



A Review on Song Recommendation Approaches

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Abstract: In recent years, recommendation systems have been used to make people's lives easier with product recommendations used by Amazon/Flipkart, movie recommendation used by Netflix/Amazon Prime. The idea of our project is to integrate the recommendation system with user emotion detection in a seamless way. The user's emotion will be captured through live feed and his/her emotion will be predicted by a trained model, based on the predicted emotion, the user will be given a playlist containing songs based on the emotion.

Key words: Emotion Detection, Deep Learning, Web Development, Recommendation System

I. INTRODUCTION

Recommendation systems have been around for a while and they are often used in popular social media sites like Netflix and Spotify using different algorithms, this project aims at making this recommendation system but adding an extra step of using the user's emotions/mood to recommend the songs in real time. Recommendation systems are incredibly useful for a variety of industries and can be used to automate complicated tasks which need to be performed. Apart from the recommendation system, mood detection or detection of any kind can be useful to measure a person's mood/emotion or any other variable. Emotion detection can be utilized in various industries where a person's emotions have to be taken into consideration before making any decision.

The real time image of the user would help the model to accurately predict the user's emotion/mood. Based on the predicted emotion, a list of songs would be recommended to the user and he/she can choose to play any song from that list. This is done so that finding a song based on one's feelings would be easier, sometimes we are not able to express which emotion we are going through but the real time image capture would capture the user's face and focus on focal points on the face which will help predict the emotion. This application can also be used when one is going through a tough time and just wants to listen to some music.

II. LITERATURE REVIEW

S.No	Name	Year	Author	Review
1	Song level features and SVM for music classification[1]	2006	Mandel, Michael I.; Ellis, Daniel P. W.	This paper describes a system, tested on the task of artist identification, that uses support vector machines to classify songs based on features calculated over their entire lengths.
2	Music Emotion Classification and context-based music recommendation[2]	2010	Byeong-jun Han, Sanghoon Jun, Eenjun Hwang, Seungmin Rho	This paper focuses on three different ways in which the idea of context awareness is incorporated in the recommendation systems. SVM is used as an emotional state transition classifier.
3	Audio based music classification with pre-trained convolutional network[3]	2011	Sander Dieleman, Philemon Brakel, Benjamin Schrauwen	A convolutional network is built that is then trained to perform artist recognition, genre recognition and key detection. The network is tailored to summarize the input features over musically significant timescales.



4	Music Recommendation System based on user's sentiments extracted from social networks[4]	2015	Renata L. Rosa, Graça Bressan, Demstenaso Z. Rodriguez	This paper presents a music recommendation system based on a sentiment intensity metric (eSM) that is the association of a lexicon-based sentiment metric with a correction factor based on the user's social media profiles.
5	Emotion Recognition using Facial expressions[5]	2017	Pawel Tarnowski, Marcin Kolodziej, Andrzej Majkowski, Remigiusz Rak	The results of recognition of seven emotional states (neutral, joy, sadness, surprise, anger, fear, disgust) based on facial expressions is mentioned. The classification of features performed using k- means expressions play an important role in recognition of emotions.
6	Emotion Detection and Categorization using Facial Features[6]	2018	Charvi Jain, Kshiti Sawant, Mohammed Rehman, Rajesh Kumar	This paper aims to detect faces from any given image, extract facial features (eyes and lips) and classify them into 6 emotions (happy, fear, anger, disgust, neutral, sadness). The training data is passed through a series of filters and processes and is eventually characterized through a Support Vector Machine(SVM), refined using Grid Search
7	A novel music recommendation system using deep learning[7]	2019	Ferdos Fessahaye, Luis Perez, Tiffany Zhan, Raymond, Robyn Markarian, Carter Chiu, Justin Zhan, Laxmi Gewali, Paul Oh	This paper focuses on an approach to improving music recommendation systems. The algorithm, Tunes Recommendation System (T-RECSYS), uses a hybrid of content-based and collaborative filtering as input to a deep learning classification model.
8	An emotional Recommender system for music[8]	2020	Vincenzo Moscato, Antonio Picariello, Giancarlo Sperl	This paper focuses on a user's personality traits, moods and emotions to make a novel music recommendation system. The user's personality and emotion has been embedded within a context-based filtering approach.

III. PROPOSED METHODOLOGY

Our work will be divided into two major modules with submodules within it, the first step is to capture the user's face and then predict the user's emotion in real time. Once the emotion is predicted, a playlist containing songs classified on the basis of emotions - happy, sad, neutral and angry will be displayed to the user on a web application from where the user can play the songs in order or shuffle it.

For frontend we will be using Reactjs, a javascript library used for seamless user experience. Machine learning and deep learning concepts like CNN and SVM will be used for emotion detection and music classification respectively.

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