

Environmental Monitor

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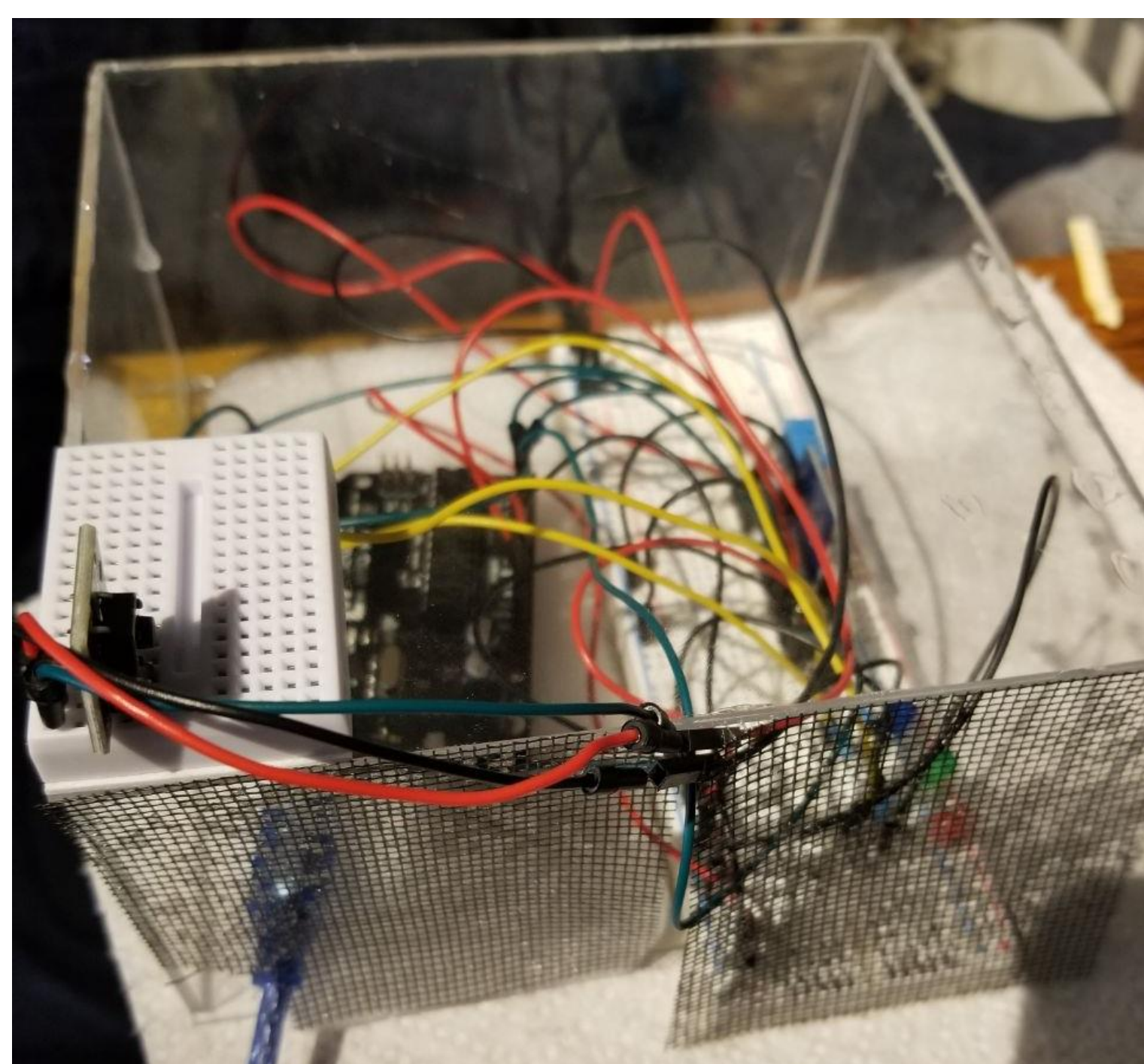
OPPORTUNITY

Many systems for monitoring environmental systems involve larger scale systems using proprietary technologies or involve setting up single sensors individually. This project was meant to create a device that can measure a variety of useful environmental conditions and display them in a simple manner while also giving full openness to the hardware and software.

DESIGN SPECIFICATIONS

Objectives: Monitor environmental factors, give visible feedback on multiple datasets, provide number value data, allow physical interaction with device, create a physical container for electronic parts.

