

EE 491: Senior Design

sddec23-05

DNA Data Storage

Jan. 2023 – Dec. 2023

Client: Professor Meng Lu

Faculty Advisor: Professor Meng Lu

Team Members:

Colin Frank

Evan Walters

Caden Wortman

Astha Upadhyay

Anna Hackbarth

Team roles have not been fully decided upon, once roles have been assigned – we will switch to individual updates instead of a team update.

Past Week Achievements:

Since we are just beginning the project, our roles have not yet been decided upon and we have only had a few meetings as a team. We've had several team meetings and several meetings with our advisor and client, Professor Meng Lu. In our team meetings, we've been establishing a communication space, scheduling common meeting times, and creating documents to share notes and questions. We've kept notes of all our meetings so far, questions asked to our client and advisor, and tracked our plans and next steps.

Our meetings with Professor Meng Lu have proved to be incredibly helpful. As our advisor, he's provided great secondary research sources with readings, videos, and prior teams' work for us to review. As our client, he's also been a great primary resource for our team to utilize and interview. Our first meeting with him included an interview where we asked about project specifics including the project in his own words, coding language, and the next steps we needed to take to prepare. Our second meeting involved scheduling a regular meeting time together, he also provided an in-depth explanation of the printer we will be using for the project and the printing procedures.

We started using a problem-solving process called 'Design Thinking,' where we were encouraged to track our thinking and ask high-level questions. We were then tasked with uploading our thinking and documenting the process using an online collaborative tool called 'Figma.' We were able to list the whys behind our project, empathize with our client, and create an in-depth analysis of our project. We designed the following graphic that shows our thinking, questions, and current understanding of the project.

Link to view our collaborative board: <https://www.figma.com/file/ncGp9lWcXC1VeU5cEByXY7/Discover-%7C-Empathize-%7C-Research-%5BTeam-05%5D?node-id=0%3A1&t=Av8k6PIjKQ6nllkS-1>

Pending Issues:

Our issues that we've discussed with our advisor and as a team includes the following:

- Slack - our client/advisor's preferred communication platform doesn't let us see messages older than 90 days (about 3 months).
 - Therefore, we need to get access to the prior teams' resources and progress in a different way.
- Need access to safety training.

Next Steps:

As a team and with our advisor's input, we've decided on the next steps:

- Lab Safety Procedures
 - To gain lab access to our space in Sweeney, we need to complete lab safety protocols.
 - Request key access with Sweeney Office
- Biology Review
 - Prof. Lu is planning on sending us more reports and research for us to prepare.
- Schedule Team Meetings
- Decide Team Roles + Delegate Responsibilities

Conclusion:

This concludes our Week 1 report, we've done a great deal of team research outside of the resources provided to us by our client/advisor. We've read up on progress made by MIST, MIT, University of Washington, and other organizations and institutions. We've found other ISU faculty that would be beneficial contacts like Mr. Kevin Callavin from the ISU DNA Facility, where he works with the Sanger Sequencing services. As a team, we feel that we are getting closer to being ready to begin working in the lab alongside Prof. Lu. While we may have a few more loose threads to tie up, we believe within the next week or two we will be ready to begin working on the project.