

Nahiyan Muhammad

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Education

Boston University

B.S. in Mechanical Engineering, Minor in Computer Engineering, Concentration in Energy Technologies

Boston, MA

Expected May 2025

GPA: 3.46

Coursework: Programming, CAD, Manufacturing, Instrumentation, Software Engineering, Clean Energy, Material Sciences.

Leadership: Boston University Student Government Environmental Affairs – Executive Chair. (23-24), BU IMPACT Advisor

Skills and Leadership

Hardware: Arduino, Soldering, Drilling, Laser Cutting, CNC Milling, 3D printing, Oscilloscope, Signal Generator, and Multimeter.

Software: C, C++, C#, Java, HTML, MATLAB, SolidWorks, Onshape, Creo, COMSOL, Gcode, Latex, Lean Six Sigma, AutoCAD.

Experience

Harmony Desalting

Boston, Massachusetts

Process Engineering Intern

June 2024 – August 2024

- Programmed with **Visual Basics of Application (VBA)** on MS Excel that analyzed and compared Excel text with AutoCAD drawings and MS Word documents to change 3 documents by adjusting 1, reducing the document creation process by 60%.
- Built an autonomous system with transient suppressors using RC snubber, Solid-state relays to manipulate water flow, Arduino programming to control the system, and Circuit Breakers for safety, removing the need for day-to-day maintenance.
- Designed **Process & Instrumentation Diagrams (P&IDs)** using AutoCAD and maintained a Bill of Materials to plan and incorporate 50+ tubing connections, building the first-ever Countertop Batch Reverse Osmosis Water desalination system.

Boston University Singh Imagineering Lab

Boston, Massachusetts

Advisor

June 2024 – Ongoing

- Created “SILab Equipment’s Directory,” a website using Java and HTML that allows users to explore the lab's capabilities.
- Implemented a dynamic search functionality **using jQuery**, allowing users to filter and find specific lab equipment in real-time based on user input, managing the **Document Object Model (DOM)**. Utilized **CSS flex** properties to align components properly.
- Used **jQuery event listeners** to control the visibility of search results based on user focus and clicks outside the search area.
- Conducted workshops on using **SolidWorks** for 3d Printing, creating models and running simulations for **50+ students**.

Further Experiences: [Eleven58](#) Auto-Recycling Trash Collector, Boston University Student Tutor, Dipon Group On-site Intern.

Projects

LumbaCare: Solution for preventing and managing Low Back Pain (LBP)

Boston, Massachusetts

June 2024 – Ongoing

- Engineering a **wearable device for monitoring LBP** that promotes healthy movement patterns while providing real-time data.
- Programmed 6-DoF accelerometers using **MATLAB and Arduino to measure spinal curvature** relative to the thoracic spine.
- Integrated electromyography sensors in the lower back to **assess muscle stress levels** during various activities.
- Conducted **cost and patent analysis**, developing a project planning schedule incorporating a **Random Forest model** for data tracking, exploring implications of using sensors for knee and hip monitoring, and introducing haptic feedback **with therapists**.

FreshFridge: Website for tracking and making Food

Boston, Massachusetts

Jan 2024- May 2024

- Designed **GUI using React** for Frontend for responsive user interface and **Backend with Node.js** for APIs and session storage.
- Wrote script in the Backend that manages API calls, using **Edamam API** to fetch recipe options and nutritional data
- Integrated Ingredient and grocery list data in session storage through **JSON stringify** and parse functions for real-time updates.

Lutron Lighting Innovation Challenge

Boston, Massachusetts

Team Leader – Third Place

Jan 2024 – Mar 2024

- Leveraged **SolidWorks and Onshape** to design a multi-functional lamp, **reducing material costs by 10%** and **prototyping time by 20%** through efficient 3D printing and laser-cutting methods such as **slicing and power optimization**.
- Programmed an **Arduino-based lamp control system** that synchronized ultrasound sensor, temperature sensor, and LED operations, **decreasing response time by 15%** and enhancing user interaction efficiency.
- Built lamp circuit design using **MOSFETs** to amplify LED voltage beyond Arduino capacity, eliminating the need for **external power and reducing operational costs by 25%**.

Further Projects: VTOL, Headset Tracker, Temperature Detecting Sensor, Research Project on Air-launch to Orbit.