Box Specifications: Plexiglass sheets, 1/8 inch thick, approximate 6-inch width, 6-inch length, and 3-inch height.



TECHNICAL DESIGN

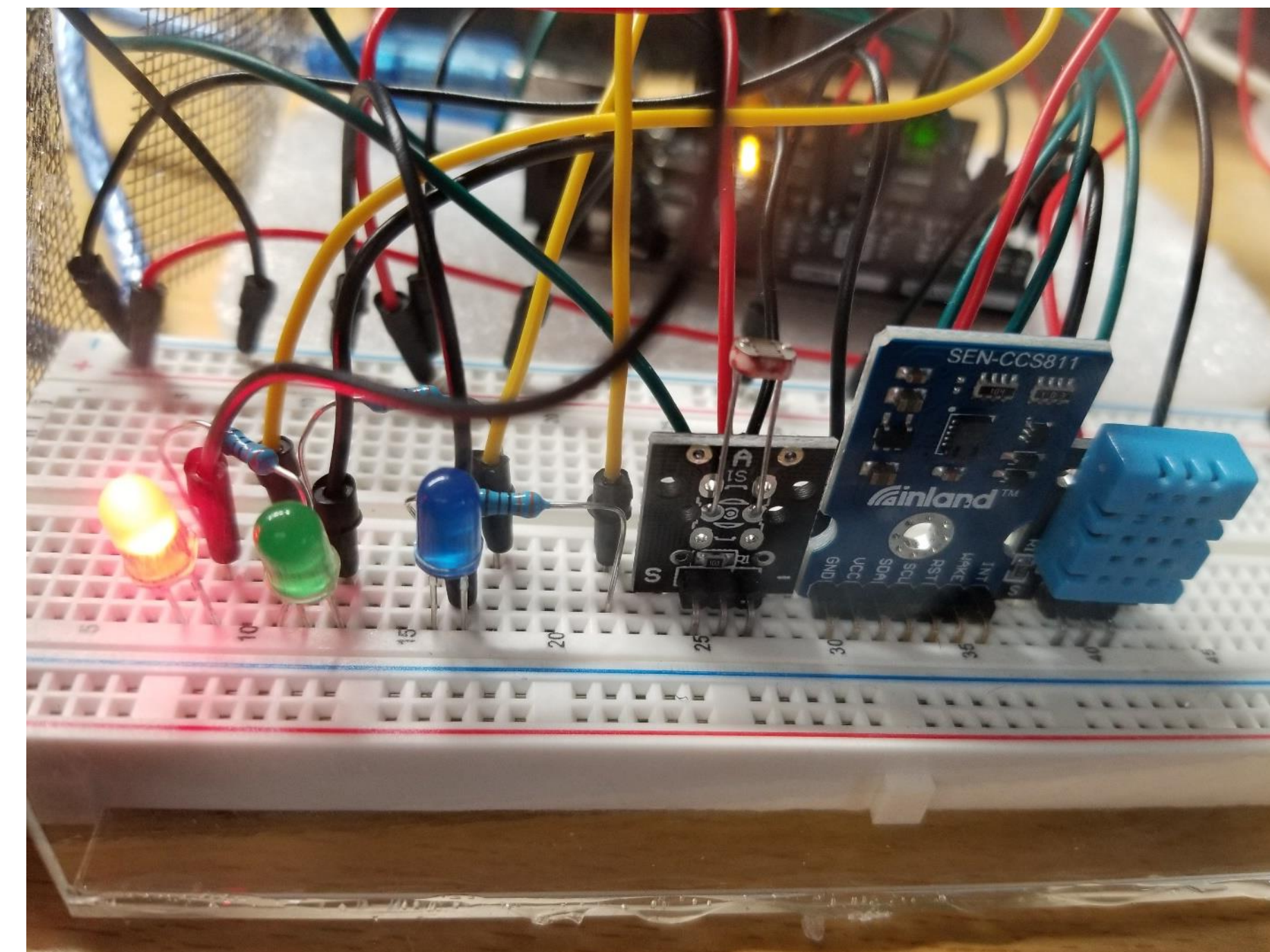


Figure 1: Close up showing the circuitry of the LEDs and sensors. LEDs required resistors while the sensors were able to operate with standard wiring.

