TBD NAME

TBD is a learning tool designed to help musicians learn and improve upon a piece of sheet music, by analyzing their playing to catch their mistakes and track their progress.

Competitive Analysis

I looked at three similar projects, Smart Music (<https://www.smartmusic.com/> ), Better Practice (<https://betterpracticeapp.com/>), and the PlayPerfect Music Practice Software (<https://www.nchsoftware.com/practice/index.html>). I analyzed these features based on 5 criteria; how the project provides feedback to its users, how the project stores past takes of the piece and the feedback given on the take, how the project displays the user’s progress to its users, if and how the project provides external recordings to be added for a specific piece, and what extra practice tools have they implemented. Each plan implemented these criteria differently, with varying success.

Smart Music’s best feature was its feedback, which was done by changing the color of the notes for the corresponding error. I plan on adapting this to fit my capabilities for m project. Smart Music’s worst feature, was that it never showed the user their progress compared to past recordings after providing feedback. Better Practice was also missing a progress report to the user. I plan on providing a clear graph of improvement to the user after analyzing the percentage of notes correct. Better Practice did have two best features. They did the best in providing recordings and allowing external recordings, both of which they did, and they also provided the greatest number of extra features for free. I plan to implement these features the same way they did, in having both internal recordings and allowing for external recordings to be uploaded, and having other features such as a metronome and a tuner. The only project that stored both all past recordings, and all uploaded pieces was PlayPerfect Music Software. I intend to implement this in the same way, so a user can physically hear their progress as well as see their progress with the graph.

Structural Plan

Comparing – Class

Library – Class / Folder??(for actual images)

Recording/playback after recording – Functions

Sheet music processing – Class

Storage of recordings – Class/Folder

Highlighting score – Function? /Class

Graphing – Class

Modes/actual app = Classes

Recordings to play along to = Class/Folder

Algorithmic Plan

The trickiest parts of my project will be the image processing of the sheet music, audio recording, finding the accuracy of the student’s recording, and storing the past takes, sheet music, and the sheet music with the highlighted errors. I plan to use PIL to do the image processing required for the sheet music. I plan to use PyAudio to record the student’s take, but I plan to find the accuracy of the take myself. I will be storing the past takes, sheet music, and the highlighted sheet music locally. The takes will be stored as a wav file, and the sheet music for the library as png files. The highlighted sheet music will be stored as a text file with the areas of error written in the format of (measure, beat).

Version Control Plan

Upload my code to drive every week?

Module List

Math, PyAudio, Wave, PIL, Numpy