Music Recommendations using Face Emotions

Nikhil Chaurasiya   20BAI10106
Shrey Agrawal   20BAI10084
Anjali Maheshwari   20BAI10198

Guided by: Dr. J. Manikandan

ABSTRACT

Songs, as a medium of expression, have always been a popular choice to depict and understand human emotions. Reliable emotion based classification systems can go a long way in helping us parse their meaning. In this paper, we present an affective cross-platform music player, EMP, which recommends music based on the real-time mood of the user. The proposed system detects the emotions, if the subject has a negative emotion then specific playlist will be presented that contains the most suitable types of music that will improve his mood. On the other hand, if the emotion is positive, a suitable playlist will be provided which includes different types of music that will enhance the positive emotion.

INTRODUCTION

In this modern era people have been much aware of what they listen to. And they also tend to listen to music to be similar to what they have listened to previously. This makes people look for new music every day and thus recommendation systems come in handy. Recommendation systems generally try to find a pattern in people's listening habits.

Nowadays, emotion detection is considered as one of the most important techniques that are used in many applications such as smart card application, surveillance, image database investigation, criminal, video indexing, civilian applications, security and adaptive human-computer interface with multimedia environments

The main objective of this paper is to implement a system that is able to detect user emotions, which can be happy, sad, natural or surprised. Then after the emotion is determined the proposed system will provide the user with a music playlist that contains music clips of certain music types which improve the user's mood. For example, if the user expression is classified as happy then the most suitable playlist will be enabled which is the classical music playlist to choose from various music clips.

MODULES AND METHODS

We present how the system recommends music and learns users' preferences. We here define the "Reference Feature" which represents how closely the Reference Words are related with how users may feel individually by listening to music. A different Reference Feature is assigned separately for every Reference Word and has initial values that we empirically defined to be probably suitable for a wide range of people. The first step of recommendation is to pick up some pieces of music and show them on the screen when users will select any of the Reference Words.

Here we use different Features of songs to get the genres and map them in dictionary with different categories like: happy, sad, natural or surprised.

The second step is to have camera set/ or through our dataset images and get the facial recognition and then get the expressions and emotions of the user.

The last step is to map the emotions with the different categories/ types of songs we have generated from our data.