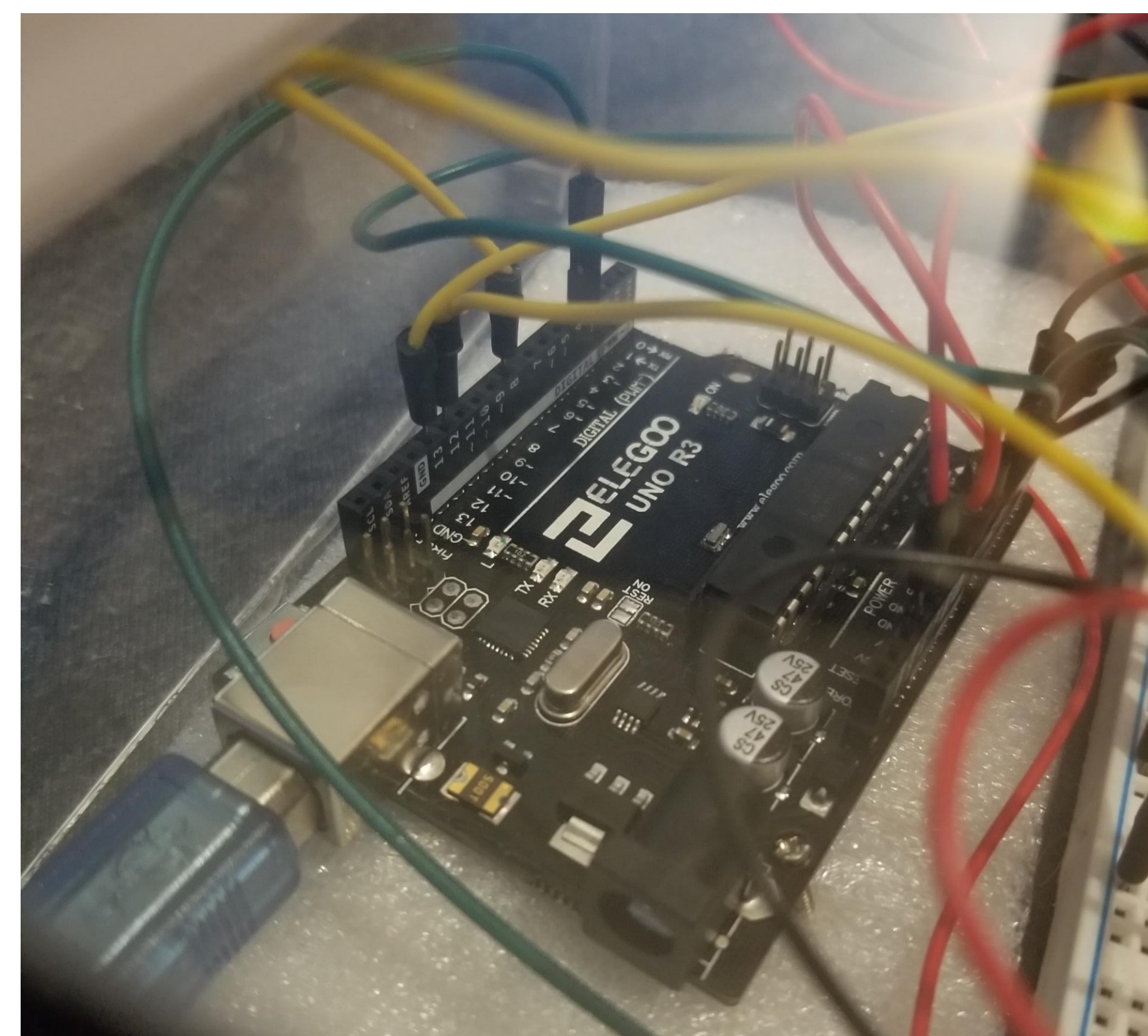
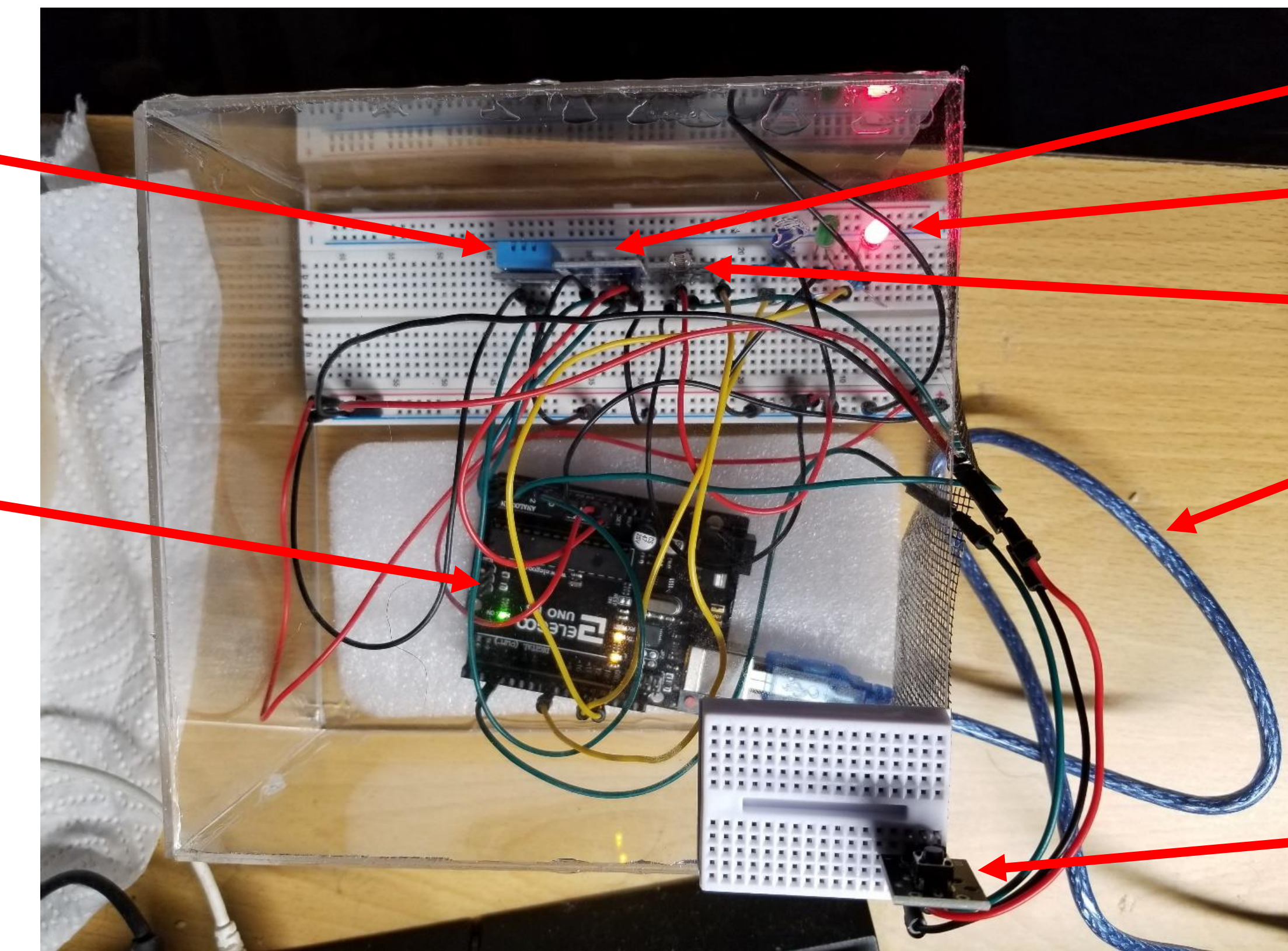


Figure 2: Close up of the microcontroller, a majority of the inputs were used up making the addition of any new sensors difficult, though the outputs are only used with the LEDs, and the button leaving some pins open.

DEVICE

KY-015 Temperature and Humidity Sensor

Arduino Uno R3 Microcontroller



CCS811 Air Quality Sensor

3 LEDs

KY-018 Photoresistor

USB Connector

Button Display Controller

TESTING

Most testing could be performed with simple changes to the environment such as turning off lights, providing shade, opening windows, and covering sensors.

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Weather Control System

Preliminary CCS811 Test:

Initialized.

Light Sensor LED Mode
Time Running: 0:0:2
Current Humidity: 30.00%
Temperature: 25.00C / 57.00F
Light Intensity Level: bright.
CO2 Level: 0ppm
TVOC Level: 0ppm
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IMPACT

This monitor provides important information on indoor and possibly some outdoor areas for both applications of safety, product preservation, and environmental protection.

REFERENCES AND ACKNOWLEDGEMENTS

- [1] ArduinoModulesInfo
- [2] ScioSense

Thank you to Dr. Wunderlich for his advice on the project and for reviewing all the reports over the project timeline.