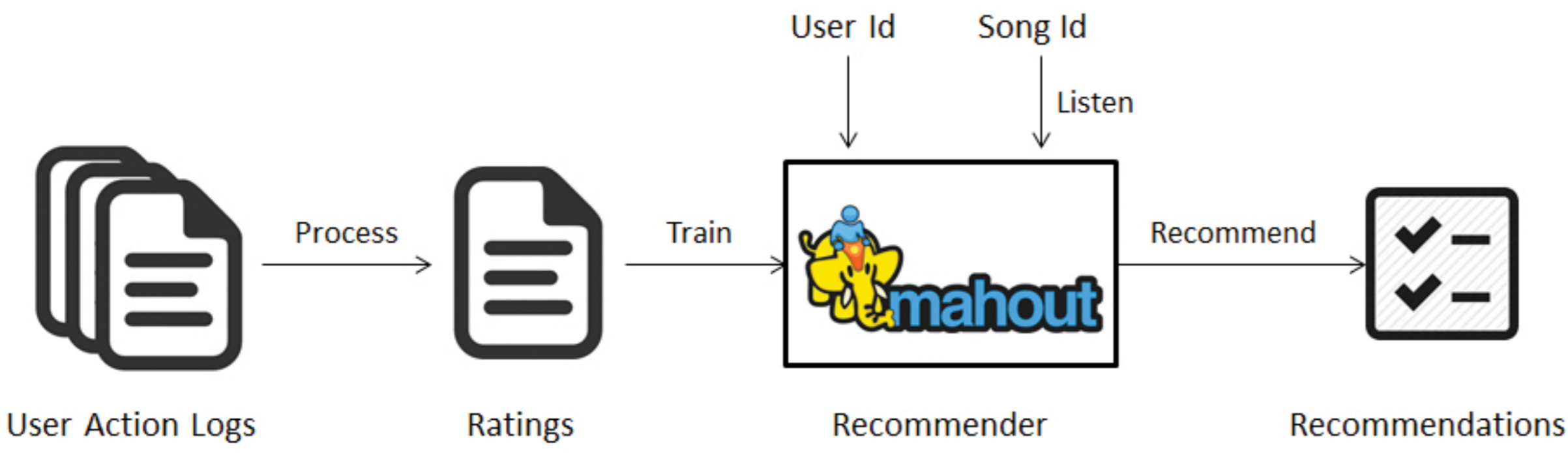


What is MusicMentor?

MusicMentor is a music recommender system, which provides users songs which they may like, based on the songs that they previously listened. Every logged in user will have access to the recommender system. The system will go through the songs that user previously listened, and then based on our mathematical model it will calculate the ratings to assign to these songs by checking the channel, history and the similar users' histories. MusicMentor is both beneficial for the user and the company. For users, they will spend less energy on discovering new items and for the company, they make the website more attractive, so they draw more users to the website.



MusicMentor Overview



How it works?

Basically, it gets the user action logs of a music application or website, process these logs to generate some rating data. Rating data is a list of 3-tuples consisting of (userid, songid, rating value). Each tuple means that if the user has a chance to rate on that song, he would probably give that much rating value to it. Then, the recommender is trained with the generated ratings and recommend songs to the users using training data.

What are the algorithms used?

Training is done offline. To speed up processing database is completely eliminated and the logs are directly processed from text files. Processing is done in three steps. First, all logs are concatenated. Then, they are externally sorted to make processing easier. Then, the mathematical model is applied to them to generate the rating values. After the generation of rating values, the recommender is trained with these rating values.

Recommendation is done on the fly. When a user request some recommendations, the similarity of other users with that user is calculated using Tanimoto Similarity function. Then, using K-Nearest Neighbours algorithm the top 3 similar users are selected and the songs that they've listened are sorted with respect to their rating values. Finally, top 5 songs are recommender to the user.

Song Id	Album Id	Artist Id
Sepet	Giderik 16	Demet Akalin
Dueller Ulesesim Gelgit Akillis	Dueller Ulesesim Gelgit Akillis	Irem Deniz
Ordu Kader Aqlarim	Sergi Arici	Yusuf Güney
Sen	Sen	Gülben Ergen
Akl Nereden Nereye	Yalnızlık Çaresini Bulmuşlar	Gripin

MusicMentor also has a recommend while listening to a song feature. If a given user is currently listening to a song, it is better to increase that songs weight on our recommendations. So, when a user is listening to a song, MusicMentor selects most similar user to the given user, among the top three users who gave the highest rating values to the given song. Then, the top 5 rated songs of that most similar user are recommended to the given user.

Evaluation

The evaluation of the recommendations is done by first randomly hiding some log data from the recommender. Then, the recommender is trained with the remaining logs. After that, the recommender recommends songs to all of the users and check that what proportion of these recommended songs actually exists in the hidden data using precision and recall formulas. Higher precision and recall values means that the recommendations are getting better.

The data that MusicMentor used to evaluate its recommendations is provided by Argedor. It contains a total of 223 log files, which have more than 47 million logs in total.

To evaluate MusicMentor, the logs of the last 13 days are used, which contain 5,225,092 logs, 144,292 users and 109,147 songs. 30% of these logs are randomly chosen and hidden for test data, and the remaining 70% of them are used as train data. The evaluation results are very promising. With a precision value of 32% and a recall value of 30%, MusicMentor is one of the great music recommender systems available.