**Chopin Student Requirements Document**

**Matthew Hansen**

**Summary of Requirements:**

The Requirements listed here contain must have requirements and would like to have requirements. The must have requirements include being able to have a user run the program from a command line interface that would then transcribe a wav file to a pdf file in under a minute. The transcription in the pdf file would have to contain at least 50% accuracy in transcription of single note piano sheet music. The program would also have to be able to find the correct time signature and the note length for each of the notes. Along the way, the program would also create a midi file from the wav file. This midi file would then be converted to sheet music in the form of a pdf file by using an already existing framework. The would like to have requirements adds in increased accuracy for single note piano transcription, the ability to have multi-note piano transcription, the ability to find the key signature, and a website that would be able to be a better user interface for users across all computing environments.

**Must Have:**

1. **Finish the transcription in under a minute.**
   1. Scenario: User starts the program, and less than a minute passes.
   2. Success Measure: If from the program starting to the sheet music being displayed or in a pdf file takes less than a minute, it is a success, otherwise it is a failure.
2. **Greater than 50% accuracy in transcription of single note piano sheet music.**
   1. Scenario: User runs the program and checks the sheet music printed against known sheet music, or known notes.
   2. Success Measure: If at least 50% of the notes have the right length and are in the right location (as determined by me having made the recording and having sheet music), then it is a success, otherwise it is a failure.
3. **Find the time signature.**
   1. Scenario: User looks at the time signature on the printed sheet music versus the existing sheet music.
   2. Success Measure: If the program finds the time signature, it is a success, otherwise it is a failure.
4. **Find note length.**
   1. Scenario: The user checks the printed sheet music to see if quarter notes are quarter notes, half notes are half notes, and whole notes are hole notes, including everything in between.
   2. Success Measure: If the program can determine notes lengths (50% of the time as seen in must have requirement #2), then it is a success, otherwise it is a failure.
5. **Wav to Midi file conversion.**
   1. Scenario: The user runs the program and a midi file is generated.
   2. Success Measure: If a midi file is generated from analysis of the .wav file, then it is a success, otherwise it is a failure.
6. **Midi to sheet music transcription via framework.**
   1. Scenario: The user runs the program and a pdf file containing sheet music is generated.
   2. Success Measure: If a .pdf file is created from the .midi file, then it is a success, otherwise it is a failure.
7. **Command-line interface to run program on Linux/GNU.**
   1. Scenario: The user is able to run the entire program from the command line using only the .wav file and pdf as command line arguments.
   2. Success Measure: The entire .wav to .pdf file is capable of being run as a command line program from a Linux/GNU computer. If it can be run, then it is a success, otherwise it is a failure.

**Would Like to Have:**

1. **Greater than 80% accuracy in transcription of single note piano sheet music.**
   1. Scenario: The user runs the program and checks the printed music against known sheet music to see if at least 80% of the notes length and location is correct.
   2. Success Measure: If at least 80% of the notes have the right length and are in the right location (as determined by me having made the recording and having sheet music), then it is a success, otherwise it is a failure.
2. **Greater than 50% accuracy in transcription of multi-note piano sheet music.**
   1. Scenario: The user runs the program and checks the printed music against known sheet music to see if at least 50% of the notes length and location is correct.
   2. Success Measure: If at least 50% of the notes have the right length and are in the right location (as determined by me having made the recording and having sheet music), then it is a success, otherwise it is a failure.
3. **Find the key signature.**
   1. Scenario: The user checks the printed sheet music’s key signature against the known sheet music/key signature.
   2. Success Measure: It is a success if the correct key signature is detected. It fails otherwise.
4. **Website for cross platform operation.**
   1. Scenario: The user is able to go to a website, upload their .wav file and able to download a .pdf file from the same website on any operating system that supports modern browsers.
   2. Success Measure: If a website is able to upload a .wav file (containing only piano sheet music) and is able to return a .pdf file to the user containing a transcription of the .wav file, then it is a success, otherwise it is a failure.