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Mining Social Emotions from Affective Music

Meenu[#1], Shaveta[*2]
[1]*Assistant Professor, CT institute of management and IT, Punjab, India.*
[2]*Assistant Professor, Lovely professional university, Punjab, India.*

***Abstract*—This paper is concerned with the problem of mining social emotions from music. The more and more development of music is assigned by social emotions like beat, jazz etc. Such emotions can provide us new aspect of music categorization and also help online users to select music based on sum features like melody, rhythm etc. in this paper we aim to discover the connections between emotions and affective features and based on which predict the emotions from music automatically.**

***Keywords*-**Clustering, Classification, decision tree, k-mean

I. INTRODUCTION

With the growth of digital music technology it is essential to develop system which can mine emotions from music and categorize it accordingly. The user generated social emotions provide a new aspect for music categorization and it is also help online user to select music based on the emotional preference. There is a content based filtering approach which analyze the content of music that user liked in past and recommend music to them. The other is the collaborating filtering approach which recommends music that peer group of similar preference liked. [1]

Musical databases are easily accessible over computer networks through internet. It is basic need to organize such database in better manner because music is a multifaceted, multi-dimensional medium, it demands specialized representations, abstractions and processing techniques for effective search that are fundamentally different from those used for other retrieval tasks. [2]

In this research paper we will develop a system which aim to discover connection between different features like melody, rhythm etc and evaluate social emotions. We will make a data set which contains different discrete values of features of particular audio. To get the discrete values we use music tools like audacity. The system will make clusters and do classification by mining discrete values from data set. We will make that this system also applicable for online audio.

II. RELATED WORK

This section reviews some of the related work on affective music mining. There is a large body of previous work on mining affective features from music e.g., music recommendation according to emotions, Indian music genre of songs is a difficult task. The performance of various features extracted from the audio signal in terms of the separability of the five classes of Indian music using Gaussian mixture model and knearest neighbour classifier. [3]

The most related direction to our work is emotion prediction and classification. On the collaboration filtering approach there is a music recommendation system called ringo. [4]. The music recommendation system ringo predict the preference of new music for the user by computing weighted average of all rating given by peer group to similar preference. There is another music recommendation system MRS which provide music recommendation based on music grouping and user interest. In this system two approaches are follow which are content and collaboration filtering approach. [5]

There is another recommendation model from film music, for music plays an important role in conveying emotions in films. The model consists of feature extraction, emotion detection and association discovery. The feature extraction approaches to extract chord, rhythm and tempo, and modified the affinity graph approach to discover the associations between emotions and music features. [1]

III. THE PROPOSED MODEL

There is a joint emotion topic model by augmenting latent Dirichlet allocation with an intermediate layer for emotion modeling.

Music elements which affect the emotion include melody, rhythm, tempo, mode, key, harmony, dynamics and tone-color. Among these music elements, melody, mode, tempo and rhythm have stronger effects on emotions.

In this research we will develop a system which aim to discover connection between different features like melody, rhythm etc and evaluate social emotions. We will make a data set which contains different discrete values of features of particular audio. To get the discrete values we used music tools like audacity. The system will make clusters and do classification by mining discrete values from data set. We will make that this system also applicable for online audio.

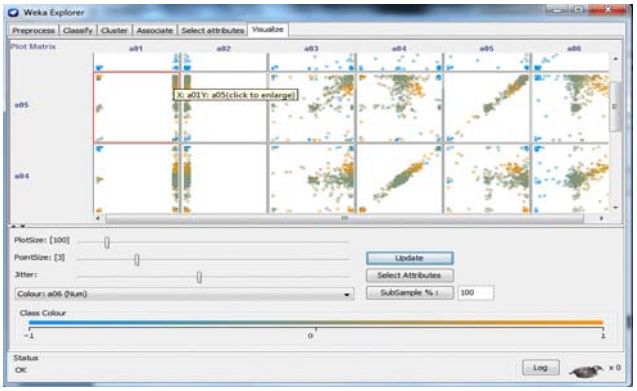

Figure1. The graphical distribution of the data in the data set

IV. PROPOSED METHODOLOGY

The model which we have proposed will make the clusters and then classified music by mining discrete values of affective emotions. For clustering we will use k-Means clustering method and for classification we will use decision tree algorithm.

