CySyphus Kinetic Art Table

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SDDEC20-04 Client and Faculty Adviser: Doug Jacobson

Project Overview

- The Sisyphus kinetic art table lacks an interface for creating new tracks to be displayed. Users have to manually make polar coordinate files to interact with the table, and then upload them to a Raspberry Pi.
- We decided to make it so users can upload images that would automatically converted into table drawing files. These files would also be submitted via a website.

Functional Requirements

- Be able to convert image into polar coordinate files

Non-Functional Requirements

- Have a companion website to go with the table
- Have the website be able to support image submission and create Playlists of images to draw
- Run a twitch stream to watch the table remotely

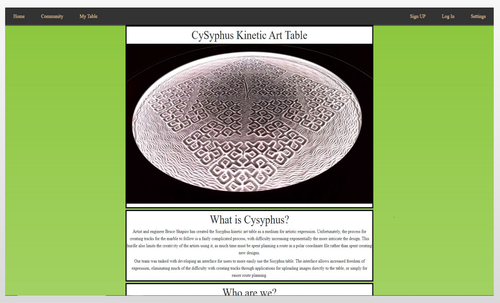
Operating Environment

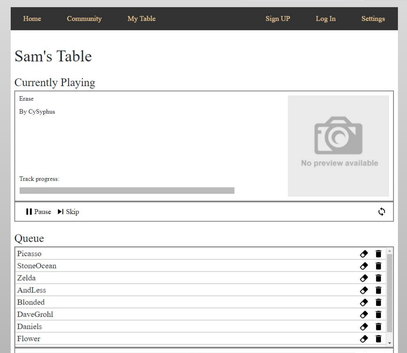
- Physical art table using a Raspberry Pi
- A webserver using Java and SQL
- A website running off of Javascript

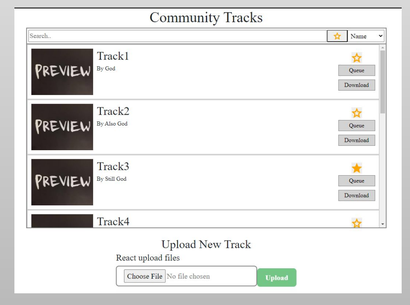
Users and Uses

This project was built to allow for any novance user that had access to the controlling website to create a account and upload any image of their choosing.

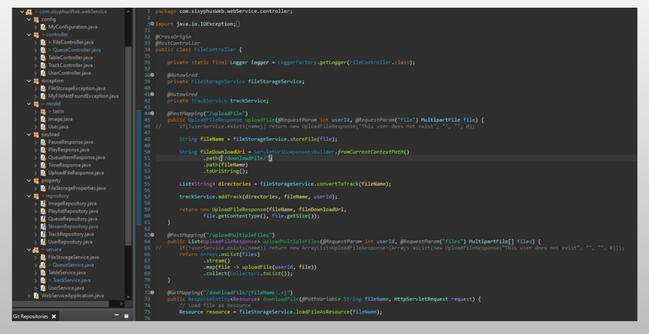
Frontend Website







Backend

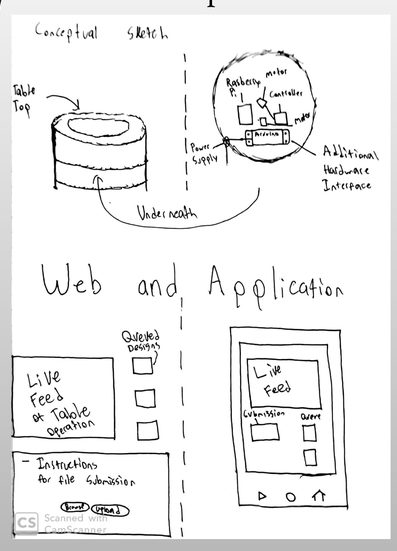


Testing

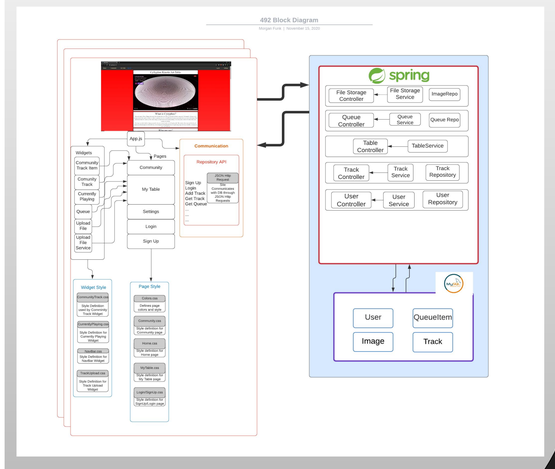
- React: A programming plugin for JS website design. Anytime we made a change to our code base, the changes would be immediately displayed in real time. This allowed for fast and easy debugging and testing of features.
- When sending data to the table, we utilized postman requests to carry the data to the table. Later on we automated these requests to an extent using python to further improve on the image drawing algorithm that converted cartesian points to polar points. This was a tedious process due to the many rules the table itself had in place for drawing.

Design Approach

Concept Sketch



Block Diagram



Technical Details

- The table itself has a raspberry pi that does the bulk of the data processing and drawing. This pi handles the lights, motors and communication between a table app and any postman request we send it. It also facilitates the drawing of images though theta rho files (.thr) These files are the key to the tables drawing and designs created.

Image Submitted

Conversion File

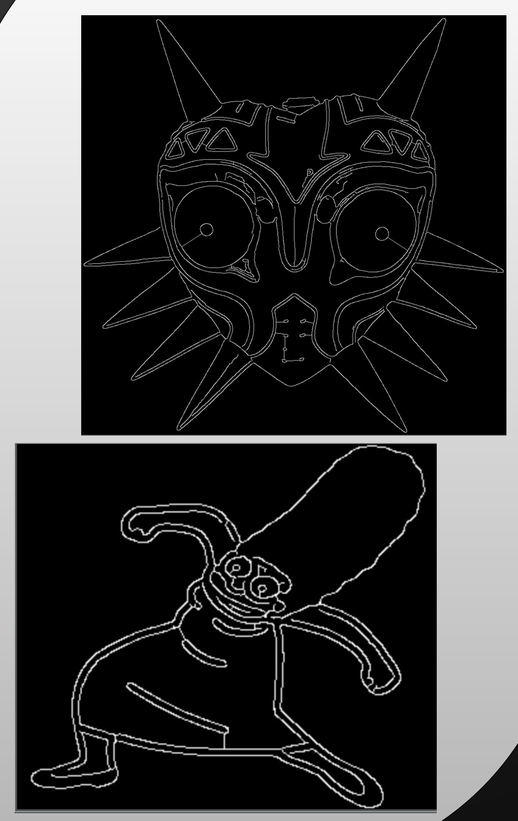


Table Drawing