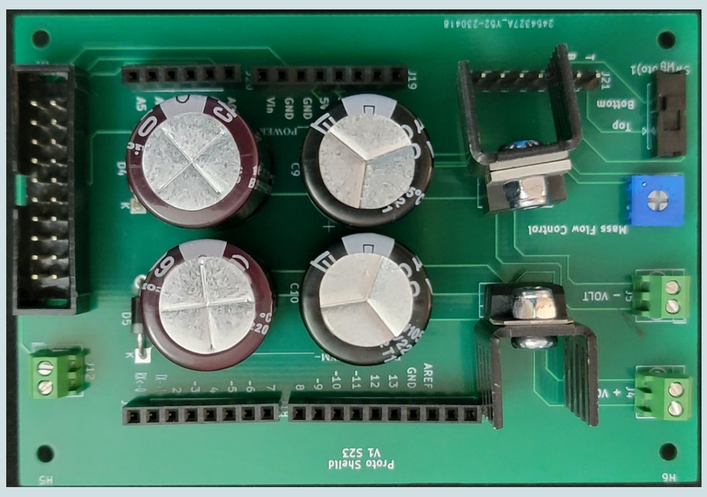
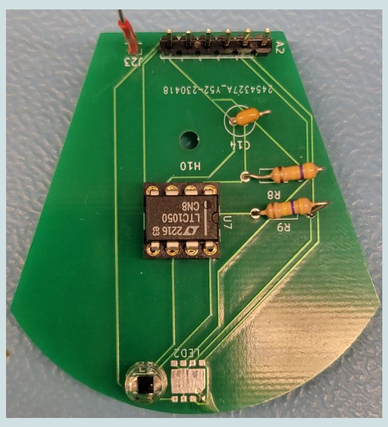
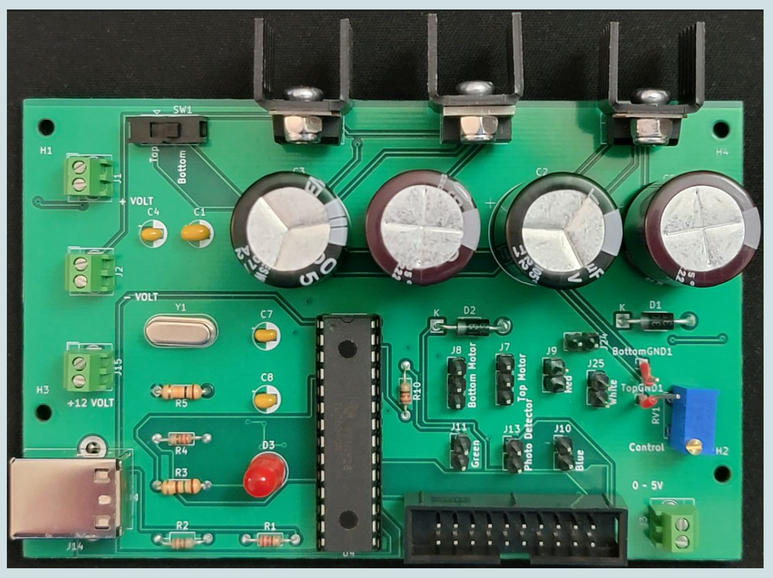


# Automated Testing Station for Sensing Applications




## Introduction

Group Members:

- Thomas McCoy, Malvin Lim, Matthew Rief, Garth Anderson

Project Goals:

- Develop a MFC (Mass flow controller)
- Develop 2 LED PCBs
- Design and construct a 3D printed box that contains a stage to hold the DUT (device under testing)
- Design and Implement a LabView program.
- Use LabView program to collect information from the DUT

