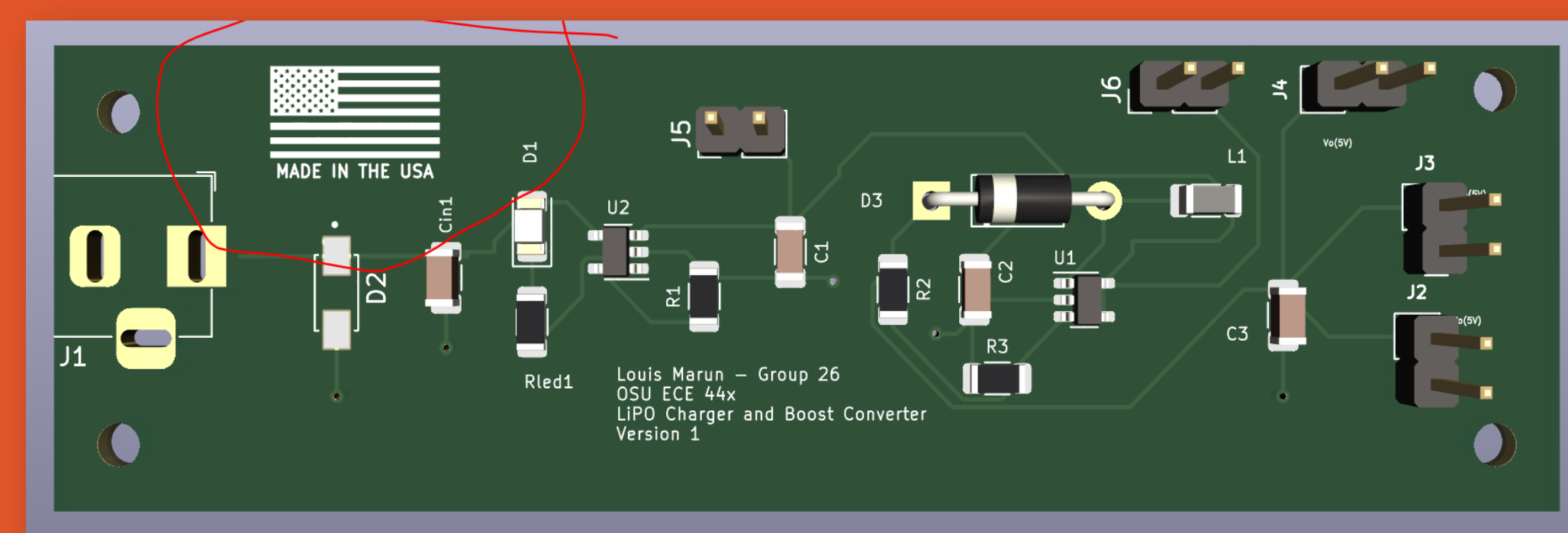# IOT ALARM CLOCK

ENGINEERING REQUIREMENTS

- **Audio Output:** The system will output sound within 1 second of the set time at the volume specified within 10% desired decibels.

- **Backup Battery:** The system will operate normally for 48 hours after disconnecting from external power.

- **Button Functionality Toggle:** The system will enable/disable the physical user inputs based on website input 95 out 100 times.

- **Display Time:** The system needs to show the time in hours and minutes accurately to within 5 seconds of global time even when Wi-Fi has not been connected for at least 24 hours.

- **Internet based interface:** The system will accept the user's input via the web-hosted site to determine the time of the clock and alarm.

- **Physical Buttons:** 9 out of 10 users will adjust the system using the snooze button and alarm reset button and state "The buttons were reliable and changed the system as expected".

- **Safe:** The system will not have visible uninsulated wires.

- **Website Credentials:** 9 out of 10 users will successfully log in to the web-hosted site with valid credentials and state "The username and password gave access to the internet-based interface".

PROJECT OVERVIEW

- This product is an Internet of Things (IoT) alarm clock that can be configured through a user-friendly website, allowing one to set the clock time, alarm time, and snooze time using a computer/phone connected to the same internet network.

