

Jack Sweeney

sweeney.jac@northeastern.edu | [LinkedIn](#) | [GitHub](#) | [Portfolio](#) | (518) 248 - 9369

Education

Northeastern University, College of Engineering

Boston, MA

Candidate for BS in Computer Engineering – GPA: 3.739

May 2027

Activities and Honors: Generate, Forge, NU Club Running, Dean's List

Coursework: Object Oriented Design | Fundamentals of Software Engineering | Computer Systems | Fundamentals of Networks | Circuits and Signals: Biomedical Applications | Embedded Design: Enabling Robotics | Fundamentals of Electronics | Discrete Structures

Technical Skills

Software Skills: Java, Python, C, TypeScript, AWS, React, Version Control - GitHub

Hardware Skills: PCB Design - Altium, Circuit Analysis and Design, Microcontroller Programming, Soldering

Work Experience

Massa Products

Hingham, MA

Computer/Software Engineer

July 2025 – Present

- Implementing C bootloader for STM32 microcontroller, UART-to-SD functionality with CRC validation and error handling
- Designing Python test frameworks using serial communication protocols to validate embedded system functionality and data integrity across hardware interfaces
- Developed responsive React 19/TypeScript frontend with Material-UI and Tailwind CSS, scalable AWS backend using DynamoDB, Cognito authentication, and RESTful APIs for device management and firmware updates
- Implemented comprehensive IoT device management system including bulk operations, group management, certificate handling, MQTT broker integration, and real-time configuration

Projects

Generate – PlaitPilot

Boston, MA

Electrical/Computer Engineer

January 2025 – Present

PlaitPilot is a semi-automated device that organizes hair extensions for braiders, improving speed and consistency through precision dispensing

- Designed and integrated the UI and sensors subsystem, including ToF sensor, slide potentiometers, buttons, and a TFT LCD Screen
- Co-developed a custom PCB in Altium Designer to consolidate a GPIO expander, motor drivers, connectors, and USB-UART bridge for clean power and signal routing
- Collaborated with enclosure and hardware engineers to co-locate UI and PCB placement for optimal user experience and cable routing
- Programmed embedded C firmware state-machine to manage user inputs, stepper motor control, ToF sensor logic, and an interactable UI

SWE DoC – Study Abroad Advisor Platform

Sydney, NSW

Backend Developer

May 2025 – June 2025

A full-stack web application that allows Northeastern students to conveniently for study abroad opportunities

- Led backend development creating 25+ RESTful API endpoints using Java and Javalin, integrated with React frontend
- Designed and implemented MongoDB database schema with users, universities, and courses to organize and model database data; developed aggregation pipelines for efficient database querying
- Implemented structured error handling with HTTP status codes and performed data cleaning to standardize and unify raw datasets

Three Trios – Game Application

Boston, MA

Technical Contributor

September 2024 – December 2024

Three Trios is a strategic one or two-player board game built in Java using Model-View-Controller design, featuring AI players and modifiable rules

- Implemented Strategy pattern to enable flexible AI player behavior and configurable different game-rule variants
- Integrated the Observer pattern, facilitating real-time updates between components of the MVC
- Adapted classmate-developed View code to integrate with our Controller and Model using Adapter pattern

Forge – Pill-Pal

Boston, MA

Product Lab Member

September 2024 – December 2024

Pill-Pal is an automated pill dispenser with biometric authentication and a touchscreen UI, designed to ensure child-safe medication management

- Led system integration for stepper-motors, optical fingerprint sensor, MP-3 speakers, and a LCD touchscreen
- Developed a child-friendly GUI using the LVGL library to manage authentication, configure pill dispensing, mood tracking, and enhance the overall user experience

Catch ‘Em All – Interactive Museum Exhibit

Boston, MA

Technical Contributor

September 2023 – December 2023

Catch ‘Em All is an interactive exhibit that uses hands-on gameplay and vibrant LEDs to teach children about soil biodiversity and sustainability

- Designed a game-board using AutoCAD and 3D printed interactive game pieces for an educational exhibit
- Programmed and integrated RFID systems with Arduino to track user interactions and control LED feedback
- Presented the exhibit to middle-schoolers and achieved 80%+ user satisfaction through hands-on engagement

Interests

Interests: Running, Weightlifting, Design and Fabrication of Denim Jeans, Computer Building, Coffee