

SE / CybE / CprE / EE 492 - sdmay23-04

Engineering Art

Weeks 12-13 Report

04/08/2023 - 04/21/2023

Client & Faculty Advisor: Rachel Shannon

Team Members:

Ayden Boehme - CprE, Researcher, Frontend Team

Derrick Brandt - SE, Researcher, Figma Wizard, Frontend Team

Tomas Elias - SE, Researcher, Note Organizer, Frontend Team

Elizabeth "Liz" Fransen - SE, Researcher, Communications Guru, Backend Team

Shelby Murray - CprE, Researcher, Notetaker, Backend Team

Juno "Winter" Robertson - SE, Researcher, Android Expert, Frontend Team

Cosette Thompson - EE, Researcher, Electrical Expert, Installation/Backend Team

Nathan "Nate" Underwood - CybE, Researcher, Security Expert, Backend Team

Parker "Park" Smith - Consulting Industrial Design Student, Installation Team

Johnny DiBlasi - Consultant, Assistant Professor of Art and Visual Culture at the College of Design

Weekly Summary

Our primary focus for this period has been integrating the entire project and preparing for user testing on April 21st.

We successfully installed and uploaded the Matlab image generation program to the server and can call it from the command line with all the necessary inputs. The backend app can successfully connect and read data from the Muse device. The frontend app faced some debugging issues, but several were resolved over the course of the week.

The backend Muse application also was configured to output an audio file, which could then be displayed on the CRTs as a visual wave. A computer speaker is required to do this, and it can be used to play the detected brainwave as an audio output. The DJ board faders were successfully integrated to play five songs, and troubleshooting continues to determine the root issue for playing additional songs.

User testing attracted a variety of audiences in major, student classification, and prior knowledge. Feedback was collected live and through a Google Form. A preselected song list was determined by suggestions, prior research, and the most popular music in the U.S. at the time of selection but remained adaptable the day of due to the shifted goals of the day.

Weekly Advisor Meeting Summary

Our weekly advisor meeting heavily overlapped our worktime, since it's the best time for us all to get together. We summarized our plans for user testing and worked to achieve our goals related to it. We also clarified some of the future goals of the project, such as moving toward art generation using P5JS and the possible return of the project in the fall semester.

Past Accomplishments

Week 12:

- Monday 9-am Meeting:
 - Updated Dr. DiBlasi
 - Provided access to Muse data output as CSV
 - Installed Matlab on server
 - Still not working - will troubleshoot
 - Worked on backend database
 - gradle, springboot
- Monday Noon Meeting:
 - May need to solder or tape wires on CRT
 - Tape is better in case of mistakes

- May need to allocate time for installation before any presentations
- Need to complete a practice run at some point, check timing
- Park has an old PC speaker that's just one amp
 - May want to put a box over it
 - Used for converting soundwave to visual on CRT
- May want a tablecloth to cover loose electronics and wires on installation
- Monday Afternoon:
 - Matlab program successfully working on the server

Week 13:

- Monday Meeting:
 - User Testing plan:
 - 10a - 4p, Fri April 21
 - reserved first (ground) floor SIC - room 1102, the atrium area
 - need as many people as possible for setup
 - minimum 2 people for operation
 - Prof. DiBlasi's talk on art & AI
 - 10a on Fri April 21
 - Registration link (virtual event):
<https://www.celt.iastate.edu/event/advantages-questions-and-fears-around-ai-uses-in-creative-practice/>
 - Have two poster boards
 - work on Wed?
 - Rachel clarified that this isn't necessarily an expectation of a final final project
 - may return in the fall
 - integration is necessary though
 - potential for long-running project, additional research, etc.
 - music - need to consider length, no explicit tracks → each person takes a category?
 - → set up submission thread in Discord
 - rock (metal)
 - early metallica song (composition is closest to classical) - Rachel
 - ride the lightning
 - and justice for all
 - one - Juno & Rachel
 - for whom the bell tolls
 - iron maiden

- wasted years - Park
- classical
 - moonlight sonata - Tomas
 - mars from the planet suite - Park
 - fanfare for the common man - Park
- jazz
 - kelpy G - Tomas
 - louis armstrong, summertime
 - fever
 - miles ? - Diblasi
 - spiderman 3 dance - Juno
- hyper pop (1)
- pop
 - werner's god save the music
 - michael jackson - billie jean
 - weird al
- film score
- country
 - taylor swift, you belong with me
 - don williams, my best friend
 - whisky glasses
 - country roads
 - sweet home alabama
 - mountain music by alabama
- industrial
- can genre track with arduino and DJ board now
- lightscan - realtime EEG data to columns
 - generate columns frame by frame
- Dr. DeBlasi sent bio via email → add to consultants page on SD website
- Need bio and photo from Park
- Lee Harker from ETG came in to talk with Cosette about the DJ board