- In addition, the alarm system will be equipped with a backup power option using batteries and should last 48 hours, providing peace of mind in case of power outages or power disconnect.

- The purpose of this project is to design and build a market-driven product, specifically aimed at parents seeking enhanced control of their children's morning routine to get them on track for the start of their day.

- The team fully designed, hosted, and implemented the user-friendly website using HTML, JavaScript, and other programming languages commonly used for web design. The website will send the user's input into a microcontroller, which is a powerful Wi-Fi/Bluetooth board, and will get that information to get the time displayed on the screen. Similarly, once it is the time of the scheduled alarm, the speaker will buzz.
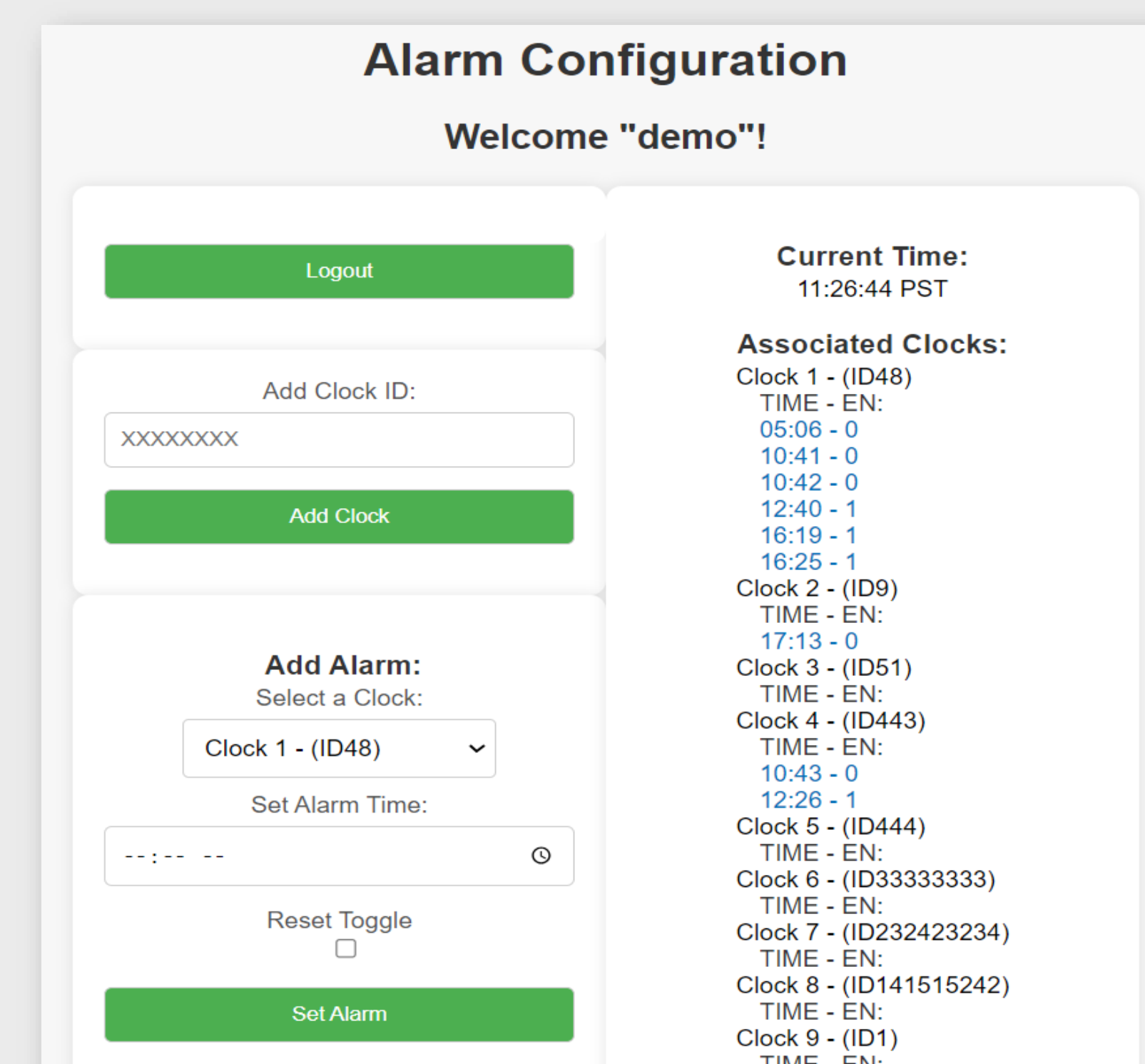
PROJECT FEATURES

