Department of Information Technology
NBA Accredited

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A Project Report on

Music Player Recommendation System

Submitted in partial fulfilment of the degree of
Bachelor of Engineering(Sem-6)

INFORMATION TECHNOLOGY

By

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1.Project Conception and Initiation

1.1 Objectives

- To create a web based music player that allows users to listen to their music libraries.
- To create search options for the ease of access.
- To create a user friendly and attractive layout.

1.2 Literature Review

- Parmar Darsna proposed a song recommendation system for user to get particular item of his/her interest based on 2 popular algorithms, Content Based Filtering and Collaborative Based Filtering (IJERT, 2021).
- D. Bogdanov discussed a recommendation system in which the workflow of the implementation of the system can be divided into data gathering, audio analysis, music recommendation, and preference visualization (CBMI,2011).
- An effective cross-platform music player, EMP, which recommends music based on the real-time mood of the user is proposed by Shlok Gilda (WiSPNET, 2017) .

1.3 Problem Definition

- Music is of great benefit to us and we all enjoy listening songs. But the number of songs available exceeds the listening capacity of single individual so half of the time is wasted in searching the perfect song.
- Everyone’s taste in music is unique so we will be understanding user preference and behaviour and can help to propose a reasonable recommendation to a specific user.

1.4 Scope

- To be useful for people who want ad-free experience using search and sort options.
- To serve as a free platform for music lovers.
- To utilize resources in an efficient manner by increasing their productivity through recommendation.
- To Shorten the time between data collection and data analysis.

1.5 Technology stack

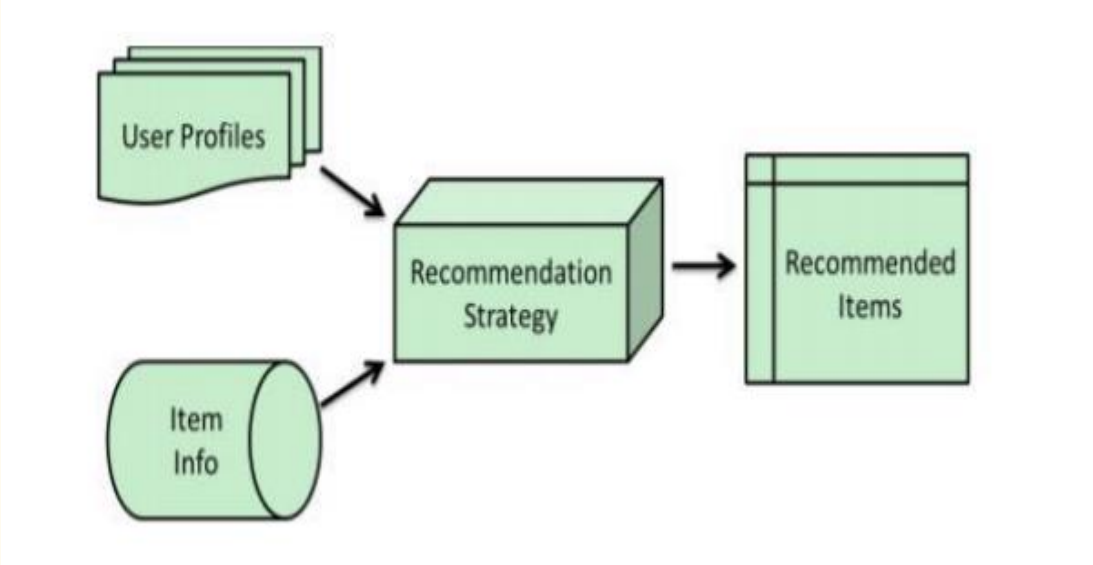
• HTML: We have chosen HTML to create the skeletal structure of our website as it is supported by all browsers.

•CSS3: CSS is being used to give the website a clean and attractive look.

•JavaScript: JS is optimal for giving the functionality.

•Python3: Python3 is used for the creation of recommendation engine.

2. Project Design



Recommendation Engine

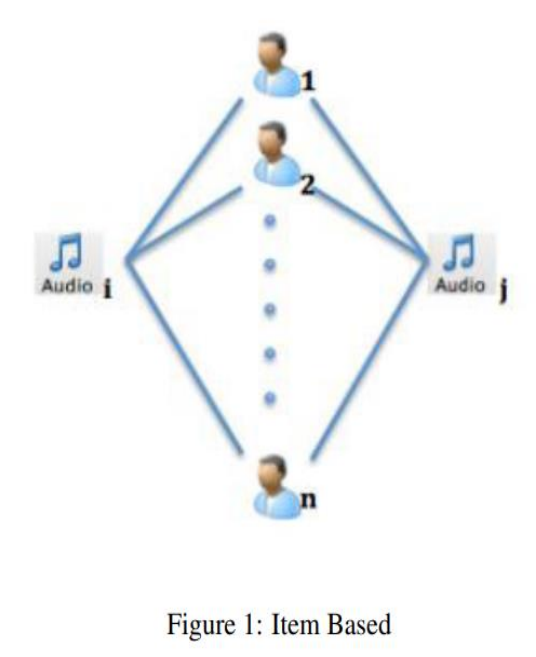


Figure 1: Item Based

	item1	item2	item3	item4	item5	item6
user1						
user2						
user3						
user4						

Cooccurrence Matrix

2.1 Proposed System

- Minimize manual data entry.
- Greater Efficiency.
- User friendly and interactive.
- Minimum time required.
- Ensure data accuracy.

