CS301 Software Engineering
Project

Feasibility Study Report
For
Music Recommendation System

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v1.0
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Scope

This Feasibility Study Report (FSR) verifies feasibility of our product, Music Recommendation System from the aspects of economic, technical and social feasibility. The report consists of the analysis of the problem which is being solved by the product. It also covers the limitation and constraints, the software faces. Then the document is proceeded by the economic feasibility of this product and a community survey, or a target customer evaluation to authenticate our assumptions.

1. Problem Analysis

Music recommendation, has become a common thing these days. It is very important for any person, even an average music listener to listen to only and only the music he/she likes. Not only this, the importance of the right music has been so much, that we have moved from the era of

music stores to the digital era of online stores, the audio system that could hardly play 20 tracks at a time has now transformed to our nice portable iPods, or cell phones. The iTunes store itself has approx. 18 million songs, amazon: 17 million songs. If this is the case how can we ignore the big problem or say the limitations of Music Recommendation Systems that we already have. So here are some of the many restrictions or drawbacks of them.

- The recommendations in these systems are based on collaborative filtering, which means that the user needs to use the service more often than normal in order for the service to work properly and recommend accurately.
- YouTube, Sound Cloud etc., provide users with recommendations, but only on the music they have in their store. Hence they are limited to themselves, and will not choose to search other databases for the user.
- A high internet bandwidth is what you require in order to avail these services.
- Also we should not forget the fact that, these are going to ask for subscription, and ultimately you have to pay.

And here are the things we'll do to overcome the above problems.

- We'll recommend the user from user's offline music collection. We are not limited to any database for giving the user suggestions.
- We are using content based filtering that doesn't require any user data for its working. Hence most of the problems of music recommendations that are based on the typical variety user problem is resolved.
- Since we fetch only metadata, we need low bandwidth internet connection and system can work properly with that not dissatisfying the user.

2. Limitations and Constraints

- Unavailability of User Data
  Obviously, using the user data also, for the calculations, will lead to further more limitations and constraints, one of the reason being we are not using this data, but user data, if related problems are resolved, can lead to better and accurate result. Since we don't have both time and resources, we can't have user data.

- Unavailability of other data
  Again, we could have used waveform analysis method also, but we don't have the training data to analyse the waveform and hence classify music on its basis. But one more point in consideration is that, this isn't an accurate method, and research is still going on it.

- Requirements
  Though it requires low bandwidth, but we can't ignore the fact that it requires internet in the first place! Without internet, it will behave as nothing but a simple player, and no

suggestions will be offered to the user. But this is only the case if the user is listening to that song for the first time, or in a long time, or has just cleared the cache. If the user would have already listened to that song earlier, the system local store must have some already cached suggestions which can be provided to the user at this particular time.

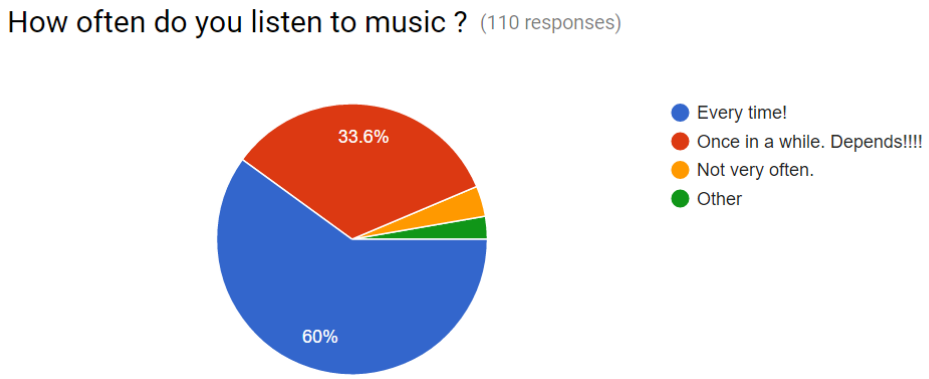
3. Economic Feasibility

This product has not been made from the business point of view, so, we don't intend to earn any monthly profit from the product. The idea for the project is to address today's music listener's problem and just produce a best possible solution for it.
Hence, this project is an open-source. The software will be available to everyone for free, anyone can use our work under mentioned license and improve on it. We also accept patches from anyone via GitHub and will merge them after reviewing. In this way, anyone can contribute to the development of this software.
Moreover, to design Music Recommendation Software, not much spending is needed as such. In addition, music recommendation is a basic need for public. The information that which functions are necessary from the perspective of all the consumers, which functions are not needed at all, and which features are seldom to use is easy to understand. And a lot of research is eliminated, thus this saved the spending. Therefore, the whole process of development doesn't require the need to spend any money.

