**Dynamic DJ**

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**Introduction**

Music should not only be controlled by buttons on a screen, music is about motion and should be controlled by motion as well. The purpose of this project is to create a wearable music playing device that allows the user to adjust settings of music using their hands. The Dynamic DJ will allow the user to control music while dancing and moving to the music of their choice. This technology can be used by dancers who want to be able to change their music they are listening to without having to get their music player out of their pocket or pause their dancing.

**Goals**

Build a device that will detect the motions of a user and allow the user to control certain settings of the music player. Write code to interpret those motions and change the settings of the music based on the motions.

The Dynamic DJ will have two modes:

* Control:
  + Choose Genre
  + Adjust Volume
  + Skip track or go back to previous track
  + Choose faster or slower song
  + Choose general time period of song
* Play:
  + Play music without interruption by motion sensors

**Implementation**

Accelerometers will be used on the hands of the user to detect motion. These accelerometers will be hooked up to the Arduino. An Mp3 Shield will be attached to the arduino to play music loaded on an SD card. Any set of headphones or speakers with a headphone plug can be plugged into the Mp3 Shield to listen to the music.

Code to interpret the motion of the accelerometer will have to be written so in the first mode, the program will change the track or volume depending on how the accelerometer moves. Which control is being used will be commanded by the orientation of the accelerometer on the left hand of the user. Code will detect the orientation and be prepared to change settings according to the movement of the right hand. Commands will be implemented by changing the orientation of the accelerometer on the right hand. Code will detect this change in orientation and implement the command that corresponds to the motion. Using the ID3 tags to find the genre, year, and tempo of the song. A user’s diagram will be made to show the user which hand motions implement the different controls on the device. Code will be written to change the mode of the device in order to disable the accelerometers and keep the music playing at a constant state.

**Timeline**

|  |  |
| --- | --- |
| **Due Date** | **Task** |
| 12/2 | Submit Status Report |
| 12/5 | Reading and writing ID3 data tags |
| 12/6 | Technical Diagrams made. Test MP3 shield with speakers. |
| 12/7 | *Volume* controls operational |
| 12/8 | *Tempo* controls operational |
| 12/9 | *Genre* controls operational |
| 12/10 | *Decade* controls operational |
| 12/11 | Hardware Implementation, Final report in progress |
| 12/12 | Final demo working, presentation materials ready, final report made! |
| 12/13 | Have final device completed and all presentation materials ready |

**Parts and Budget**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Part** | **Use** | **Cost** | **Amount** | **Total Cost** |
| Arduino | Control device | $24.95 | 1 | $24.95 |
| MP3 Shield | Music Interaction | $41.95 | 1 | $41.95 |
| Accelerometers | Motion detection | $9.95 | 2 | $19.90 |
| Earphones | music playing | $4.99 | 1 | $4.99 |
| Perf boards | Mounting Accelerometers | $1 | 2 | $2.00 |
| Electrical Tape | Protect user from electrical connections | $1 | 1 | $1.00 |
| Wire | Electrical connections | $0.25 | 3 | $0.75 |
|  |  |  | **Total Cost:** | **$95.54** |

**Division of Labor**

Labor is divided mainly into the portions that are software and hardware. Rachel will mostly be working on the software relating to the project and Gavin will be mostly working on obtaining and implementing hardware. The rest of the group (Hassan, Flor, Lupe) will be working on both sides and contributing to the project in general. All members of the group will contribute to the written portions of the project and the presentation at the end of the project.