

Initial Plan

“Music makes you run faster...?”



Cardiff University School of Computer Science and Informatics

CM3203 – One Semester Individual Project – 40 Credits

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Project Description

Technology is becoming more and more implemented into people's daily lives. There is an app on your phone for just about anything you could possibly imagine, and the need for using these applications to better improve our productivity, manage our time and track our daily habits is growing. One activity where the use of smartphones and fitness bands have become particularly prevalent is in people's exercise routines. There is this need for tracking your workouts to measure your performance, to set goals and targets and to see how you have improved over time and how you could further improve. The number of people tracking their exercises is increasing year by year, with one of the most popular platforms for doing so being Strava. The company has experienced a yearly growth of active users, with 20 million in 2016, to 76 million as of 2021 [1. BusinessOfApps]. With an ever-growing number of users, there is therefore the need for new features and new ways in which the user's data can be used to derive new performance statistics and new conclusions from their exercises. Whilst tracking their exercise, many users also listen to music at the same time, with many of them using streaming services such as Spotify, Apple Music or Last.FM. This is where the question can be raised, can music make you run faster?

Using the data obtained from a user's workout which has been tracked through a service such as Strava and their music listening history from services like Spotify or Last.fm, this project aims to answer that question. Through the creation of an online web-application which allows a user to connect with both services, the aim is to help a user understand what kinds of music have the most impact on their workouts, whether those impacts be positive or negative. This could be done by individually examining a single workout to see how different music listened to across that time period related to their performance, or by looking at a larger time period and several exercise sessions to identify any trends in their data.

I intend to develop the solution as a web-application written in JavaScript using the React framework. React is a free and open-source front-end JavaScript library which can be used for building user interfaces based on UI components. This approach should give me everything I need to construct a suitable solution which is able to access data from external API's, process it and present it to the user.

Project Aims and Objectives

Primary Aims:

The main aims I have for the project and what I would like to implement for a minimum viable project are:

1. To create a web-application which will display a user's running activity history as well as their music listening history for each activity.
 - a. Recent activities should be displayed to the user with an option to search for activities by date.
2. To implement functionality which allows the comparisons between a single user's running activity and the music they were listening to during the time-period of that activity.
 - a. This should include information such as which song they were listening to when their heart rate / pace was at its highest.
3. To implement functionality which compares running activities and music listening history across a given time frame by the user.
 - a. This should also include information such as what genre of music the user typically performs best at when listening to.
4. To design and implement a suitable and user-friendly user interface.
 - a. It should be intuitive to use with a mobile-first approach taken for development.

Secondary Aims:

My secondary aims for the project are features which if implemented would improve the solution to the project, but should not be needed for the minimum viable project:

1. To update the application logic to allow for different kinds of activities to be included as opposed to just running. For example, cycling, weightlifting, boxing etc.
2. To extend the level of detail which is offered by the insights of the music and activity comparison, for example calculating the suitable beats per minute (bpm) the music the user listens to when they exercise should be.
3. To add functionality for song suggestions based on how the user performs whilst listening to certain genres of music.
4. To implement a log-in system which would mean users would not have to connect their Strava and Last.FM accounts each time they want to use the application.

- a. This would involve implementing a back-end system which would store user data, and therefore will careful consideration on ethical approval in advance before I investigate implementing this.

Objectives

To achieve my aims, there are a few objectives I have that will need to meet. I will need to:

1. Investigate and work with external developer API's available from several companies and see the extent of what data can be obtained from each one.
2. Investigate, understand, and implement authentication workflows using authentication procedures used by external API's.
3. Work with resources available to better understand and learn some best practices for front-end JavaScript development.

Ethical Considerations

My aim for this project is to conduct all the testing myself. This eliminates the need for user testing, and I will not be collecting any personal data from any members of the public. My vision for the project is that it will not be storing or collecting any user's data and saving it anywhere. I have discussed this approach with my project supervisor Martin Chorley, and we have both concluded that the approach I am taking should not need ethical approval, however if my approach were to change further down the line and I was to store user data then we would need to look at gaining ethical approval. For example, if I were to implement new features in the future such as a log in system which stored data from users Strava accounts with their personal data.

Work Plan

Below is a breakdown of each week of the project. I have aimed to outline what tasks I aim to complete and when I aim to complete them. Please see appendix A for a Gantt chart view of the work plan. I will be taking an agile approach to my working methodology, but this is an outline of some milestones and deliverables I would like to achieve in my sprints. Alongside my work I will be meeting with my project supervisor once a week to discuss my progress and to discuss any ideas, improvements, or issues I may have.

Week	Tasks
1	Initial Plan: Complete initial plan document Complete Minimum Viable Product: Begin set-up of development environment and GitHub repository Investigate developer APIs for music services Investigate developer APIs for activity tracking services
2	Complete Minimum Viable Product: Ensure development environment is set up correctly Complete research into API's Begin process for acquiring ethical approval Develop simple User Interface Develop call functions to both API services Begin functionality to connect user accounts to each service
3	Complete Minimum Viable Product: Complete functionality for connecting user accounts to each service Create new user interface wireframes Make user interface improvements and display data returned from API's
4	Complete Minimum Viable Product: Finish updates to user interface Add functionality for linking activities to the songs played the time period Add functionality to compare performance and music listened to on a single activity
5	Complete Minimum Viable Product: Add functionality for comparing performance and music listened to across a time period of activities Begin first round of user testing

6	<p>Complete Minimum Viable Product: Complete first round of user testing</p> <p>Addition of extended features (Secondary Aims): Update functionality to include other activities besides running</p>
7	<p>Addition of extended features (Secondary Aims): Add functionality for more detailed insights in music / activity comparisons Add functionality for song suggestions based on genre and performance</p>
8	<p>Addition of extended features (Secondary Aims): Add functionality for song suggestions based on genre and performance Investigate addition of log in system</p> <p>Final Report: Begin looking at and writing opening sections of the final report</p>
9	<p>Addition of extended features (Secondary Aims): Complete final round of user testing Investigate addition of log in system</p> <p>Final Report: Continue with writing the final report</p>
Easter Break	<p>Final Report: Continue writing some sections of the final report</p> <p>Improvements / Resolving unforeseen issues Use this time over the break period as extra time for bug fixing, enhancements and resolving any unforeseen setbacks.</p>
10	<p>Final Report: Continue writing some sections of the final report</p>
11	<p>Final Report: Continue writing some sections of the final report</p>
12	<p>Final Report: Continue writing some sections of the final report Submit Final Report</p>

References

1. BusinessOfApps. 2022. Strava Revenue and Usage Statistics 2022.

Available at: <https://www.businessofapps.com/data/strava-statistics/#:~:text=UXCam%20%2D%20Mobile%20App%20Product%20%26%20Experience%20Analytics&text=Strava%20currently%20has%2076%20million,Strava%20with%20an%20exclusivity%20edge>.

[Accessed: 01 February 2022]

Appendix

Appendix A

Music makes you run faster...?

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