

A Music Recommendation System Using Collaborative Based Filtering Technique In Data Mining Approach

Rutuja Borkar¹, Jeevika Huske², Yash Chakole³, Mohnish Barve⁴

¹Mrs. Rasika Rewatkar

Department Of Information Technology

Kavikulguru Institute Of Technology & Science

Ramtek – 441 106

Abstract - In this project, the prospect of design, implemented and analyzed song recommendation system. The scope of this project to Make a system in that using face recognition songs are recommend. On the basis of face expression the user justify their mood and then recommend the song. Users used Million Songs in Dataset. In this system Kaggle dataset is used. For the correlations between users and songs various dataset used. This system learns previous listening history of users to provide recommendations for songs which users would prefer to listen most and also learn their emotions. Collaborative filtering is the technology that is used for the relationships between users and between items to make a prediction.

Key Words: Recommendation systems, Music, Million Song Dataset, Collaborative filtering, content-based, Face Expressions, Emotions.

1. INTRODUCTION

Different recommendations primarily need to work for the satisfaction the users. Content-based music recommendation is provided. Identifying user grievances thereby resolving them leads to customer satisfaction as well as trustworthiness. For emotion representation, emotion can be considered as a set of continuous quantities and mapped into a set of real numbers. The today's world many people are busy and suffering a lot in their life so to overcome that problem for at least sometime and the best solution is listening to the music. Emotion detection and recognition in music is very useful. Emotion terms were described as silent and excited . Other emotions such as nervous and excited aren't considered in this system. So we decided to project on a music recommendation system so that users can listen a song based on their interests , can get the recommendation based on their mood songs can be recommended. Categories of moods for the face emotions are happiness, anger, sadness and fear.

2. OBJECTIVES

- Analyze machine learning approaches used for time series prediction and present possible solutions for user activity prediction task.
- Experimentally evaluate these approaches on real-world dataset. Determine model settings that bring the most accurate results.
- Analyze the usability of selected solutions in real-world recommender systems. If needed, propose changes to make such solutions more suitable.

3. RELATED WORK

Face Detection and Facial Expression Recognition System

Anagha S. Dhavalikar et al [1] proposed Automatic Facial Expression recognition system. In This system there are three phase 1.Face detection 2. Feature Extraction and 3.Expression recognition. The First Phase Face Detection are done by RGB Color model, lighting compensation for getting face and morphological operations for retaining required face i.e eyes and mouth of the face. This System is also used AAM i.e Active Appearance Model Method for facial feature extraction In this method the point on the face like eye, eyebrows and mouth are located and it create a data file which gives information about model points detected and detect the face the an expression are given as input AAM Model changes according to expression.

Emotional Recognition from Facial Expression Analysis using Bezier Curve Fitting

Yong-Hwan Lee, Woori Han and Youngseop Kim proposed system based on Bezier curve fitting [2]. This system used two step for facial expression and emotion first one is detection and analysis of facial area from input original image and next phase is verification of facial emotion of characteristics feature in the region of interest [1]. The first phase for face detection it uses color still image based on skin color pixel by initialized spatial filtering ,based on result of lighting compassion then to estimate face position and facial location of eye and mouth it used feature map After extracting region of interest this system extract points of the feature map to apply Bezier curve on eye and mouth The for understanding of emotion this system uses training and measuring the difference of Hausdorff distance

With Bezier curve between entered face image and image from database.

Using Animated Mood Pictures in Music Recommendation

Arto Lehtiniemi and Jukka Holm et al [3] proposed system on animated mood picture in music recommendation. On this system the user interact with a collection of images to receive music recommendation with respect to genre of picture. This music recommendation system is developed by Nokia researched center. This system uses textual meta tags for describing the genre and audio signal processing .

Human-computer interaction using emotion recognition from facial expression

F. Abdat, C. Maaoui et al and A. Pruski et al. They proposed an system fully automatic facial expression and recognition system based on three step face detection, facial characteristics extraction and facial expression classification [4]. This system proposed anthropometric model to detect the face feature point combined to shi and Thomasi method. In this method the variation of 21 distances which describe the facial feature from neutral face and the classification base on SVM (Support Vector Machine).