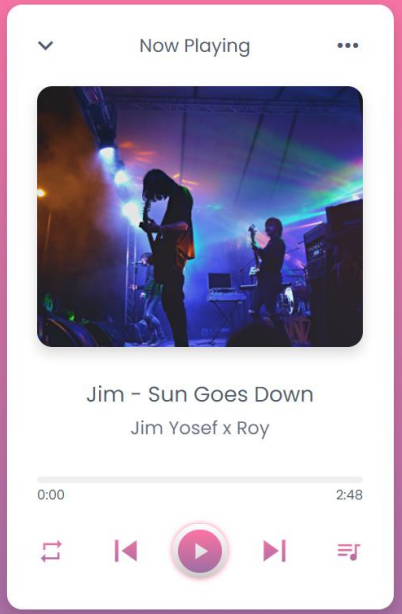
2.2 Design(Flow Of Modules)

- Recommender Module: Recommender module generates recommendation based on the user profile. It analyses the previous listening history and preferences of a user and provides a list of songs that user might prefer to listen.

- Web Application Module: Web application provides an intuitive user interface to the user and interacts with file server and recommendation module.

- Recommendation Engine Module: Recommendation engine module consists of the working logic/algorithms of the recommender.

3. Implementation



Front End (GUI)

In [14]:
```
# display the top 10 popular songs
pr.recommend(song_df['user_id'][5])
```

Out[14]:

	user_id	song	score	Rank
3660	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Sehr kosmisch - Harmonia	45	1.0
4678	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Undo - Björk	32	2.0
5105	b80344d063b5ccb3212f76538f3d9e43d87dca9e	You're The One - Dwight Yoakam	32	3.0
1071	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Dog Days Are Over (Radio Edit) - Florence + Th...	28	4.0
3655	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Secrets - OneRepublic	28	5.0
4378	b80344d063b5ccb3212f76538f3d9e43d87dca9e	The Scientist - Coldplay	27	6.0
4712	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Use Somebody - Kings Of Leon	27	7.0
3476	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Revelry - Kings Of Leon	26	8.0
1387	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Fireflies - Charttraxx Karaoke	24	9.0
1862	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Horn Concerto No. 4 in E flat K495: II. Romanc...	23	10.0

Popularity Based Recommendation

In [19]:
```
# give song recommendation for that user
ir.recommend(song_df['user_id'][5])
```

```
No. of unique songs for the user: 45
no. of unique songs in the training set: 5151
Non zero values in cooccurence_matrix :6844
```

Out[19]:

	user_id	song	score	rank
0	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Oliver James - Fleet Foxes	0.043076	1
1	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Quiet Houses - Fleet Foxes	0.043076	2
2	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Your Protector - Fleet Foxes	0.043076	3
3	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Tiger Mountain Peasant Song - Fleet Foxes	0.043076	4
4	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Sun It Rises - Fleet Foxes	0.043076	5
5	b80344d063b5ccb3212f76538f3d9e43d87dca9e	The End - Pearl Jam	0.037531	6
6	b80344d063b5ccb3212f76538f3d9e43d87dca9e	St. Elsewhere - Dave Grusin	0.037531	7
7	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Misled - Céline Dion	0.037531	8
8	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Oil And Water - Incubus	0.037531	9
9	b80344d063b5ccb3212f76538f3d9e43d87dca9e	Meadowlarks - Fleet Foxes	0.037531	10

Similarity Based Recommendation

5. Result

During the course of this project, we were able to make a music recommendation system using a hybrid approach of collaborative and content filtering using Popularity based and Item Similarity based recommendation system.

6. Conclusion and Future Scope

- In our project, we have tried to briefly describe the various type of recommendation techniques and its type. We also discuss the feedback techniques for recommender system.

- In the future, we will try to add a greater number of artists and languages which will make the recommendation stronger giving even better playlists for the users.

- For future applications, an emotional detector system that will recommend the songs by recognizing our facial emotion can be developed.

References

[1] Kathavate, Sheela. "Music Recommendation System using Content and Collaborative Filtering Methods." *International Journal of Engineering Research and Technology (IJERT)* 10.02 (2021): 167-171.

[2] Das, Debashis, Laxman Sahoo, and Sujoy Datta. "A survey on recommendation system." *International Journal of Computer Applications* 160.7 (2017).

[3] Garg, Shefali, and S. U. N. Fangyan. "Music Recommender System CS365: Artificial Intelligence." (2014): 1-6.

Thank You