



Music Recommendation Using Deep Learning A Study

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Abstract: To suggest a song for an individual user by his preferences. We have studied some deep learning model which will improve the recommendation accuracy over traditional methods like Collaborative Filtering(CF), Convolutional Neural Network(CNN), Recurrent Neural Network (RNN). In which CNN showed promising results and we have decided to use CNN for our personalized music recommender.

I. INTRODUCTION

There are millions of songs available but choosing the songs that you like is hard. It depends on your music taste, what you like might not like other people.

Having a list of songs specifically suggested for you is really a requirement, with modern technology and the internet era it is possible to create a personalized music recommendation system which will suggest songs that are most likely to be loved by you. Learning from users' favourite songs can lead to many effective music suggestions.

To compare and analyse the suggested songs with traditional methods.

To suggest a song for an individual user by his preferences. We have studied some deep learning model which will improve the recommendation accuracy over traditional methods like collaborative filtering.

II. LITERATURE REVIEW

The main focus of this study is to review different types of New Deep Learning Approach. Following are some methods used for music recommendation using Deep Learning

Authors: Brad Ross (bross35), Prasanna Ramakrishnan (pras1712)

For this project, Author use an unsupervised deep learning technique known as Adversarially Learned inference to find out a metric embedding on songs and compare that embedding to many baseline metric embeddings that don't consider deep learning, like PCA. In different words, Authors need to find out a function that generates a lower-dimensional representation of an input song while not making use of any labels for those songs. These lower-dimensional representations of songs create decisive song similarity trivial and therefore have applications to a large kind of music analysis and recommendation issues.

This project demonstrates that deep unsupervised model were able to find salient variations between songs far better than traditional embedding ways like PCA. though this experiments were able to demonstrate that the ALI embedding will distinguish between high-level music designs and genres, it's still unclear specifically that attributes of songs the ALI model uses to work out its embeddings. With longer, authors would conduct experiments to check whether or not the ALI embeddings separate songs by different salient attributes like tempo and key.

Authors: Amala George , Silpa Suneesh , S. Sreelakshmi , Tessa Elizabeth Paul

In this paper, Authors present an efficient music recommendation system, which recommends music based on the present mood of the user. It primarily focuses on Convolutional Neural Network (CNN) model that relies on MobileNet design that classifies seven completely different human facial emotions. this method consists of 3 modules: emotion Module, Music

Classification Module and Recommendation Module. The feeling Module takes a picture of the user's face as associate input and makes use of CNN to spot their gift mood. The Music

Classification Module makes use of audio options to attain a noteworthy results of ninety eight whereas classifying songs into four completely different mood categories. the advice Module recommends music to the user by distinctive their emotions to the mood kind of the song, taking into thought the preferences of the user. Their model is trained, tested associated valid victimisation the manually collected image dataset with an accuracy of ninety eight.

Authors: Caroline Langensiepen, Adam Cripps, Richard Cant

A collaborative filtering method using two different models (K methods and consecutive combinations) is used to separate playlists data into comparison clusters. After the data has been combined, using the Euclidean distance estimate between songs in the collection and average values of songs in the file playlist for single users to make final predictions.

Use of familiarity and PCA enabled K and sequence methods assembly models to form well collections. When tested on a small sample of users, the system recommended songs that are considered popular with users 60 percent of the time, while still found songs that used to be different.

Authors: Shun-Hao Changa, Ashu Abdula, Jenhui Chena,b,c,*, Hua-Yuan Liaoa

In this paper, a personalized music recommendation system (PMRS) based on convolutional neural network (CNN) method is used. CNN's method separates music based on audio signal beats of the music into different genres. In PMRS, it has proposed a collaborative filtering (CF) recommendation algorithm to integrate output of the CNN with the log files to recommend music to the user. Log file contains the history of all users who use PMRS. PMRS extracts user history from the log file and recommends music under each genre.

Structural and sequence features introduced in audio signals can be the reason for the diversity of music recommendations. The use of the other DNN methods such as GRU and LSTM to create a music class with respect to CNN method can be considered to increase the accuracy of the user's music preference prediction.

Authors: W. Wu, F. Han, G. Song and Z. Wang

The deep neural network learns automatically features improved layer by layer, which makes it very good results in many areas. The music signal is in sequence as well Recurrent Neural Network (RNN) is widely used by successive data. Among the different units of the RNN, Independent The Recurrent Neural Network (IndRNN) can learn for a long time better relationships than popular units like Long-Short Time Memory (LSTM) and Gated Recurrent Unit (GRU). In addition, IndRNN has better calculation capability. As a result, the multi-layered IndRNN is used as the main component of this model of classifying music genres in the GTZAN database.

Test results show good performance during separation accuracy and training time. Compared to state-of-the art models, these test results are highly competitive. So, how to integrate spread transform and IndRNN can do it well Classification of genre in GTZAN database.

Authors: K. Zhang, Z. Zhang, K. Bian, J. Xu and J. Gao

In this paper, a customized complimentary program for the next song that collectively looks for long-term and short term interests in its composition. To show long-term favorites, it has split the user network in communities depending on the same internet activity; and are currently introducing such a network of communities with the Markov chain to make a series of recommendations that are better prepared for short-term preferences as well.

We see a novel approach based on an underlying high-order Markov chain, where the change for each user community is different and the parameters modeling interesting-forgetting property are user-specific. performed experimental tests on a real data set, and the results show that this approach exceeds existing algorithm in terms of the accuracy of predicting the long- and short-term preferences.

Authors: H. Tian, H. Cai, J. Wen, S. Li and Y. Li

Collaborative filtering does not manage data sparse issues when new items are introduced. To solve this problem, some people use the logistic way to go back as a user music prediction divider favorites to recommend songs. The deflection of goods is a line model that does not have complex non-linear data features. This paper suggests a hybrid LX compliment algorithm by combining asset disposal with eXtreme Gradient Promotion (xgboost).

Comparing the overall performance of different models in the test set, and found that this LX model has excellent results, proving that our approach is powerful working in the field of music recommendations. This article only reads details of user behavior again does not include user network details

Authors: Rosilde Tatiana Irene, Clara Borrelli, Massimiliano Zanoni, Michele Buccoli, Augusto Sarti

In this study authors propose an automatic playlist generation approach which analyses hand-crafted playlists, understands their structure and evolution and generates new playlists accordingly. We adopt Recurrent Neural Network (RNN) for the sequence modelling. Moreover, since the representation model adopted to describe each song is determinant and is also connected to the human perception, taking advantages of Convolutions.

II. CONCLUSION

There are a lot of ways to recommend the music like usage history, genre and artist based recommendation, and Machine learning based like

Collaborative Filtering(CF), Convolutional Neural Network(CNN), Recurrent Neural Network (RNN).

In which CNN showed promising results and we have decided to use CNN for our personalized music recommender.

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