

EE/CprE/SE 491 WEEKLY REPORT 6

March 7, 2022 – March 11, 2022

Group number: 12

Project title: *Creating DNA from scratch for DNA-based data storage*

Client &/Advisor: *Iowa State University / Meng Lu*

Team Members/Role: *Connor Larson/Software Engineer , Kyle Riggs/Software Engineer , Brandon Stark/Electrical Engineer , Nathan Armstrong/Electrical Engineer , & Lucas Heimer/Electrical Engineer*

○ **Weekly Summary**

This week we acquired the newly purchased HDMI to DIPI adapter from Meng Lu. We connected the adapter to the default LCD screen that comes with the Photon Mono 3D printer.

○ **Past week accomplishments**

- Team Member 1 (Connor): As we were able to successfully conform the adapter connected to the LCD screen, as well as a computer, I was able to start looking into code. I was looking into ways to code project images and control a LCD display, rather than have it act as a second monitor. So far, I have found little information, but once we get the UV backlight to work for the LCD screen, we should be able to start trying out a few things.
- Team Member 2 (Kyle): After more research and meeting with our advisor we decided to go with C# to code an application that a user can interact with. I am happy with this because it is my best language and we can use it to great effect for this project. We now have a plan in place of how the application will look and function as well.
- Team Member 3 (Brandon): I retrieved the HDMI to DIPI converter from Meng after 491 lecture. Nathan Lucas and I connected the adapter to our new and default LCD screen within the lab and tried to determine what steps needed to be done in order to get our default LCD screen to work.
- Team Member 4 (Nathan): I worked with our current LCD screen to try to get it working with our new adapter piece. When we realized the LCD screen that came with the printer was broken, we ordered a new one. I also did some more research on the flow controller and how we might implement that into our project.
- Team Member 5 (Lucas): Performed troubleshooting with the new MIPI to HDMI adapter. Tested the adapter first with the LED screen that came with it and then tested the 3D printer LCD screen. Unfortunately the screen seemed to have shorted out so we need to acquire a new component and further testing will need to be done to verify it will work as intended and if there are any resolution issues. Also started researching the flow cell and materials needed for that.

○ **Pending issues**

- Team Member 1 (Connor): Need to get the UV backlight to work before I can test code to see if it's properly displayed on the LCD screen. I also need to figure out an effective way to control the LCD through code. I need to choose a coding language that will work best for this, the UI, and the liquid injection system we will make next semester.
- Team Member 2 (Kyle): No pending issues really on my end. Just need to start coding the application and if issues arise we will troubleshoot them.
- Team Member 3 (Brandon): Configure our default LCD screen to fit a computer's resolution.
- Team Member 4 (Nathan): We need to get some hands on experience with the new LCD screen to make sure we can use everything as needed
- Team Member 5 (Lucas): Need to obtain a new LCD screen which Professor Lu will have ordered for us and possibly tested prior to our return from break. Need to be sure there are no resolution disparities between the LCD screen and whatever computer we attach to it.

○ **Individual contributions**

<u>NAME</u>	<u>Individual Contributions</u> <i>(Quick list of contributions. This should be short.)</i>	<u>Hours this week</u>	<u>HOURS cumulative</u>
Member 1 (Connor)	Research code for controlling HDMI input. Try to get LCD, UV backlight to display.	6	36
Member 2 (Kyle)	Starting the basic C# application that will be used for the user to interact with.	6	36
Member 3 (Brandon)	Worked with a new adapter component, troubleshooted how we could get our LCD screen to display an image, and researched how to configure the default LCD screen that is connected to our computer.	6	36
Member 4 (Nathan)	Worked with the current LCD to try and troubleshoot the issues it was having and why our system was not working	6	36
Member 5 (Lucas)	Troubleshooting the LCD screen with an adapter and trying to find a way to power the UV light without the 3D printer. Began research on the flow cell requirements	6	36

○ **Plans for the upcoming week**

- Team Member 1 (Connor): I plan to choose and finalize a coding language as well as start a Git Repository for the code. As well, i'd like to have a base plan/outline on how I will begin to code the UI for the project.
- Team Member 2 (Kyle): I plan on developing the application into something visual so we can witness a basic idea of how it should look and work.
- Team Member 3 (Brandon): After spring break I will continue to mess around with the newly acquired adapter and configure our default LCD screen to it.
- Team Member 4 (Nathan): Work with the new LCD screen that we will be getting in the mail and the adapter piece to see if the two are compatible.
- Team Member 5 (Lucas): After spring break we will be able to fully test the LCD screen and do some work to get the light control code setup. I will continue to focus my efforts on planning the fabrication of the flow cell.

○ **Summary of weekly advisor meeting**

Discussed with our advisor our progress. We discussed connecting the LCD to the adaptor, to a computer. We told him how it came up as a 'second monitor.' As this is a no color LCD screen, he told us we should put a piece of paper over the monitor to see some outlines and shadows. Also, we went over the software side of the project and how it will function. We want to generate an image that the user can modify. A 10x10 array that has black and white spots that the user can specify how far away they are from each other. This will allow them to customize their DNA sequence to what they want.