4. The Survey & Conclusions

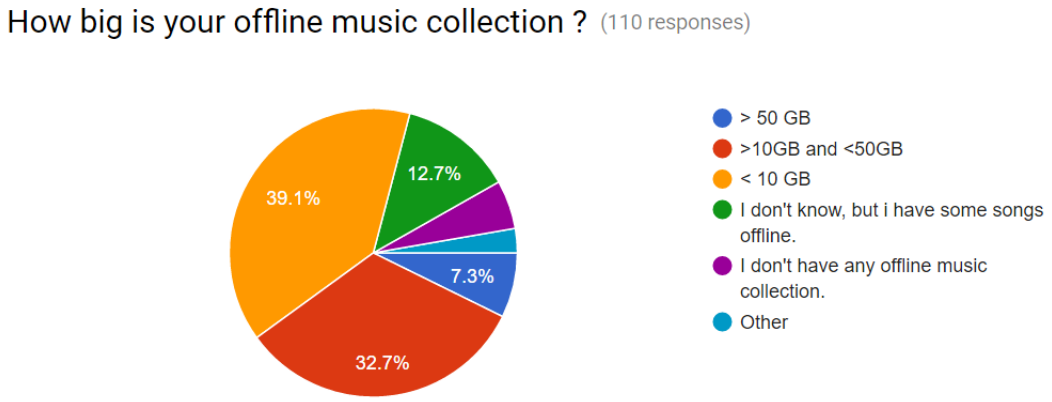
Survey size: 110
Survey class: People of different age groups, working in different sectors, such as educational, agricultural, political etc.
Questions in the survey are given below along with the responses, and the inferences.

1.



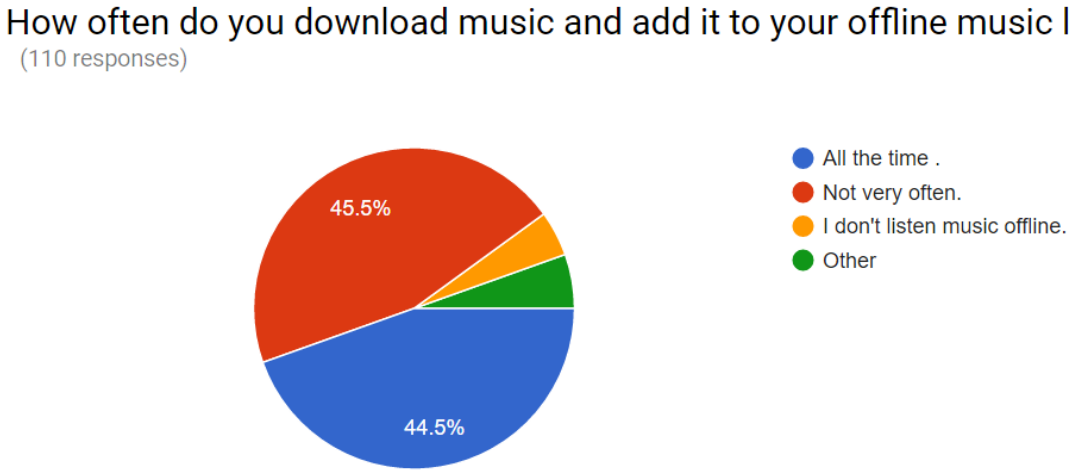
Inference:
The pie chart clearly shows, that 60% of the people like to listen to music every time, and 33.3% listens to it every once in a while, only a few don't listen to music very often.

2.



Inference:
The pie chart shows that most of the people have less than 10 GB of songs stored offline, rest of the time, they'll prefer online music. Very less people don't have any offline music at all, and also very less people have a large amount of music offline i.e., greater than 50 GB. So, it shows that generally people have considerable amount of music offline. This product can prove to be useful for these people.

3.

