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MUSIC RECOMMENDATION SYSTEM

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ABSTRACT

This application is built on Flutter framework which is an open-source framework developed by google. So, this app can run on Android, IOS and also on Web using the single code base.The main motivation behind developing this project is to provide a music recommendation application to the user that is able to find the music interest of the user and recommend that music to him which he likes to listen.This application has home screen, music player screen, favourite screen, navigation drawer and recommendation screen. The data of this application is stored on firebase which is a secure place to store data, storing data on server makes it flexible for user to just download and import it's all data into the app. This application also enables user to mark music as favourite. This application recommends music to the user by analysing the music that he has marked as favourite and also by analysing the type of music that user most often listen. This application recommends music also by analysing the type of artist of the music.

Keywords: Flutter, Dart, Firebase, ML Algorithms etc.

1. INTRODUCTION

Now a days lots of music applications are available in market which have a huge collection of all types of music and many music are adding to their collection day by day. Now with the increase in the list of available music a user has to spend its significant amount of time in searching out the music of its interest and if user has small collection of music then it will not be able to listen its favourite music. Here music recommender system comes in role. The music recommender system helps the particular user to search the best music from a large music collection that matches with the user's preference.

1.1 Recommendation Task: *This Objective of this project is to implement and build a recommendation engine that is capable of analysing the music preference of the user and recommends the music that user will be interested to listen.The main aim of this project is to provide a platform to the user where he can get the list of songs which are matched on his interest. This help the user to save a lot of time in searching for songs in any application like Android or iOS. Every user can create an account to listen a song in future.*

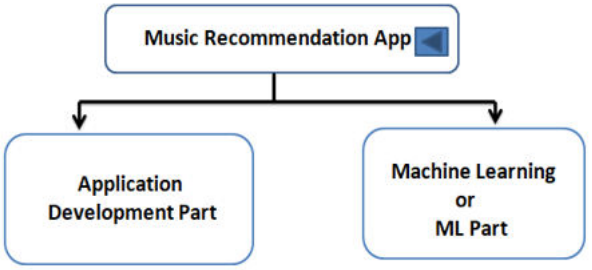
2. PROBLEM DEFINITION

The main goal is recommending best set of songs to the user any application like Android, iOS, Browser etc. For a specific user we had their song history, artist, tag and liked songs by the user to recommend song. The recommendation engine will work on the personalized recommendation that is it will help the individual user in selecting his favourite music.

As it not a straight forward task to find the relevance between various songs it might be possible that one song which looks similar to other may be completely different and users may dislike that song or may be that song is not of users' taste. There are lots of user around the world and lots of songs so making a relevance between songs and users is a tedious task.

3. SOLUTION APPROACH

The problem is solved by implementing a music recommendation application which analyses the music preferences of user and recommends music that he wish to listen.



These components of this application are as follows: -

3.1 Application Development Part- *Our app is developed in Flutter. Flutter is an open-source UI software development kit created by Google. It is used to develop cross platform applications for Android, iOS, Linux, Mac, Windows, Google Fuchsia, and the web from a single codebase.*

3.2 Machine Learning Part- *In this part we collect, pre-process and clean a data using Python libraries then we recommend a song using a ML Algorithm.*

- ***Data Gathering -****In the data gathering phase we will try to gather the best quality data of the various music because the data is the input for our project and our project will give its output by analysis the music data.*
- ***Data Cleaning -****Since the data we take for our project generally has many features about any music, but we will not always be interested in the all that features so we need to remove these extra features from the data table, and this may also happen that some cells this null value with a default value or we can remove this value from the table.*
- ***Input to algorithm -****In this phase we will have our data cleaned and ready to pass as input in the algorithm. So, in this phase we give data as input in the algorithms that are used in the recommendation engine algorithm.*

3.3 Technology and Tools used

These Technology are used in this application

- ***Flutter-*** *There are many frameworks available for developing mobile application like Android which provides native development using Java and Kotlin language, iOS provides native framework based on Swift language. But to develop an application supporting both platform we have to use Flutter framework. In this application we have used Flutter framework so our application can run on both Android and iOS using same codebase.*

