

Initial Plan

Music makes you run faster...



James Goodrick-Clarke

Supervisor: Dr Martin Chorley

Moderator: Sylwia Polberg

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Module Title: One Semester Individual Project

Credits Due for This Module: 40 Credits

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PROJECT DESCRIPTION

Running has transformed into a cultural movement. No longer limited to a track, the sport gives individuals freedom to exercise, an identify and with that social fulfilment. With trends like this technology soon follows- tracking, planning, and identifying their exercise all become a runner's fundamental. It is apps and services like Strava, Fitbit or Nike Run Club that are allowing runners to streamline, understand and improve their skill.

Conversely, technology has also made music disposable at our fingertips. Services such as Apple, Spotify and Amazon allow us to stream any song at any time. Individuals often turn to music for motivation during exercise. Music can change mood, focus, and stress levels (Shih, et al., 2009). This poses the question if there is any form of correlation between the two and if so, what is the fighting factor that will allow runners to exploit and push their progress to the next level. This project will investigate, discuss, and create a solution to the overarching question: Can music make you run faster?

The project will answer the question with an iOS application. A clean, compatible interface with an emphasis on design. The core of the program will compare two of the most popular services, Strava running metrics (pace, heart rate, distance) to Spotify listening data (beats per minute, song length). I have chosen these two services because they are the most widely used and have extensive APIs. This will manufacture a product that that will allow the user to understand what music improved or maintained ideal running metrics. In addition to this, there is further research I wish to explore within the project. Research has shown that different genres of music can additionally alter an individual's emotions (McCraty, 1998). Following this, I will compare music genre to running metrics to investigate if certain styles of music or artists make you run faster.

A handful of similar solutions are available on the market. 'Rock my run' is a running app that matches you running pace to the beat of the music (RockMyRun, 2022). 'Zombies, run!' uses malicious sound effects to motivate the user to run and to stimulate the user being chased (Zombies, Run!, 2022). Both applications play into the research I have discussed but neither truly answer the question if the products are successful in making you run faster. However, both have obtained a cult following in the running community, suggesting strong backing and a market for applications that play into the research idea.

The final result of the application will display to the user essentially, what tracks, artists and genres have made them run the fastest and why. The interface will be modern and guide and walk users through their listening habits and running times in a cohesive, stylish format.

ETHICAL CONSIDERATIONS

The project is dealing with fitness data and listening data including running activity, music activity and other personal data. Therefore, with the manipulation of both, research and user testing may need approval. Myself and my supervisor (Dr. Martin Chorley) have completed the research integrity online training program. The next step is to submit an Ethical Approval Form. On speaking with Dr. Chorley, it has been advised that if approval is needed a group application approval will be requested at the request of myself and other group members. Ethical approval is vital for user acceptance testing therefore, it is important to gain approval as soon as I can.

PROJECT AIMS AND OBJECTIVES

PRIMARY AIMS

Aims considered for the minimum viable product of the project

- 1.0 To create an iOS mobile application that integrates Spotify API and Strava API
- 1.1 To compute the comparisons of user's running metrics and user's listening history.
Comparing running metrics such as pace, heart rate and distance with listening metrics such as song, artist, genre, BPM and song length.
- 1.2 Create an interactive interface with a large basis on design, fit for purpose and cleanly walks the user through their data comparisons

SECONDARY AIMS

Aims considered for further extending the project if project timeline allows for them

- 2.0 To create a share to social media button that shares a summary and comparison of the user's data to popular social media
- 2.1 Create a secondary algorithm that will suggests more songs or artists based on what songs or artists made the user run the fastest

OBJECTIVES

- 3.0 Have created the application using the XCode framework
- 3.1 Have successfully integrated the Spotify and Strava API

APPROACH

Based on the project timeline and the type of product I am creating I have opted to use SCRUM methodology. I will also use certain Agile methodologies throughout the process but using 3-week sprints. I felt with the progress of my project, until the Easter holiday when I plan to do a larger bulk, I won't necessarily see enormous change every week, but rather every 3 weeks. I have decided to use these methodologies as they split large projects into smaller projects that can be completed quickly and efficiently. Each aim listed above will be granted its own analysis, design, implementation and testing phases as per the guidelines of the approach.

As I am creating an iOS application, it is fitting to use XCode (Apple, 2022). This is the Apple integrated development environment. It uses the language 'Swift' - a general purpose language, associated with programming languages like C++. I have experience of creating projects using this language in the past, hence why it is fitting for my skillset. In addition to this, I already have the resources to emulate and test iOS programming. Spotify and Strava will be accessed via their API calls respectively. I will be created a minimum viable product and a final product. My MVP will mean that all Primary Aims and objectives have been met and my final product will mean all Primary and Secondary Aims and Objectives have been met. This is to ensure robustness during the process. My secondary Aims and Objectives will be added in the order I see fit after Primary Aims and Objectives have been met.

Along with the final testing process I will be completing rounds of acceptance testing after the MVP and Final Product are finished (assuming ethical approval) to ensure the final product meets the user's needs.

RISK

I have delegated parts of some weeks that have less tasks to be 'overflow' weeks in case unforeseen circumstances slow my progress down. In addition, they can be used if I discover certain insights or features along the timeline, I am able to add them if I think they will create a more robust modular solution. This buffer caters for risk and in such a short time for a project, if anything were to go off track, I have a fallback solution.