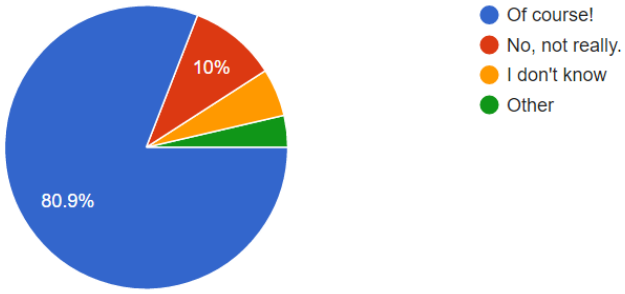


Inference:
Almost 45 % of the people say that, they download music all the time, which means that they must have a considerable amount of music offline. These users can certainly download songs at the very instant, a new song is suggested to them by the software. The same amount of people don't download music very often.

4.

Do you like to discover new music, like similar to what you have in your offline music collection.

(110 responses)



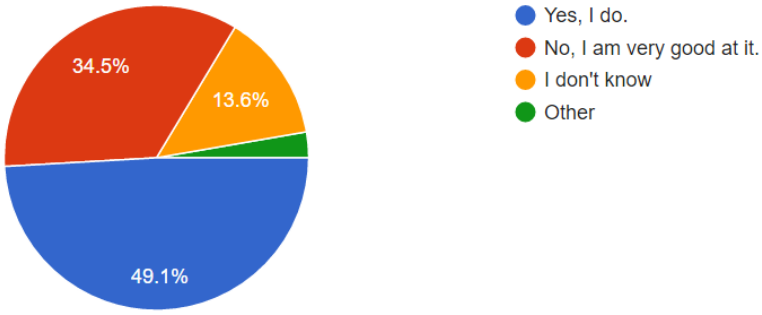
Inference:

The pie-chart clearly shows that a large majority of people will want something that can suggest new music similar to their taste.

5.

Do you find it difficult to search songs similar to your offline music library?

(110 responses)



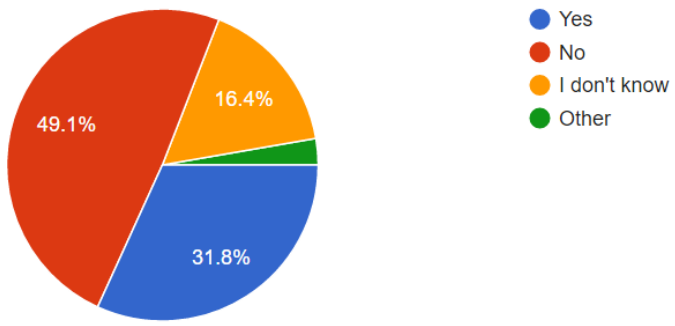
Inference:

The pie-chart shows that almost half of the people (49% app.), find it difficult to search the songs similar to the one they have in their offline music library. This suggests that they would like to get recommendations based on their music taste, automatically, and then accordingly download that particular kind of music.

6.

Does your offline music library have fully updated song metadata (like correct album art, singer, etc)?

(110 responses)



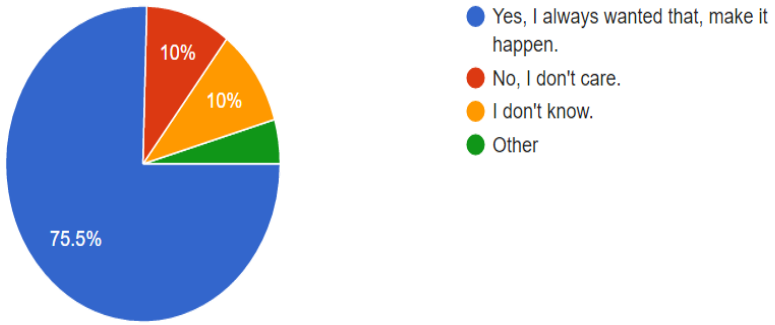
Inference:

The pie-chart shows that almost half of the people do not have a fully updated metadata (approx. 50%), which made us to attach an extra component to our software, known as the Metadata Updater.

7.

Would you like to use a music player that recommends similar songs from and outside of your music library?

(110 responses)



Inference:

Finally, here we ask people, if they want to use such a music player that recommends similar songs from and outside of their offline music library. Seeing the number of people (76%) who want this to happen, we concluded that our product is feasible for a majority.