Clustering involves dividing a set of data points into non-overlapping groups, or clusters, of points, where points in a cluster are "more similar" to one another than two points in other clusters. The term "more similar," when applied to clustered points, usually means closer by some measure of proximity. When a dataset is clustered, every point is assigned to some cluster, and every cluster can be characterized by a single reference point, usually an average of the points in the cluster. Any particular division of all points in a dataset into clusters is called a partitioning. [6].

The k-mean algorithm takes the input parameter, k, and partitions a set of n objects into k clusters so that the resulting intracluster similarity is high but the inter cluster similarity is low. Cluster similarity is measured in regard to the mean value of the objects in the cluster, which can be viewed as the cluster's centroid or center of gravity.

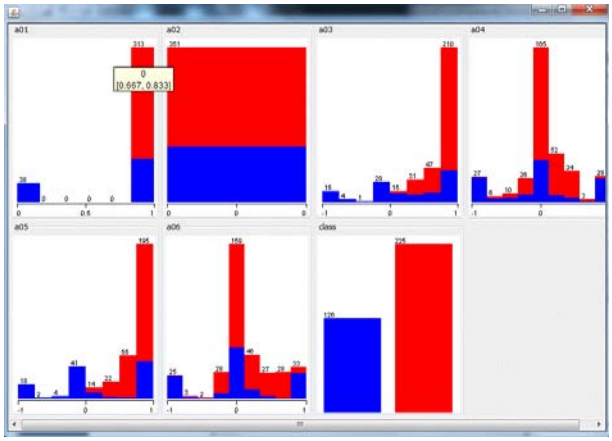

Figure2. Graphical representation of the clustering

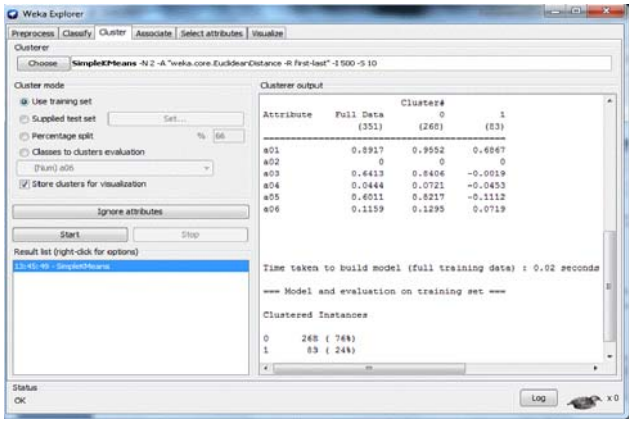

Figure 3. The result of the clustering

The decision tree is a flow chart like tree structure, where each internal node denotes the test on the attribute, each branch represent on outcome of the test and each leaf node holds a class label. The top most node in the tree is the root node.

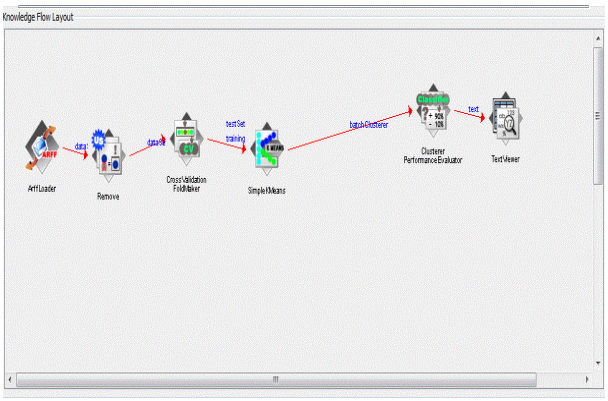

Figure 4. Over all view

V. CONCLUSION

In this paper, we present and analyze a new problem called social affective music mining, which aim to discover and model the connection between online music and user generated social emotions.

As for future work, we are planning to evaluate our model with a large scale of online music collection classification. After clustering if we perform classification it will improve the result

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