MILESTONES

7/3/2022

- Solution to correlate data between Strava and Spotify will have been achieved in all facets
- Finish building visual data processing interfaces e.g. Graphs, charts etc to display data
- Finish bulk of static front end design

21/3/2022

- UI dynamic design is complete
- Social media share button is implemented

28/3/2022

- Song suggestion feature is implemented

DELIVERABLES

7/2/2022

- Hand in initial plan (due 7/2/2022 23:00pm)
This includes this document with my weekly plan and Gannt Chart

7/3/2022

- Minimum Viable Product Achieved
This includes correlative solution between Strava and Spotify, Visual data processing and static design

25/4/2022

Coded project completed
This includes all Primary and Secondary Aims completed and Objectives and testing completed

2/5/2022

- Hand in Final Report (due 13/05/2022 23:00pm)
This includes my research, approach, implementation, results and reflection of my project

REVIEW MEETINGS:

28/3/2022

- Review Meeting 1

25/4/2022

- Review Meeting 2

WORK PLAN

See Appendix for Gantt representation of the work plan. Below is the weekly breakdown of the project timeline. It includes tasks to complete each week, actions to partake in and if applicable the deliverables for that week. My review meetings are scheduled before and after easter, where I expect a large bulk of the project will be completed.

WEEK 1 – 31/1/2022

TASKS:

- Research into the initial problem
- Write up initial plan
- Being starting to research documentation of Spotify and Strava API
- Set up a development environment in XCode
- Set up GitHub Repo
- Complete Student Ethics Training

ACTIONS:

- Meeting with supervisor

WEEK 2 – 7/2/2022

DELIVERABLE:

- Hand in initial plan 7/2/2022 23:00pm

TASKS:

- Begin to draft up and conceptualise user interface designs
- Begin to write ethics form
- Start to create a solution to obtain Spotify and Strava data using the API

ACTIONS:

- Meeting with supervisor

WEEK 3 – 14/2/2022

TASKS:

- Finish API functionality and be able to obtain call data in running application
- Submit Ethical Approval form
- Start implementing shells of UI into XCode

ACTIONS:

- Meeting with supervisor
- Individual Review

WEEK 4 – 21/2/2022

TASKS:

- Begin solution to correlate Strava and Spotify data
- Finish implementing shells of UI into XCode

ACTIONS:

- Meeting with supervisor

WEEK 5 – 28/2/2022

TASKS:

- Carry on building a solution to correlate Strava and Spotify data
- Investigate and start building how I want data to be displayed to user

ACTIONS:

- Meeting with supervisor

WEEK 6 – 7/3/2022

DELIVERABLE:

- Minimum Viable Product Achieved

TASKS:

- Solution to correlate data between Strava and Spotify will have been achieved in all facets
- Finish building visual data processing interfaces e.g. Graphs, charts etc to display data
- Finish bulk of static front end design
- Start acceptance testing Spotify and Strava API functionality

ACTIONS:

- Meeting with supervisor
- Individual review

WEEK 7 – 14/3/2022

TASKS:

- Start to implement feedback gained from acceptance testing
- Start designing and implementing dynamic UI design
- Start to create solution to condense data for a 'share to social media' button

ACTIONS:

- Meeting with supervisor

WEEK 8 – 21/3/2022

TASKS:

- Start to create conclusions to display to user based on the correlation of their data
- Finish dynamic UI design
- Implement 'share to social media' button

ACTIONS:

- Meeting with supervisor

WEEK 9 – 28/3/2022

TASKS:

- Finish implementing conclusions on what correlations suggest to user
- Finish any technical loose ends
- Implement adding song suggestion functionality and research algorithms that surround recommendations
- Showcase prototype to supervisor

ACTIONS:

- Review meeting with supervisor
- Individual review

4/4/2022 EASTER

DELIVERABLE:

- Final product achieved

TASKS:

- Finish any technical loose ends
- Finish song suggestion functionality
- Implement any feedback from supervisor
- Begin another round of user acceptance testing
- Room left here for unforeseen circumstances in plan
- Finish all major coding
- Begin writing final report

WEEK 11 – 25/4/2022

TASKS:

- Continue writing final report
- Room left here for unforeseen circumstances in plan
- Implement final feedback from review meeting
- Implement any feedback from user acceptance testing

ACTIONS:

- Review meeting with supervisor

WEEK 12 – 2/5/2022

DELIVERABLE:

- Hand in Final Report 13/05/2022

TASKS:

- Final adjustments to report
- Submit final report

ACTIONS:

- Meeting with supervisor
- Final individual review

WEEK 13 – 9/5/2022

DELIVERABLE:

- Project Viva
- Potential hand in final report 13/05/2022

TASKS:

- Conduct viva for project
- Final report buffer if not finished

REFERENCES

BIBLIOGRAPHY

Apple, 2022. *XCode*. [Online]

Available at: <https://developer.apple.com/xcode/>

[Accessed 5 February 2022].

McCraty, R. e. a., 1998. The effects of different types of music on mood, tension, and mental clarity.. *Alternative therapies in health and medicine*, 4(1), pp. 75-84.

RockMyRun, 2022. *RockMyRun*. [Online]

Available at: <https://www.rockmyrun.com>

[Accessed 5 February 2022].

Shih, Y.-N., Huang, R.-H. & Chiang, H.-s., 2009. Correlation Between Work Concentration Level and Background Music: A Pilot Study. *Work*, 33(3), pp. 329-333.

Zombies, Run!, 2022. *Zombies, Run!*. [Online]

Available at: <https://zombiesrungame.com>

[Accessed 5 February 2022].

APPENDIX

Figure 1: GANTT
CHART