Emotion-based Music Recommendation By Association Discovery from Film Music

Fang-Fei Kuo et al and Suh-Yin Lee et al.[5] With the growth of digital music, the development of music recommendation is helpful for users. The existing recommendation approaches are based on the users' preference on music. However, sometimes, recommending music according to the emotion is needed. In this paper, we propose a novel model for emotion-based music recommendation, which is based on the association discovery from film music. We investigated the music feature extraction and modified the affinity graph for association discovery between emotions and music features. Experimental result shows that the proposed approach achieves 85% accuracy in average.

Mood play: Interactive Mood-based Music Discovery and Recommendation

Ivana Andjelkovic et al and John O'Donovan et al [6]they proposed that a large body of research in recommender systems focuses on optimizing prediction and ranking. However, recent work has highlighted the importance of other aspects of the recommendations, including transparency, control, and user experience in general. Building on these aspects, we introduce Mood Play, a hybrid recommender system music which integrates content and mood-based filtering in an interactive interface. We show how Mood Play allows the user to explore a music collection by latent affective dimensions, and we explain how to integrate user input at recommendation time with predictions based on a pre-existing user profile. Results of a user study (N=240) are discussed, with four conditions being evaluated with varying degrees of visualization, interaction, and control.

An Accurate Algorithm for Generating a Music Playlist based on Facial Expressions

Anukriti Dureha et al [7]. In this he proposed Manual segregation of a playlist and annotation of songs, in accordance with the current emotional state of a user, is labor intensive and time consuming. Numerous algorithms have been proposed to automate this process. However the existing algorithms are slow, increase the overall cost of the system by using additional hardware (e.g. EEG systems and sensors) and have less accuracy. This paper presents an algorithm that automates the process of generating an audio playlist, based on the facial expressions of a user, for rendering salvage of time and labor, invested in performing the process manually. The algorithm proposed in this paper aspires to reduce the overall computational time and the cost of the designed system. It also aims at increasing the accuracy of the designed system. The facial expression recognition module of the proposed algorithm is validated by testing the system against user dependent and user independent dataset.

Enhancing Music Recommender Systems with Personality Information and Emotional States

Bruce Ferwerda et al and Markus Schedl et[8] al proposed that the initial research assumptions to improve music recommendations by including personality and emotional states. By including these psychological factors, we believe that the accuracy of the recommendation can be enhanced. The system gives attention to how people use music to regulate their emotional states, and how this regulation is related to their personality.

3. CONCLUSIONS

Music recommendation system should consider the music information to increase the quality of music recommendations. we will try to add a greater number of languages which will make the recommendation even better playlists for the users. When there are millions of songs out the users their preference of songs which they want to listen. The songs by recognizing our facial emotion can be developed.

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REFERENCES

1. Malte Ludewig, Iman Kamehkhosh, Nick Landia, Dietmar Jannach. Effective Nearest-Neighbor Music Recommendations. Proceedings of the ACM Recommender Systems Challenge 2018
2. Schedl M, Zamani H, Chen CW, Deldjoo Y, Elahi M. Current challenges and visions in music recommender systems research. *Int J Multi Inform Ret.* (2018)
3. Dorfer M, Henkel F, Widmer G. Learning to listen, read, and follow: score following as a reinforcement learning game. In: *Proceedings of the 19th International Society for Music Information Retrieval Conference (ISMIR 2018)*, Paris (2018)
4. Keita Nakamura, Takako Fujisawa. Music recommendation system using lyric network, Journal of 2017 IEEE 6th Global Conference on Consumer Electronics (GCCE), 2017.
5. Libo Zhang, Tiejian Luo, Fei Zhang and Yanjun Wu. A Recommendation Model Based on Deep Neural Network. Journal of Chinese Academy of Sciences, Beijing, 2017.
6. D. Arditi, Digital Subscriptions: The Unending Consumption of Music in the Digital Era, Popular Music and Society (2017).
7. Everyone listens to music, but how we listen is changing. [online] Available at: <http://www.nielsen.com/us/en/insights/news/2015/everyone-listens-to-music-but-how-we-listen-is-changing.html> [Accessed 10 Oct. 2017].
8. Choi K, Fazekas G, Sandler M. Automatic Tagging using Deep Convolutional Neural Network. arXiv eprints arXiv:1606.00298. 2016.