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| Project Title | | |
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| **Link to Software Repository:** |  | |

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# Project Statement

The aim of this project is to develop a web and android application, that will give each and every user their own personalized account. The app will recommend live music events that are on in their area. The recommendations will be based on the type of music and artists the user has in their Spotify account playlists. It will also incorporate a collaborative filtering recommendation system that will recommend artists unknown to the user, based on recommendations from other users with similar interests.

# Research

## Viability

The first area of research I focused my attention to was the viability of my proposed project. I needed to ascertain if the goal I had set myself was realistic and attainable. I investigated possible risk areas such as getting user feedback on the application, finding a data set that would be accurate enough to train my machine learning model with, the complexity of the model and how to implement that model into an application and actually utilize it in the proposed manner. I also looked into multiple technologies and if there are frameworks or libraries that can help me in reducing some of the grunt work. I have come to the conclusion that the project is feasible, while it will require a lot of work it is something that I should be able to complete in the given time frame.

Technologies

I had initially set out the technologies I thought I would use before I began the project, I discovered shortly after that some of these technologies may not be the best option for the task at hand with the time available. Through further research and modules I have taken in the first semester of this year I have been able to pick out a group of technologies that should work well together. These are a list of technologies I investigated:

* Angular
* React
* Spring Boot
* Django
* Flask
* SQL
* MongoDB
* PostgreSQL
* PostGIS
* Cordova
* Ionic
* Docker
* AWS

I will briefly talk about the technologies that I plan to use in my project and highlight why I have chosen these technologies.

### Django

Django is a high-level Python Web framework that encourages rapid development and clean, pragmatic design. (“The Web framework for perfectionists with deadlines | Django,” n.d.) I will be taking an MVC approach to this application, Django will act as the controller. Much of the business logic will be completed in this application. It will be used to securely conect the users to their relevant data stored in the database using API calls data serialization, token and session authentication. Django has many built in libraries that help with securing an application e.g. SessionAuthentication, TokenAuthentication. I had initially decided to implement Spring Boot as the controller for the application but after much deliberating I decided Django would be a better fit. Both frameworks provide a similar type of service, the main difference being Spring Boot is a Java framework and Django is a Python framework. Django being a Python framework was key to my decision as I will be developing the machine learning portion of the application in Python. While I had very little Python experience in Python, I believe this solution will cause me the least amount of issues along the development process. I have discovered possible issues when passing data between a Java and Python application and learning a new language is not that big of an issue to me. Django will also be used to serve the front end of the end of the web app utilizing Django’s templates and views, this template and view system Django implements will allow me to(…….) I still might use angular…….

### PostgreSQL

PostgreSQL is a powerful, open source object-relational database system that uses and extends the SQL language combined with many features that safely store and scale the most complicated data workloads.(“PostgreSQL: The world’s most advanced open source database,” n.d.) PostgreSQL was chosen for this project as it has the ability to store objects with ease which will be essential to efficiently managing user objects especially when users locations will be stored as geospatial objects using PostGIS. The user’s location will be used to guide them to locations where gigs are happening and so it is essential to do this efficiently as users expect very short delay times when using any application, this is especially the case location based apps. PostgreSQL databases make implementing PostGIS very user friendly, it can be accomplished simply by including PostGIS as an extension. Both SQL and MongoDB were looked at as possible solutions, but SQL proved to be too rigid in the datatypes it could store and MongoDB proved that it would be too slow for the data processing aspects of the project.

### Ionic

Ionic is an open source SDK for hybrid mobile application development, it is built on top of Angular and Apache Cordova. It provides developers with tools and services for construction native feeling hybrid mobile apps using web technologies such as HTML, CSS, Sass, JS, TypeScript.(“Ionic (mobile app framework),” 2018).

What research has been done and what are the outputs? This concerns background research on the topic itself, as well as any research on the data analytics that you plan to perform and the technologies that you wish to use. Use the following headlines to fill in your information. Use one of the standard citation styles consistently throughout this section. Discuss the following:

## Background Research

Recommender systems

* + - Categorical
    - Community
    - Collaborative filtering

## Alternative Existing Solutions to Your Problem

Bands in Town

## Technologies Researched

Java Spring Boot

Python Django

Flask

Cordova

Ionic

Angular

JQuery Mobile

## Other Relevant Research Done

## Resultant Findings and Requirements

## Bibliography

Your researched resources. Use Vancouver citation style.

# Approach and Methodology

Agile – Scrum approach, using Kanban board(trello)

What is your approach to this project? Are you using any particular software methodology? Eg. Are you delivering design/ code in phases, or are you completing all design up front, followed by all coding? Have you some sections lower priority if time runs short?

# Design

## Technical Architecture Diagram

Insert the architecture for your solution

## Other Design Documents

Insert other design artefacts that explain your system: e.g. Use cases/ ERDs/ Class diagrams

# Prototyping and Development

Explain exactly what prototyping and development you have completed.

# Testing

User based testing rolling out the application to friends and others I know in the music industry that will be able to help me test the application.

Explain your planned testing approach: For example: who will be involved, what test scripts are planned, how will the testing be executed.

# Issues and Risks

Explain the main issues / challenges that are unresolved on your project. – and your suggested approach to solving them. This is a critical part of your report to show that you understand what is required to complete the project.

# Plan and Future Work

What are the key deliverables and date for the remainder of the project? Include a GANTT chart or another means of illustrating your project plan.