- There is an LCD screen that displays the current time.

- There are physical buttons on the outside of the clock that enable the user to snooze, reset the alarm, and adjust the brightness of the display.

- The clock features a speaker that will sound when the alarm triggers.

- Battery backup functionality allowing the clock to run for over 48 hours without external power

- Settable alarm time through via website on personal device

BLOCK DIAGRAM
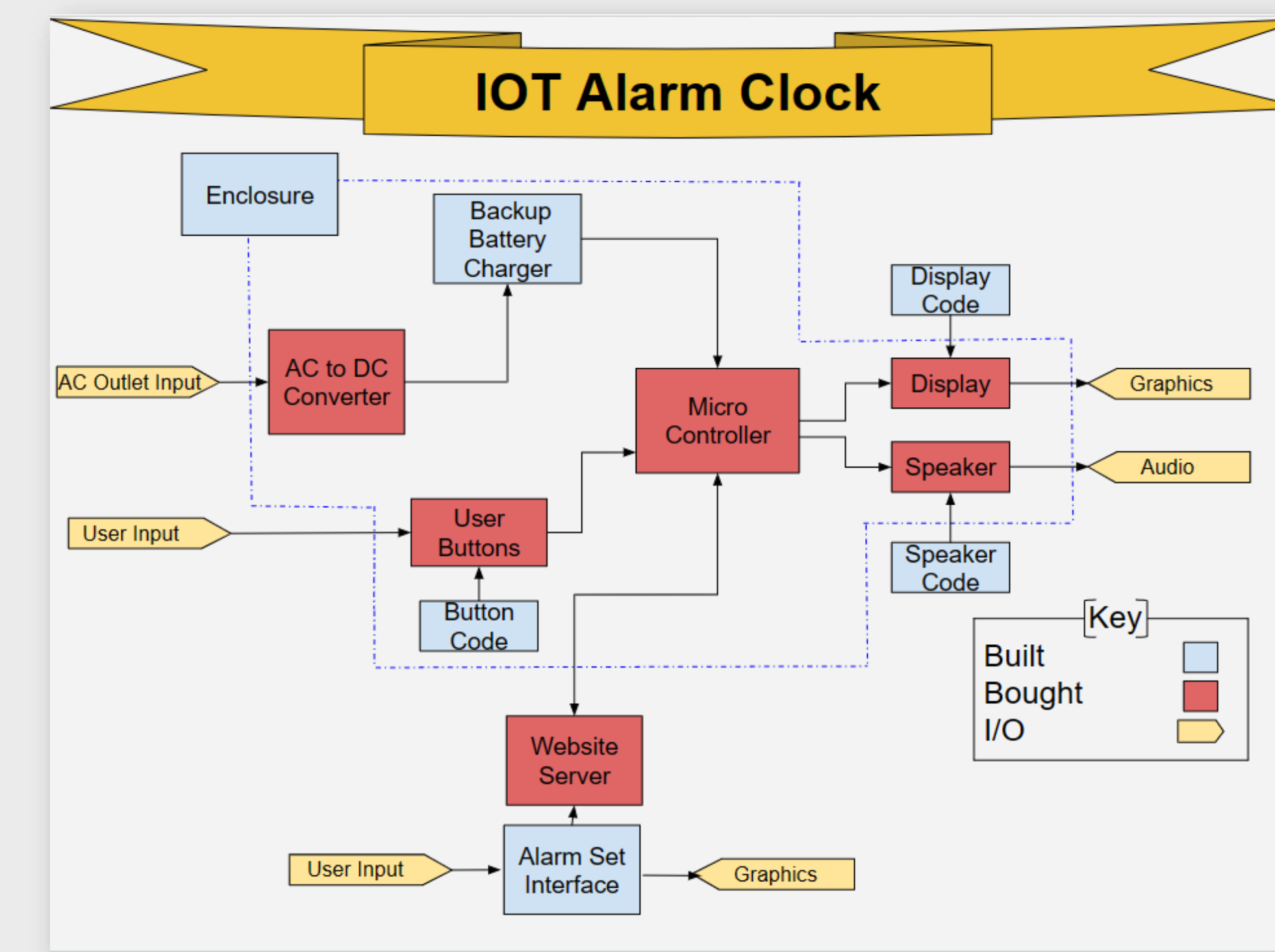
IOT SYSTEM INTEGRATION

The main aspect of this system that distinguishes it from traditional systems is that it is internet based. The website takes in the user's