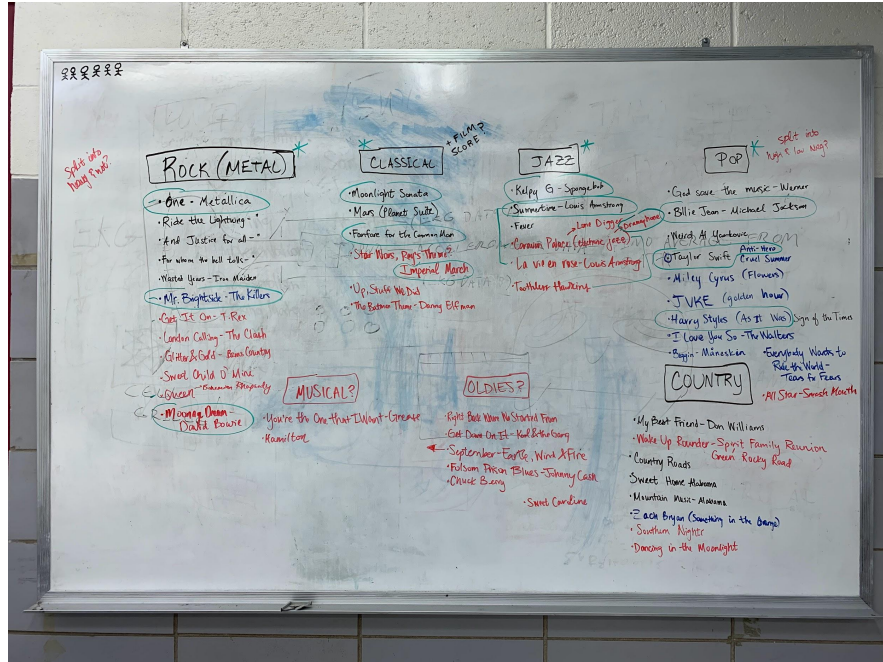


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- Thursday - user testing prep
 - Trifold creation
 - Design process explanation
 - Project explanation
 - Store run for supplies

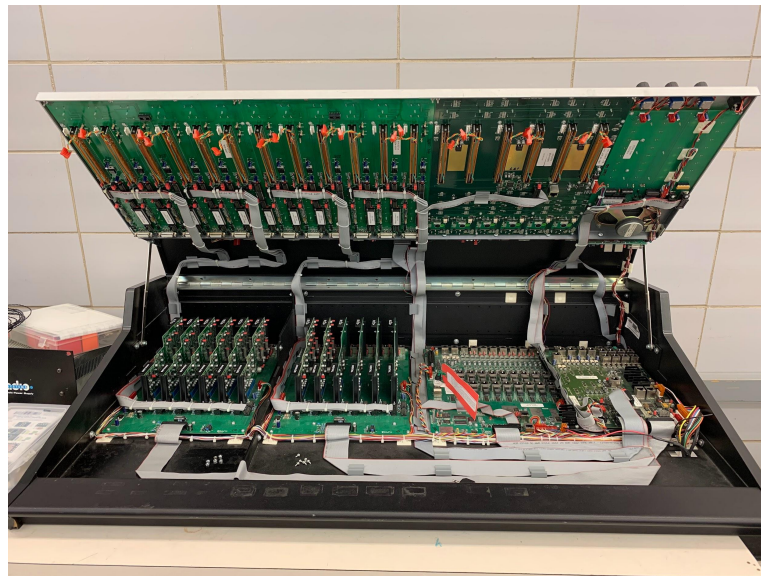


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- DJ board wiring and set-up
 - 5 songs successfully on faders
 - DJ board faders connected to Teensy microcontroller
 - Still some troubleshooting to complete

- Narrowed down total song list based on suggestions, research, and popular music to 12 for future use



- began download process - the Teensy microcontroller uses WAV files



- Live Muse data connected and displayed on CRTs
 - Converts Muse output data to audio signal using Java audio API
 - Lowers hertz to improve display of the wave



- - Created Google Form for user testing
 - general / purpose questions
 - DJ board questions
 - possibility of reconnected with users, if they included email
 - frontend app
 - debugging required additional software installations
 - still troubleshooting required for the future
- Friday - user testing in SIC Room 1102 (atrium) from 10 am - 4 pm



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- variety of audience
 - people we directly asked to come

- students passing through
 - tour groups/families passing through
- Recorded user feedback through a Google form, accessible via QR code
 - Need to add additional questions for each part of the project
- DJ board opened up for viewing while troubleshooting continued
 - attracted bystanders
- Posterboards for
- Higher integration for future
 - art generation
 - frontend app

Individual Contributions

Name	Individual Contributions	Hours this Week	Hours Cumulative
Derrick	<ul style="list-style-type: none"> ● Work on backend server and database endpoints ● Unavailable for part of week due to outside obligations 	5	55
Ayden	<ul style="list-style-type: none"> ● Made some progress on frontend fragment ● Contributed to the team's user testing poster board 	6	55
Tomas	<ul style="list-style-type: none"> ● Worked on user testing ● poster board ● Worked on frontend fragment 	4	51
Elizabeth	<ul style="list-style-type: none"> ● Develop audio synthesizer for CRT visualization 	8	57
Shelby	<ul style="list-style-type: none"> ● Finished Matlab installation and configuration to server ● Supported DJ board implementation ● Supply run during work day ● Narrowed down song list and began WAV download process 	8	57
Juno	<ul style="list-style-type: none"> ● Made basic music player for the app as a backup 	8	56

	<ul style="list-style-type: none"> Implemented nearly complete Muse functionality with single-button pairing and ability to link to the server 		
Cosette	<ul style="list-style-type: none"> Wired DJ board faders and Teensy microcontroller Integrated five songs through the Teensy with volume controlled by the DJ board faders Narrowed down song list and began WAV download process Corresponded with ETG on suggestions and supplies 	10	60
Nathan	<ul style="list-style-type: none"> Worked on user testing posterboard 	6	48

Pending Issues

- Continue work on process book
- Keep track of all contacts reached out to
- Collect all photos (with captions) in a central location
- Season of sickness and allergies
- Add Wei Shen to consultants / thank you page on website

Plans for the Upcoming Week

- Implement better visualization possibly with color
- Cleanup data pipeline
- Finish integration of frontend app
 - Matlab art generation
- Continue troubleshooting DJ board and Teensy microcontroller
 - Download remaining songs from preselected list
- Begin work on final presentation and documentation requirements
- Website additions - consultants page, thank you, photos
- Process book
 - Consolidate photos and videos into one location

Additional Comments & Discussion

- Scheduling continues to be more difficult this semester due to busy schedules and heavier workloads.