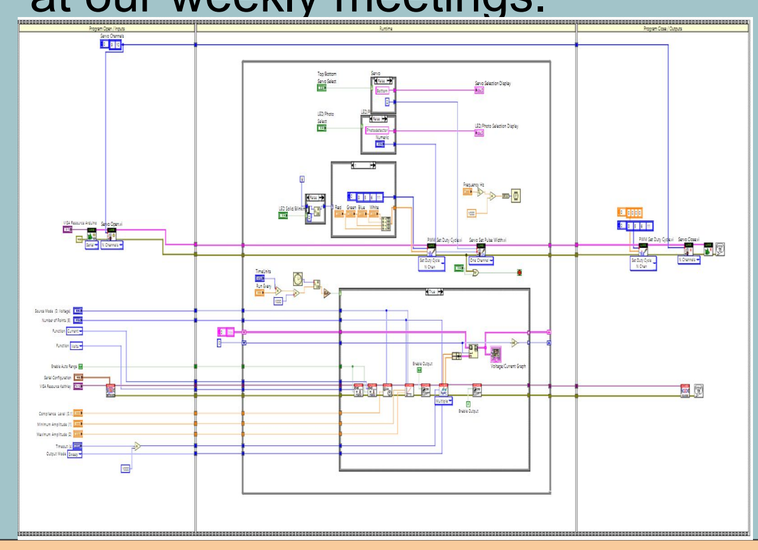
## Overview

Our client needs a more efficient and automated way to test different photosensitive devices and how they respond to different wavelengths of light through a medium of different gasses. Currently, when testing these devices' capabilities, the process is manual, making it arduous, expensive, and time-consuming. We will solve this problem by automating the testing process and collection and interpretation of data. Our target audience is mainly researchers and students.

## Methodology: Waterfall

The first semester was dedicated to the design and procurement of required parts (PCBs, servos, etc.), The second semester was dedicated to the construction and implementation of the testing station. This methodology allowed our group to follow more in line with the expectations of the client/advisor

Design decisions were made at the request of our client/advisor at our weekly meetings.



## Implementation

Hardware:

KiCad 7.0 - Platform to design Circuit and PCB for MFC, Proto shield, and LED Motor.

challenges:

Limited availability for component footprints.

Software:

Platform used: Labview (Graphical programming language)

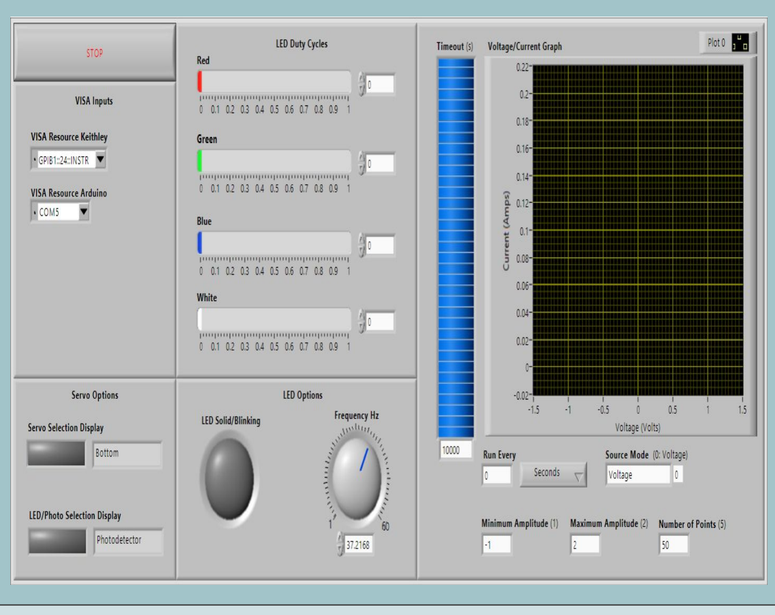
Challenges: Arduino Uno digital caused issues changed design to avoid problematic channels. Had to learn a new programming language in order to complete project interface.

## Results

Our project successfully implements several hardware components and a software interface to read data from a DUT and graph the results. It successfully allows for the regulation of gas, and the configuration of servo rotation and LEDs.

## Impact

This project is likely to be the first step in the development of this type of testing station. It will simplify the testing process of different photosensitive devices.




## Conclusion

Our project is a good step forward in the testing of these sensing devices. It will hopefully lead to further iterations of this type of testing station, which will streamline the testing process. Our key takeaways from this project include the importance of project management and also the incredible importance of strong communication skills and coordination with the client.