstruction.*”

* Create a computational model of the T-shaped cavity with a cylindrical obstruction using the COMSOL Multiphysics software.
* Assessing the performance of the developed P, PI, and PID-controlled device by analyzing key metrics, such as the response time, steady-state error, and control stability.
* Using MATLAB SIMULINK for further tuning of the graph.

**Membership of Professional Societies:**

1. Student affiliate member of the Institution of Mechanical Engineers (IMechE).

Membership number is 80698193

1. Member of Institute of Engineers Bangladesh (IEB).

Membership number is

1. Member of Canadian Society for Mechanical Engineering (CSME)

Membership number is 220230334