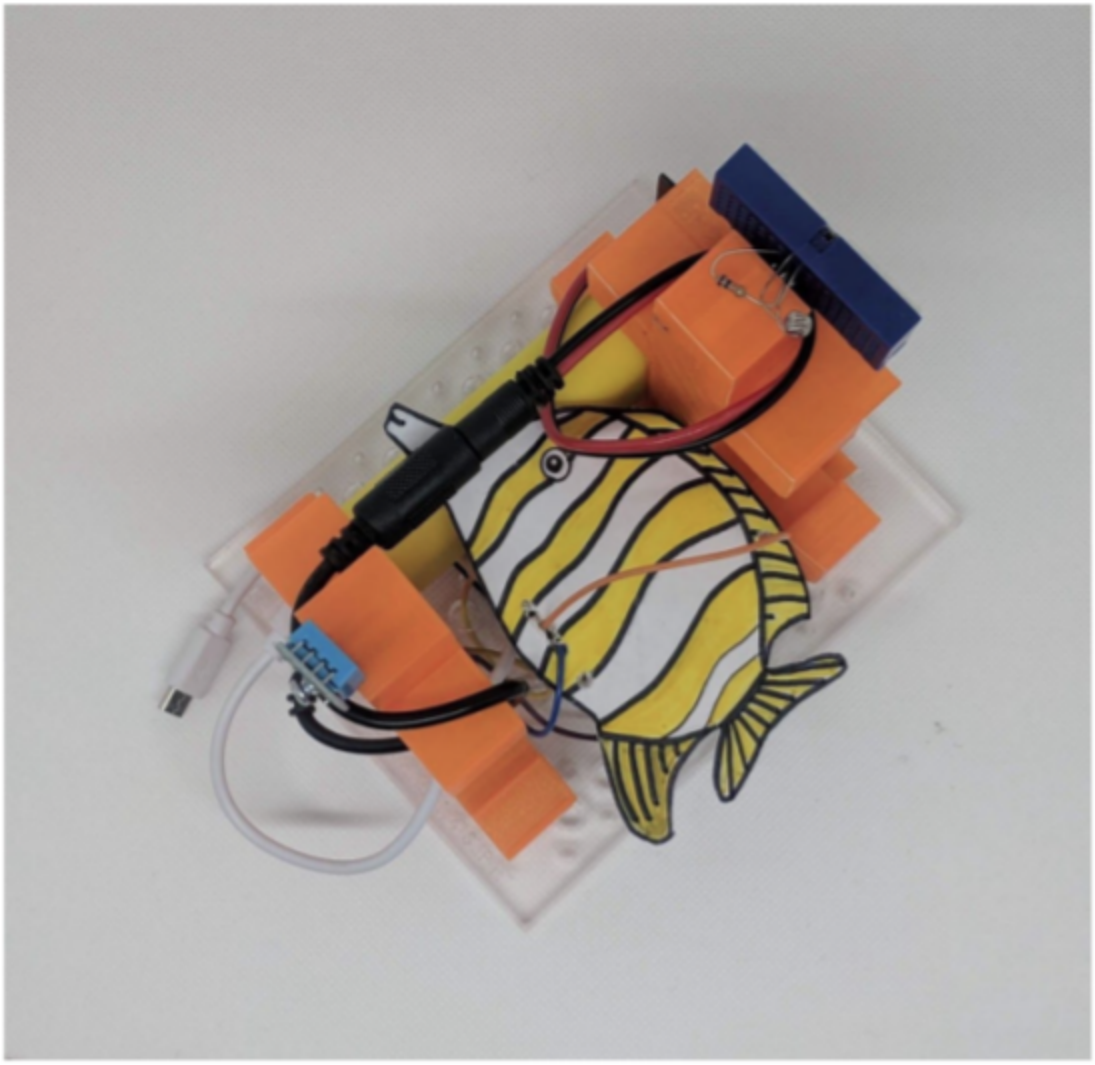
Environment Monitoring System

Ryan Callaghan, Audrey Fanning, and Lauren Sager



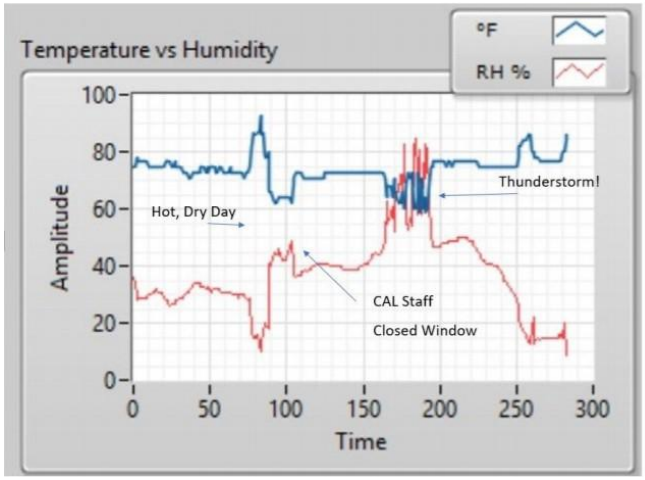
The team was tasked to create a weather monitoring system that measures illuminance, temperature and humidity levels. The system will be deployed for four days straight to measure these variables in a remote location, and must be durable enough to withstand any factors that may get in its way (weather, curious student, ect.). The team will ensure the system publishes the recorded data to a server, and the team will subscribe to this data and analyze any patterns or occurrences shown in the data. They will elegantly display this data on a graphical user interface using Labview. The team is responsible for the mechanical enclosure, electrical design, software design, and analysis of data.

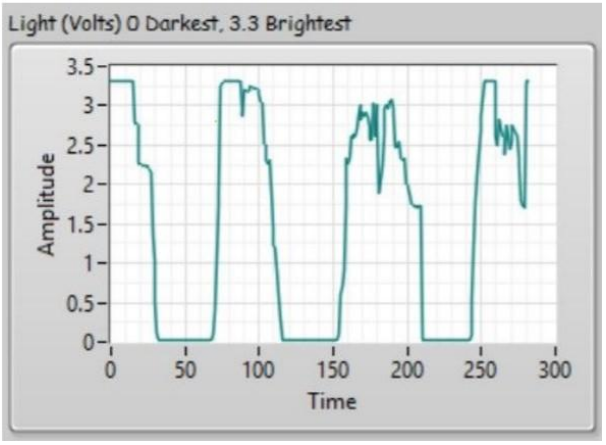
Labview Graphical User Interface

The final GUI was created using a Labview block diagram. Included are a temperature gage, a relative humidity gage, light descriptions, and warning symbols of the temperature and humidity are out of ideal ranges. The user can pick a specific date and time within the four days the unit was deployed, and see these values on the GUI. Also included are four graphs depicting the temperature, humidity and light as well as comparing their values happening concurrently throughout the four days.

Analyzing and Interpreting Data

The data showing the humidity and light values were shown in the same graph to enhance the users ability to identify key weather patterns happening at a certain time. The light values are also shown adjacent to the temperature and humidity graph to correlate these weather patterns. The time refers to collection points, which happened 3 times per hour. From this data, the team concluded key weather events such as a hot dry day, the closure of windows, and a day with thunderstorms. Looking at the weather history in the area of deployment, the data collected matches what our unit submitted to us, proving that our device functioned properly.





Electrical Schematic

A schematic of the electrical wiring from the Arduino board to the sensors of our system. Our team decided to include a solar cell, in order for the system to last the full four days, as previous testing showed that the battery died early.