Advantages: -

- *Modern and reactive framework*
- *Beautiful and fluid user interfaces.*
- *High performance application.*
- *Runs same UI for multiple platforms*

- ***Dart-*** *Dart is an open-source general purpose language which is developed by Google. Syntax style of Dart language is like C language. It is also an Object-Oriented Programming Language and supports programming features like classes, interface.*

- ***Android Studio-*** *Android Studio is the official integrated development environment (IDE) for Google's Android operating system, built on JetBrains' IntelliJ IDEA software and designed specifically for Android development. On May 7, 2019, Kotlin replaced Java as Google's preferred language for Android app development Java is still supported, as is C++.*

- ***Google Firebase-*** *Firebase is a google free cloud storage service, it enables developers to build application faster without worrying about data storage. It provides services to android, iOS, web, and unity. It uses NoSQL for the database for the storage of data.*

4. CHALLENGES

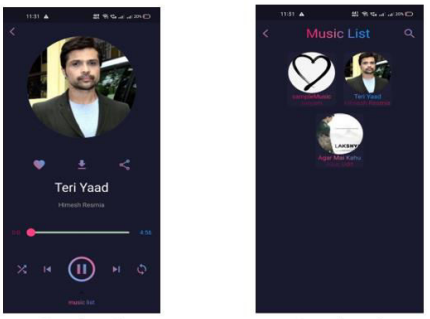
There are millions of music available in the world and also there are millions of music application users, so the scalability aspect is the main concern when choosing or designing a recommendation system.

Another data-related issue is concerning potential biases in the available data. There is avery long tail of musical tracks available on music platforms that have been barely listened to byanyone and many modern algorithms might mostly focus on the more popular item.

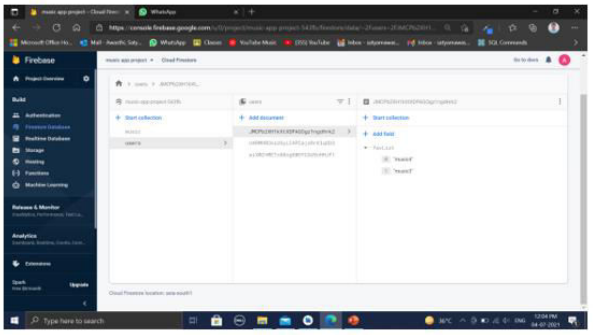
Overall, in many application domains of music recommendation hybrid techniques can be considered the method of choice. When creating a playlist for a virtually endless radio station, forexample, the application of collaborative filtering techniques can increase the probability that

therecommendations include tracks that are new to the user ("discovery"). Using content-based techniques in parallel can, at the same time, help to ensure that the tracks played in the future donot deviate too much from the seed tracks in terms of their musical features. A general challengein the context of such hybrid systems, however, is how to combine the different techniques in thebest possible way.

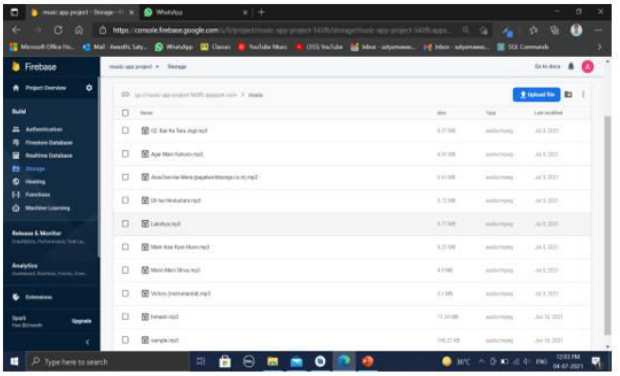
5. RESULT



Music Player Screen



User's Data on Firebase



Music's Data on Firebase

6. CONCLUSION

Through the development of music player on Flutter platform, we get a clear understanding of overall process of the system. The core part of the music player is mainly composed of main interface, file browsing and song listing, Grasping the development of the music player has had the preliminary scale small features.

This application is developed using Flutter framework and it recommends related music to the user according to their music preference.

7. FUTURE SCOPE

- *Voice Recognition can be added in the application to improve user's experience.*
- *User's location can be added for recommending regional music to user.*

8. ACKNOWLEDGEMENT

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