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Software Design, MP4

3/8/17

Interactive Programming Project

Project Overview

We created a music visualizer by importing pygame and librosa.

Results

For our project we created a music visualization that allows the user to interact with the interface by selecting a song, and then creates a visual of circles with random colors and circle sizes

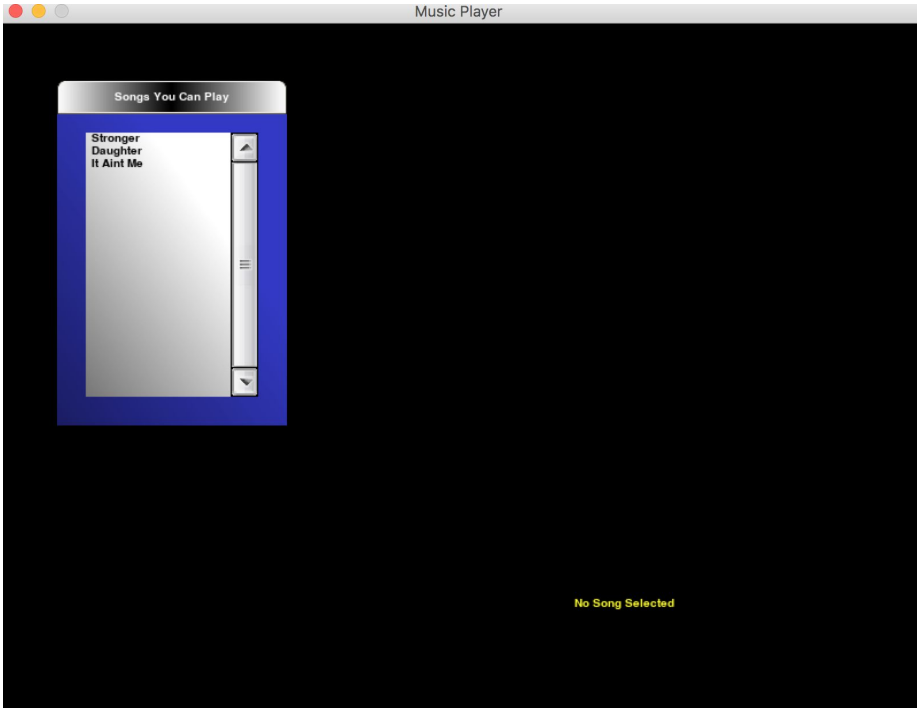

Exhibit 1: Selecting your Song

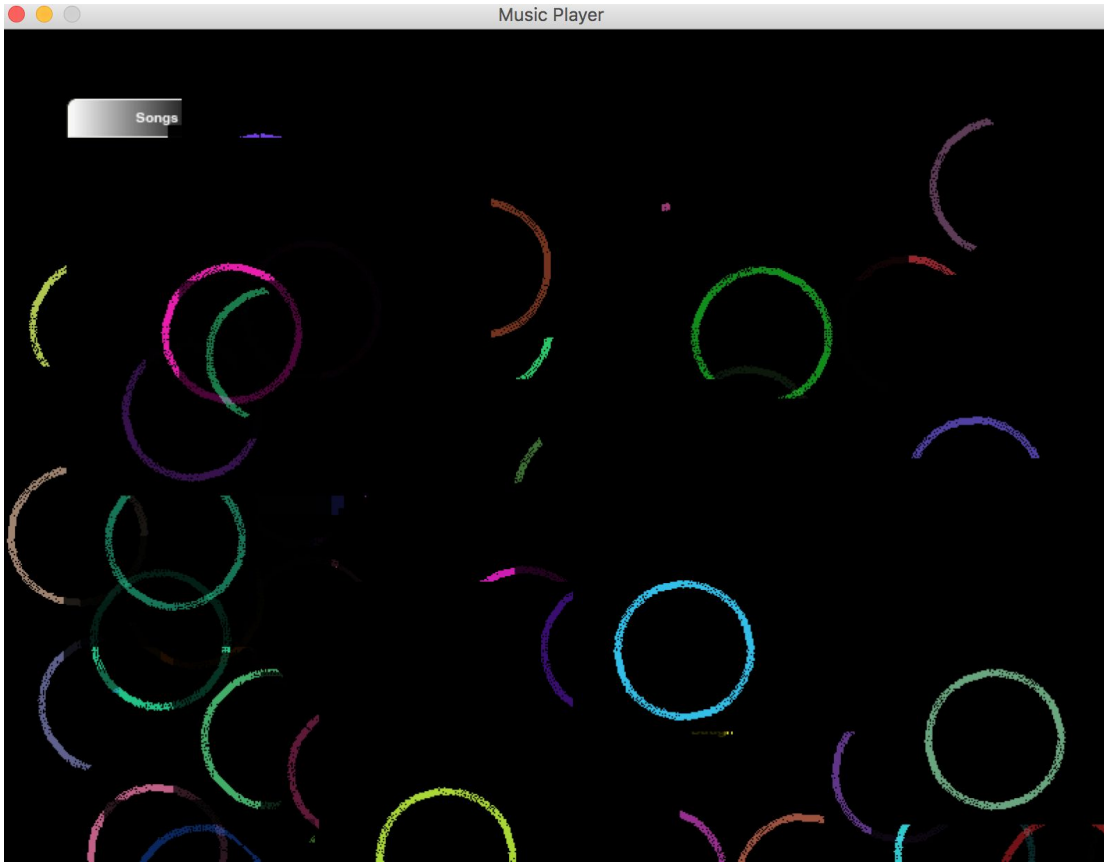

Exhibit 2: Circles appear on the screen according to an array of beats from that song

```
66.7109297052
48.0420861678
158.54585034
1.30031746032
28.0032653061
135.836734694
202.710204082
222.400725624
50.2712018141
92.1367800454
200.063129252
87.0283900227
71.4942403628
28.537324263
21.4552380952
126.920272109
40.8439002268
139.482267574
138.971428571
98.8705668934
39.7525623583
169.43600907
172.524263039
189.776689342
149.281088435
223.886802721
217.617414966
169.946848073
99.4046258503
122.694240363
60.975600907
59.9307029478
55.6582312925
19.8530612245
97.8721088435
68.3363265306
196.974875283
182.624943311
182.044444444
135.302675737
49.7139229025
43.6302947846
```

Exhibit 3: Terminal Output - Random array of beats during music

Implementation

For our music player we created a class around the music player window which allowed us to make a sub window to display our song, select the song and display its name, call the visualization and exit out of the music player.

Our second class we created was around the circles such that we could get the circles to move around the screen and randomize color.

Using librosa's audio analyze we created a function that retrieved the song selected and analyzed the audio to then display as a circle. Initially when we looked at librosa, we found out that it was able to give us a number associated with a beat, however it wasn't until the end of the project that we realized the beats only gave an incremental number associated with a beat and it didn't actually measure beats. This circle was put in a loop where pygame would select the radian of the circle.

Reflection

This project ended up being much harder than expected. Music files are big files that was hard to deal with -- during our more high up beat songs our music player will break, and at one point our computer would only read .wav files but not .mp3.

Additionally, we didn't realize how long it would take us to find a library set to analyze song. As we mentioned before, we were not anticipating librosa to give us an incremental number of beats as the song progressed, thus we were not able to visualize the beats and create the pulsating visual. Reflecting on this, we should have anticipated libraries not working but we are proud of how we were able to pivot to make it become a random array of beats so that there was still some "visual" element to our music player.

We are proud of how flexible we were able to pivot when things did not go well. Christina was able to learn a lot about debugging and how to tackle problems we never even heard of.

And perhaps the hardest thing we encountered was finding time to program with each other. There was a lot of miscommunication on meeting deadlines and commenting on what was completed and what was still left to be completed.