input and stores the information in a database we created. From there, our system pulls the information for various functionalities, such as displaying the current time and output a sound at the scheduled time.

MARKET RESEARCH

For our project, we conducted market research to get a greater understanding of what customers want in an alarm clock. Our research sample space was parents with children ages of 4-12. Some of the results we found were:

- Greater level of control from various locations

- Less control on the physical device.

- Ability to control functionalities of the physical device.
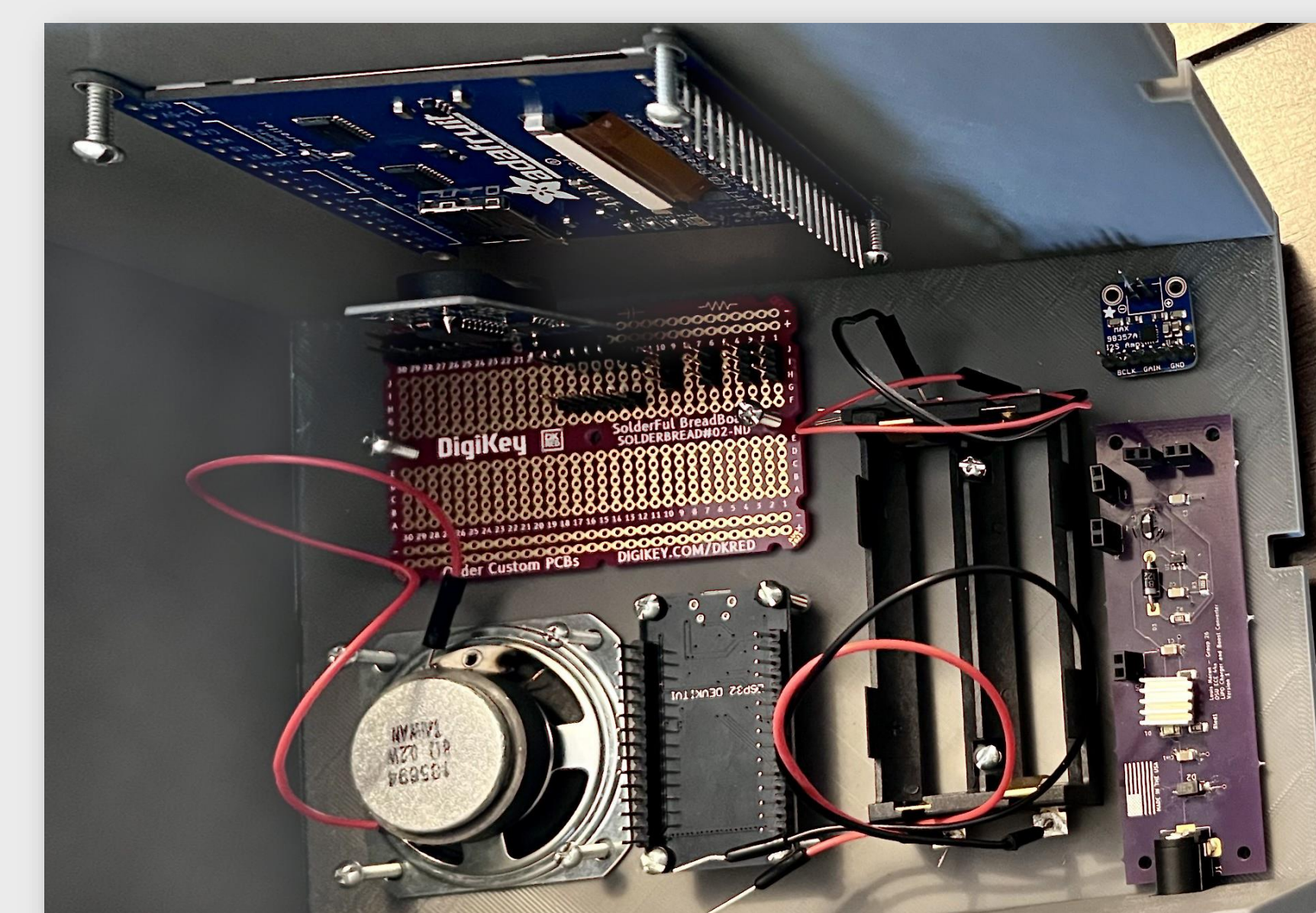
ABOUT OUR TEAM

