EE 492: Senior Design II

sddec23-05

DNA Data Storage

Jan. 2023 – Dec. 2023
Client: Professor Meng Lu
Faculty Advisor: Professor Meng Lu

Team Members:

Colin Frank – Software: GUI

Evan Walters – Software: GUI

Rachel San Agustin – Software: GUI

Caden Wortman – Hardware & Integration: Projector & OxyGEN

Astha Upadhyay – Software: OxyGEN

Anna Hackbarth – Software & Logistics: OxyGEN, Document Management, Website

Week Summary and Updates:

These past two weeks had our group present goals, next steps, and an overall project introduction in our PIRM meetings for class. We discussed and developed timelines for various project steps, such as OxyGEN SDK development, hardware improvements, and integration tests. Further developed GUI, ordered new hardware components, and have created solid plan of action.

Past Week Accomplishments:

- Evan – User can now pick a specific array size from a width and height of up to 10. The resulting array reflects this. Array spots were changed from a rectangular shape to a circle to better match the shape of the DNA microarray. Another button was added to create a form to allow user defined DNA string.
- Colin - User can now pick a specific array size from a width and height of up to 10. The resulting array reflects this. Array spots were changed from a rectangular shape to a circle to better match the shape of the DNA microarray. Another button was added to create a form to allow user defined DNA string.
- Rachel -
- Caden – Research new projector to make sure it would work for our requirements, met with Professor individually to start testing the new projector when it arrived and found that the outlet plug was the wrong size, met with ETG to discuss swapping it with a different outlet plug
- Astha – Researched about OxyGen SDK and how it could be implemented within our project goals.

- Anna - Met with Professor individually to discuss SDK challenges, brainstormed solutions, worked with ETG to download the necessary software to a lab machine. Created biweekly + assignment documents, and began website updates.

Pending Issues:

- Evan – Need to be able to recommend an array size given a user defined DNA string based on length and pairing overlap. We need to create an identical image on the main form that reflects what the projector is seeing so the user knows the machine is working correctly.
- Colin - Need to be able to recommend an array size given a user defined DNA string based on length and pairing overlap. We need to create an identical image on the main form that reflects what the projector is seeing so the user knows the machine is working correctly.
- Rachel
- Caden – Projector outlet swapping so that we are able to test the functionality of the updated design, design new housing to 3d print to hold the projector in place on the printer
- Astha- Facing issues with the OxyGen software
- Anna – OxyGEN SDK is non-compatible with Apple products, working to find a solution with ETG and download necessary software to a lab machine.

Individual Hours and Contributions:

Name	Tasks (9/01 - 9/16)	Hours	Cumulative Hours (F23)
Evan	General GUI Work	12	12
Colin	General GUI Work	12	12
Rachel	Team meetings (3 hr)		
Caden	Team meetings (3 hr) Projector Research (1 hr) Ind. Meeting with Professor (1.5 hr) ETG Meeting for Plug (.5hr) Presentation Work (1.5 hr) Project Review (1 hr)	8.5	8.5
Astha	Team meetings (3 hr) Presentation work (1.5hr) Research (2hr)	8.5	8.5
Anna	OxyGEN Troubleshooting (2 hr) Brainstorming (2 hr) General document management (1 hr) Website review (1 hr) Team meetings (3 hr) Ind. Presentation practice (1 hr)	10	10

Upcoming:

This upcoming week we are hoping to resolve the issue with the next projector by either working with ETG to fix the unit or ordering a new projector with the correct wall plug. The SDK plans to have the necessary software setup and the beginning of the controls coded. The GUI will require a touch more polishing and the addition of a "recommended array" function that when given data, the computer will provide a recommended array size. We ideally would like to begin integration processes in early October.

Summary of Faculty Advisor Meeting:

Last week, we worked with our advisor to order a new projector for the hardware portion of this project. We also talked about the timeline of goals and how we hoped to showcase the GUI at our next meeting. This week, we were able to meet and demonstrate progress made with the GUI, speak through the SDK, and plan some integration tests we would like to utilize.