UNIVERSITY OF LEICESTER

School of Computing and Mathematical Sciences

CO7201 Individual Project

Interim Report

SongAssist

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Introduction

SongAssist is a stem-separation web application that aims to provide a comprehensive practice environment specifically targeted at guitarists by featuring AI-powered qualitative insights and advice in addition to stem-splitting and other helpful audio-manipulation tools. Currently, SongAssist exists as a completed front-end with all features visible; Significant progress has been made on implementation of the Gemini assistant for advice and tablature generation although other features such as stem-separation functionality are yet to be implemented.

Tasks

Completed

- *AI Assistant*
  - The AI assistant automatically reads the title of the mp3 the user has sent in (along with any input into the artist field) and offers general advice on playing the song. The user can then ask any follow-up questions.
- *Straightforward User-Interface*
  - All frontend elements are in place to form a cohesive and intuitive interface, it is clear where the user can control the mix of isolated guitar along with accessing the AI assistant and tablature features.
- *Bookmarking*
  - Users can add a bookmark at any specific time in the song and label this bookmark with a name. Once the bookmark is selected, the seeker will move to the corresponding part of the song.

Ongoing

- *Tablature Generation*
  - Currently tablature is being generated but accuracy is inconsistent and the Gemini assistant frequently gets lyrics mixed up for less popular songs.
  - Further prompt-engineering is required to ensure more accurate results.
- *MP3 Uploading and Playback*
  - Users can upload an MP3 file and the title will be passed to the AI assistant, the length of the song is also reflected in the UI. Playback of MP3 files is not functional as of now.
- *Waveform Display*
  - A static audio waveform display is currently in place until functionality is developed for a dynamic waveform that reflects the MP3 file.

Pending

- *Playback Speed and Pitch Control*
  - The UI elements for playback speed and pitch control are in place but until MP3 playback has been properly implemented no progress can be made on this.
- *Stem-Splitting*

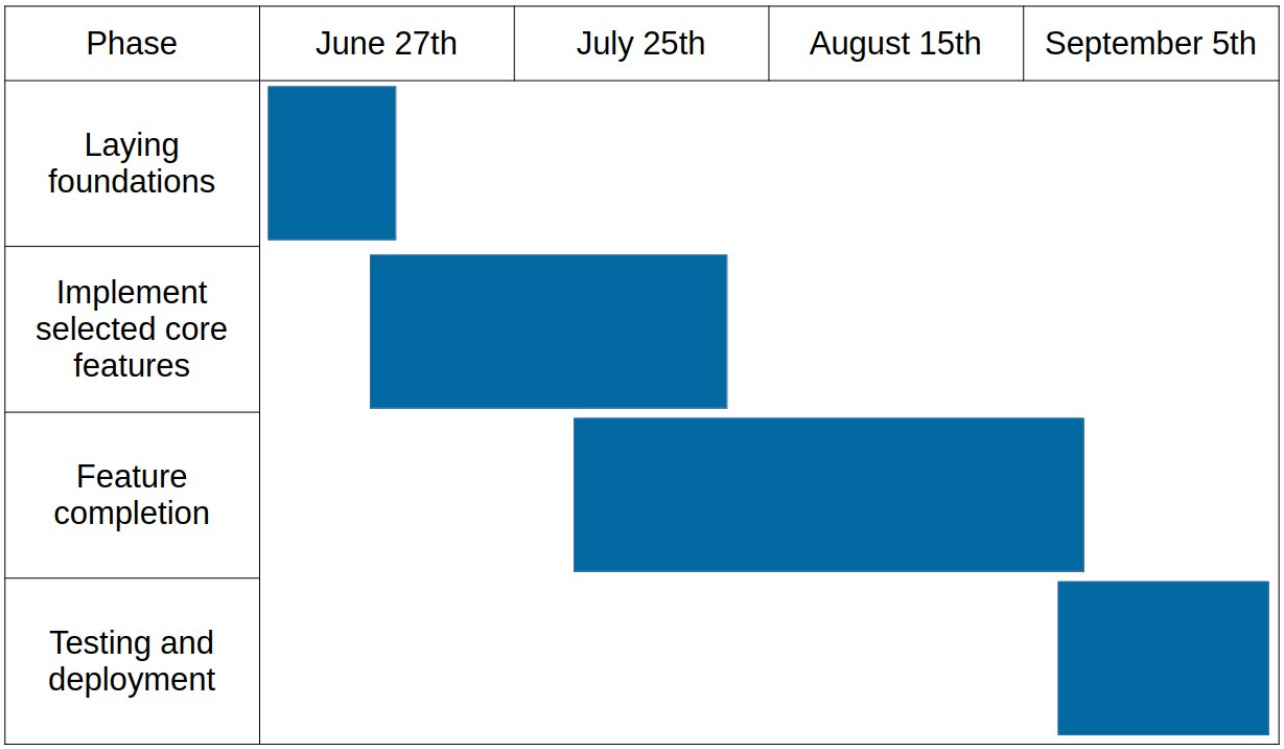
    - No backend functionality for isolating the guitar track from MP3 files has yet been implemented.
- *Playlist Management*
    - Playlist management functionality implementation has not yet begun, it is still being decided whether this is a necessary feature for SongAssist to have without overcomplicating the user-experience.

Project Timeline

Phase	Week(s)	Date(s)	Objectives	Milestone
1. Laying foundations	1	June 27th - July 4th	• Set up development environment (cloud project and server) • Finalize tech stack (decide on using a database for state saving) • Start to design user-interface	• **(COMPLETED)** Development environment initiated. • **(COMPLETED)** Tech stack decided.
2. Implement selected core features	2-4	July 5th – July 25th	• Implement frontend design • Implement AI assistant functionality • Develop bookmarking features	• **(COMPLETED)** Core application structure is in place, UI is functional and responsive.
3. Feature completion	5-7	July 26th – August 15th	• Implement fully functional MP3 playback • Ensure stem-splitting is in place and of a high quality • Facilitate easy adjustment of playback speed and pitch	• *SongAssist* is completely functional and all features are fully implemented.

4. Testing and Deployment	8-10	August 16th – September 5th	• Fix any bugs that are found • Conduct user acceptance testing • Make sure SongAssist is robust and not prone to crashes	• The application is reliable and feature-complete, making it ready for deployment.

Gantt Chart



Conclusion

The development of SongAssist is so far proving to be a success with some features even ahead of the preliminary project timeline. Going forward, the main priority is to implement MP3 playback as soon as possible as this allows for work on other core features such as stem-splitting to begin. If the project timeline can be successfully followed with few issues then SongAssist looks to be a very promising application with a unique combination of user-friendly features.