RESULTS

During the testing phase, we took five photos to test the proposed system and each single image for the four emotions: happy, natural, surprised, sad. we found that most of the time the proposed system detects the emotions correctly. There are further observations we would like to highlight, we noticed that the happy face without showing the teeth may be classified as neutral, likewise, surprised face when the teeth appears may classified as happy, and when the teeth don't appear sometimes it's classified as sad because of the shape of the mouth and that may justify the cases that their detection was not accurate. The testing images are real-time images which affected the accuracy. The accuracy results in table1 depends on the training dataset, so if we increase the size of the training set the accuracy will be improved.
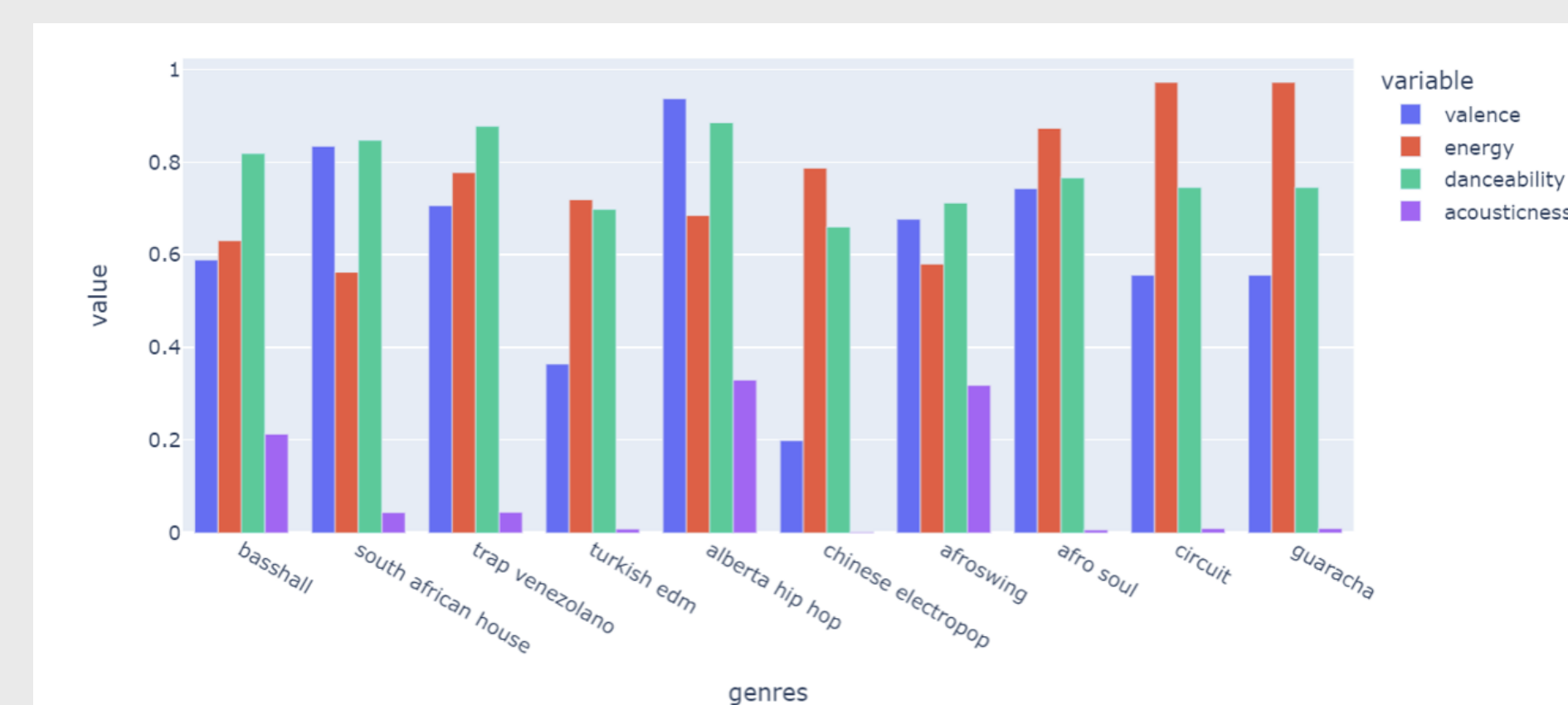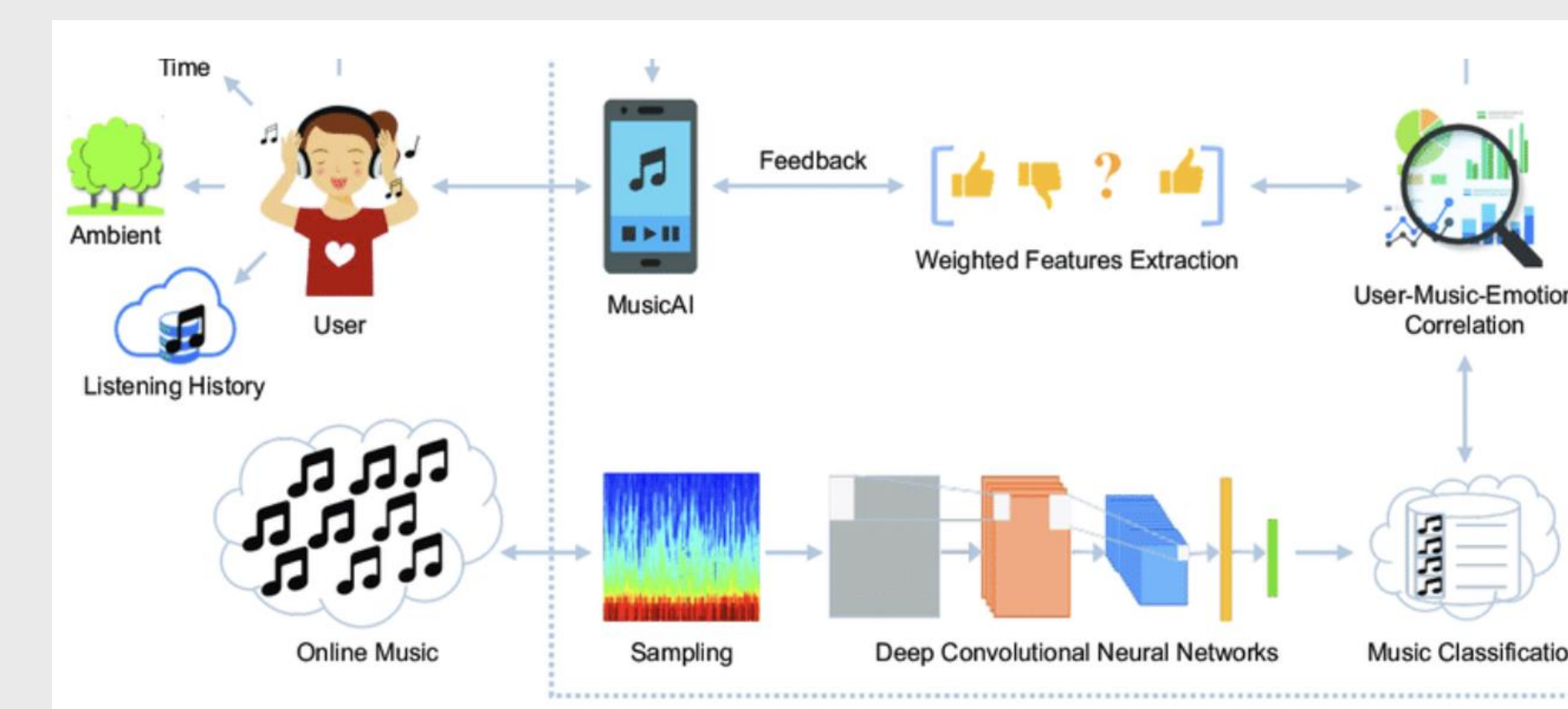
DISCUSSION

Using the K-Means clustering technique, we will aim to locate comparable users based on context, and among those users, we will use the PLSA technique to determine the most frequent or most listened songs based on content. The songs that users listen to will be categorized proportionally, and the set of songs that other users listen to the most will be recommended to the current user. In the proposed work, we were able to successfully implement a system that utilizes the required algorithm with the help of PCA to detect the emotion that are depicted in the acquired image to suggest depending on that the most suitable playlist will be recommended through which we aim to improve the user's mode. Figure 7 and 8 shows a screenshot of the proposed system and how the system provides the appropriate list based on the detected mode.

CONCLUSIONS

We provide an overview about how the music can affect the user's mood and how choosing the right music tracks improve the user moods. Also, we showed the emotion detection techniques.
The implemented system were able to detect the user emotions. The emotions that the system can detect were happy, sad, natural or surprised. After determining the user's emotion, the proposed system provided the user with playlist that contains music matches that detected the mood.

REFERENCES

- https://www.analyticsvidhya.com/blog/2020/11/create-your-own-movie-movie-recommendation-system/
- https://ieeexplore.ieee.org/document/9596276
- https://ieeexplore.ieee.org/document/1429796
- https://ieeexplore.ieee.org/document/8299738
- https://drive.google.com/drive/folders/12qgEq6aFonSTNUgpW_GjhMVcX6VsaEpr?usp=sharing