

Aima Hossen

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Education

Massachusetts Institute of Technology – Cambridge, Massachusetts

Sep 2025 – May 2029

Bachelor of Engineering in Artificial Intelligence & Decision Making

Related Coursework

(6.100A) Intro to CS Programming Using Python, (6.100B) Intro to Computational Thinking and Data Science, (6.1200) Mathematics for Computer Science

Experience

Undergraduate Researcher – Fluid Interfaces @ Media Lab – Cambridge, Massachusetts **Jan 2026 – May 2026**

- Conducted human subjects research on **sonophoresis**, investigating ultrasound-based transdermal caffeine delivery via a co-developed wearable watch device (**SonoPatch**) to evaluate effects on cognitive performance.
- Developed an end-to-end experiment software stack using **Python, Flask, and Lab Streaming Layer (LSL)** to synchronize and record multimodal physiological data across devices. Built Python-based data analysis pipelines for **Sustained Attention to Response Task (SART)** behavioral metrics.
- Conducted and supervised in-person experimental sessions, configuring hardware setups and maintaining data integrity using **LabRecorder** and **Supabase**.
- Integrated real-time **EEG streaming (MuseS headband)**, EmotiBit physiological sensors, and experimental event markers for precise temporal alignment during trials.
- Authored the **Related Works** section for a paper submitted to **ACM UIST 2026**.

Controls Programmer – FIRST Robotics Team 2601 – Queens, New York

Sep 2023 – June 2025

- Programmed robot subsystems in **Java using WPILib**, integrating **TalonSRX motor controllers**, sensors, and driver inputs for teleoperated and autonomous control.
- **Implemented real-time CAN bus and signal communication** between motor controllers and the RoboRIO using VSCode and FRC Driver Station tools.
- **Conducted field tests** for control boards and experimented with mechanical components created by the mechanical and electrical sub teams.

Activities

Infotainment Systems Developer - MIT SEVT - Cambridge, Massachusetts

Sep 2025 – May 2026

- Developed the in-vehicle infotainment system for MIT's Solar Electric Vehicle Team.
- Led development of **SolsticeAI**, an embedded in-vehicle AI assistant enabling speech recognition, natural language query processing, and real-time responses via **ChatGPT API** integration.
- Engineered the full voice pipeline, including audio input handling, API-based response generation, and audio output.
- Designing the infotainment UI/UX on **Raspberry Pi 5**, integrating **Apple CarPlay** and physical volume controls.
- Implemented and tested vehicle communication protocols using **CAN bus signaling** with **STM32CubeMX** and **STM32CubeProgrammer**.
- Modeled the infotainment panel enclosure in **Autodesk Fusion 360** and fabricated the final hardware via **3D printing** for vehicle integration.

Awards/Certifications

- Amazon Future Engineer **Apr 2025 – Present**
- GenAI Zürich 2026 Hackathon - 1st Place **Apr 2026**
- CITI Program Biomedical Responsible Conduct of Research **Jan 2026**
- CITI Program Human Research Biomedical Research Investigators **Jan 2026**

Skills

- Applied Python (Data Analysis, Experimentation)
- Prompt Engineering
- Human Subjects Research
- Collaboration