Lab 2 - CrossFade Product Description

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CS411W

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CrossFade

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Version 2

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3.   Product Requirements

    3.1.   Functional Requirements

        3.1.1.   User Interfaces

            3.1.1.1.   Edit Song (O: Hopper)

- CrossFade shall allow the user to edit song information including:
    1. Time signature
    2. Tempo
    3. Key

            3.1.1.2.   Edit Metadata (O: Hopper)

- CrossFade shall allow the user to edit song metadata including:
    1. Song title
    2. Artist(s) name
    3. Album

            3.1.1.3.   Edit Track (O: Hopper, M1: Wassell)

- CrossFade shall allow the user to edit individual track information including:
    1. Track name
    2. Instrument

            3.1.1.4.   Listen to the Edited Piece (O: Vano Ruano)

- CrossFade shall allow the user to listen to the piece of music that they are editing in the following manners:
    1. Play the complete musical piece if no segment of the song is selected.
    2. Play only the section that has been selected.

3.1.1.5. **Edit Note** (O: Vano Ruano, M1: Hopper)

- CrossFade shall allow changing a note by adjusting:
  1. Pitch
  2. Duration
  3. Articulation

3.1.1.6. **Import Music Files** (O: Abad)

- CrossFade shall allow the user to import:
  1. MusicXML
  2. MIDI

3.1.1.7. **Save and Export Modified Music Files** (O: Abad, M1: Wassell)

- CrossFade shall allow the user to save and export modified music files as:
  1. MusicXML
  2. MIDI

3.1.2. **Algorithms**

3.1.2.1. **Parsing of MusicXML Files to Datasets** (O: Wassell, M1: Abdullahi)

- CrossFade shall parse MusicXML files for trainer datasets.

3.1.2.2. **Transcription Error-Detection** (O: Blay, M1: Hopper)

- CrossFade shall be capable of identifying the following types of transcription errors:

3.1.2.2.1. **Identify Incorrect Rhythms**

- Recognize errors with the time signature of the piece of music.
- Recognize errors with the tempo of the piece of music.
- Recognize errors with note duration.

3.1.2.2.2. **Identify Incorrect Articulation**

- Recognize errors in articulation of the transcribed musical content.

3.1.2.2.3.   **Identify Incorrect Dynamics**

- Recognize errors in dynamic markings of transcribed musical content.

3.1.2.3.   Transcription Error-Correction (O: Blay)

- CrossFade shall be capable of correcting the following types of transcription elements:

3.1.2.3.1.   **Correct Rhythms**

- Correct errors related to the rhythm of transcribed musical content, ensuring it aligns with the original audio source.

3.1.2.3.2.   **Correct Articulation**

- Correct errors in articulation, ensuring that musical notations accurately represent how the notes are played.

3.1.2.3.3.   **Correct Dynamics**

- Correct errors in dynamic markings, ensuring that the volume and intensity of musical passages are accurately transcribed.

3.2.   Performance Requirements

3.2.1.   Application Performance

- The initial file upload request should not take more than 30 seconds for smaller files and 1 minute for larger files.

- The sheet music page should update from current to original no longer than 5 seconds.

3.3.   Assumptions and Constraints (O: Abdullahi, M1: Wassell)

Effects of Assumptions, Dependencies, and Constraints on Requirements

Condition	Type	Effect on Requirements
The system will utilize a library (music21) to parse MusicXML files	Dependency	Eliminates the need to manually extract MusicXML file information.
Only MusicXML files with a single instrument will be inputted into the system	Assumption	Limits the task of dealing with different frequencies from different instruments.

3.4.   Non-Functional Requirements

3.4.1.   Security

3.4.2.   Maintainability

- The user will need a machine with access to the internet to download this application.

- The user will need to download when a new application version is released.

3.4.3.   Reliability

3.4.3.1.   Availability

- The transcription error correction shall always be available.

- The Crossfade application shall always be available for download.