Andrew Zellner

- Senior Electrical and Computer engineer Major with a minor in Computer Science and a focus on power systems and renewable energy.

- Project Responsibilities: Enclosure design website development.

Louis Marun

- Senior in Electrical and Computer Engineering with a Computer Science Major, with a focus on CMOS integrated circuit design and semiconductor fundamentals.

- Project Responsibilities: PCB design and display.

Joseph Conrow

- Senior Electrical and Computer Engineering with a minor in Computer Science

- Project Responsibilities: Website development and code integration.

Cade Tillema

- Senior in Electrical/Computer Engineering with a Computer Science minor

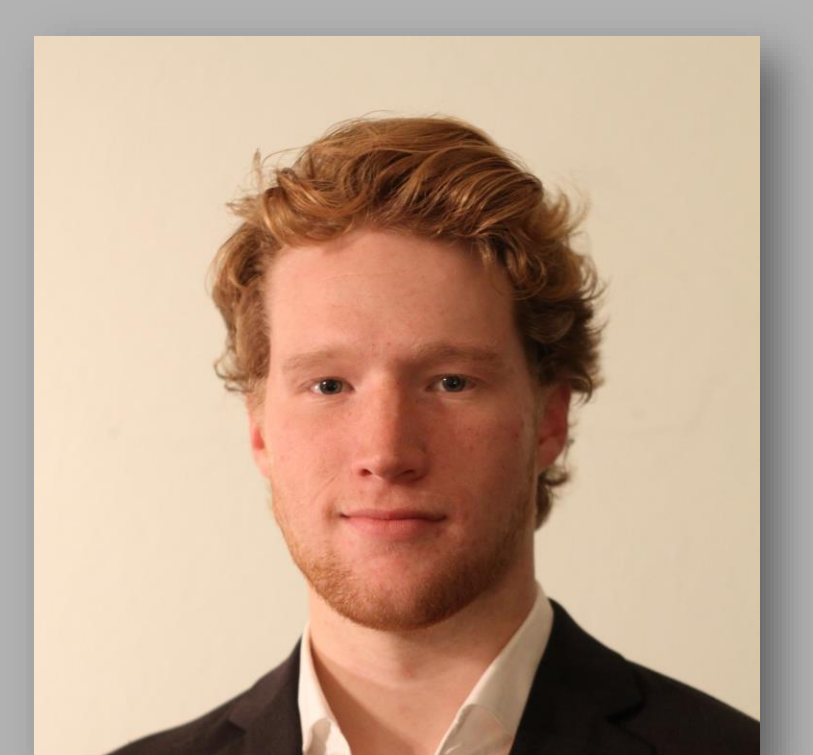- Project Responsibilities: Speaker Sound Design and User Buttons
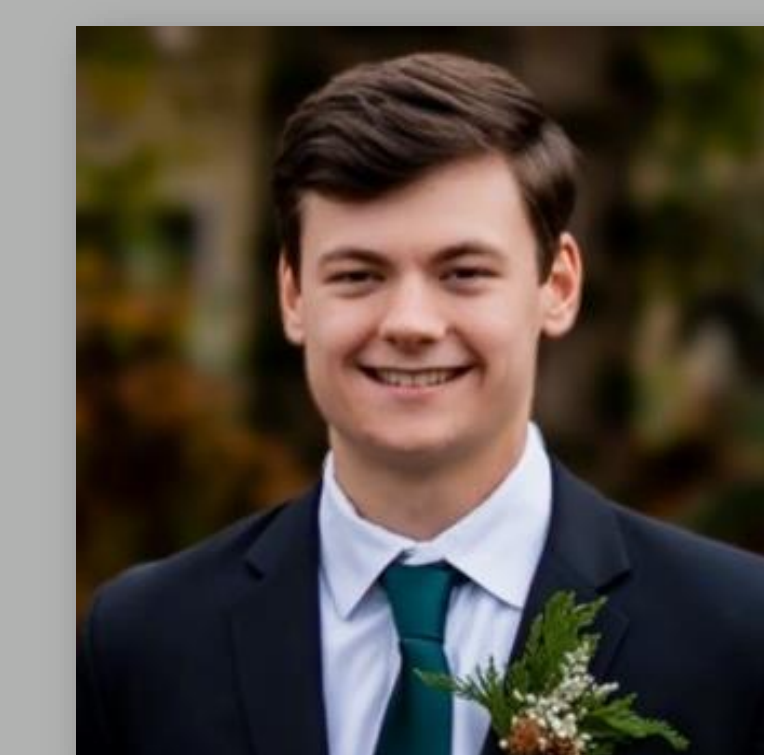
Andrew Zellner
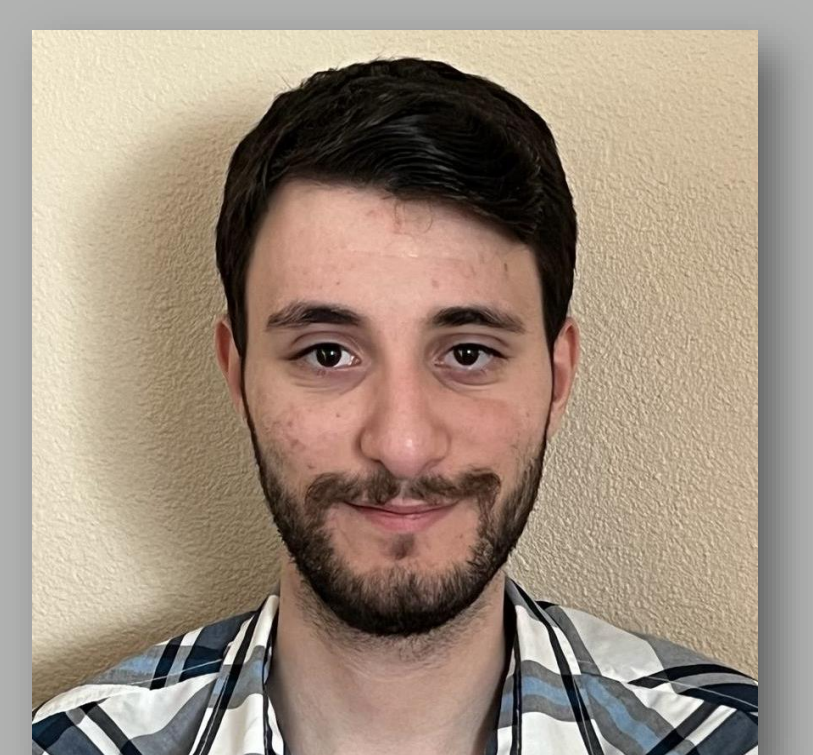
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