EE 4910 WEEKLY REPORT: 6

3/24/2026 - 3/31/2026

Group number: 06

Project title: Developing a Cost Effective NIR VIS Spectrometer

Client &/Advisor: Avishek Das & Manojit Pramanik

Team Members/Role: Ryan Majstorovic, Evan Tamer, Dawson Posekany, Samar Gill

Weekly Summary

Prior to the team's meeting with Avishek this week, Ryan and Dawson made progress on soldering the CCD driver boards in preparation for hardware integration testing. This work sets the stage for the upcoming task of reading CCD data into the microcontroller and streaming it to a laptop. A testable version of the microcontroller code has also been pushed to GitHub, giving all team members access to a common baseline and streamlining individual testing and iteration.

The team met with Avishek to review the PowerPoint presentation being given in class this week. Avishek provided approval on the existing content and offered additional input that was incorporated into the final slides. The meeting also served as an opportunity to align on the plan for the coming week, which centers on reading CCD data and developing a means to display it.

Optical component selection remains an open item, though the team has identified several candidate parts that will be finalized next week alongside the CCD integration work.

Past week accomplishments

Samar: Created a PowerPoint presentation outlining the project's components, current progress, and other relevant design information. This presentation will also serve as the basis for the team's upcoming lightning talk for Senior Design.

Evan: Tested code for timers and researched different methods of calibration. Some adjustments to the code were needed, so a new version was also developed.

Ryan: Continued to refine the final optics components and ensuring components met the standards (Deadline set for 4/6/26 to reorder optics components). Soldered the CCD driver boards. Worked on creating visuals for the high-level design lightning talk.

Dawson: Created the Gantt chart, ensuring it is up-to-date with our active tasks so that it is presentable to the class in this week's lightning talk. Aided in the effort to solder the Driver Boards.

Pending issues

1. We are still ruminating on what optics devices we want to buy. This needs to be settled this week to allow for benchtop mounting tests and then 3-D printed enclosure fabrication.

Individual contributions

NAME	Individual Contributions *(Quick list of contributions. This should be short.)*	Hours this week	HOURS cumulative
Ryan Majstorovic	Soldered the components for the ccd driver boards. From the optics review transmission grating will be used.	6	35
Dawson Posekany	Gantt Chart, soldering	9	31
Samar Gill	Created PowerPoint to track progress, document components, and prepare for upcoming lighting talk.	6	30
Evan Tamer	Tested and fixed code for timer generation, and did more research on calibration methods	6	31

Comments and extended discussion

Planned Tasks for the next couple of weeks:

1. 4/5/26 – Meeting with Avishek to test and validate microcontroller driver timers and data transfer to the host pc.
   4/6/26 – Meeting @ BILab to discuss and order final optics components for the device. (Ideally order arrives by 4/20/26) Dawson and Ryan to start on python GUI to go over at the next meeting.
2. 4/13/26 – Meeting @ BILab to discuss and go over basic python GUI. Define full feature set (Calibration procedure, data display, logging, adjustable integration window…)
3. 4/20/26 – Optics bench testing and start design of 3d printed case.

Plans for the upcoming week

Samar & Evan: Start integrating the CCD with the microcontroller and stream the data to our computer through USB connection. Verify that the sensor is working correctly before beginning optimization steps. Evan will also discuss the details of the calibration device so that parts can be ordered.

Ryan: Finalize the selected optics components and reorder during meeting on 4/6/26 to ensure delivery by 4/20/26. Work on the desktop application to get a working basic implementation to demonstrate and discuss by 4/13/26.

Dawson: Aid the development and testing of our software.

Samar, Evan, Ryan & Dawson: The full team will focus on testing the CCD with the microcontroller and conducting an initial review of the code with Avishek. Testing will take place in the lab, with early results and feedback from Avishek used to guide next steps.

The team will also continue working toward a decision on optical component selection, specifically around the design for focusing light onto the CCD. This will involve desktop demonstrations in the lab to evaluate candidate configurations before committing to a final approach.

Appendix:

Lightning Talk on High Level Design: Lightning Talk - High Level Design.pptx