EMOTION BASED MUSIC RECOMMENDATION SYSTEM

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ABSTRACT

Human expression plays a vital role in determining the current state and mood of an individual, it helps in extracting and understanding the emotion.Saving time from looking up different songs and parallel developing a software that can be used anywhere with the help of providing the functionality of playing music according to the emotion detected.The user would not have to waste any time searching or looking for songs and the best track matching the user's mood is detected, and songs would be shown to the user according to his/her mood.

OBJECTIVE

The main objective of this paper is to design a cost-effective music player which automatically generates a sentiment aware playlist based on the emotional state of the user. The application is designed to consume minimal system resources. The emotion module determines the emotion of the user. Relevant and critical audio information from a song is extracted by the music classification module. The recommendation module combines the results of the emotion module and the music classification module to recommend songs to the user. This system provides significantly better accuracy and performance than existing systems.

INTRODUCTION

Emotion-based music player is a novel approach that helps the user to play songs according to the emotions of the user automatically. It recognizes the facial emotions of the user and plays the songs according to their emotion. The emotions are recognized using a machine learning method EMO algorithm. The human face is an important organ of an individual's body and it especially plays an important role in the extraction of an individual's behaviors and emotional state. Mood Detection model can detect face from any image and then it can predict the emotion from that face. We can do it from both still images and videos. After predicting the emotion from face our recommender system take the predicted emotion as input and generate recommendation by processing a Spotify dataset from a kaggle contest. We predicted the music mood from a model trained with data_moods.csv. The recommender system will generate top 40 songs to recommend for a spotify playlist.

LITERATURE SURVEY

[1] Viola, P., and Jones, M. Rapid object detection using a boosted cascade of simple features. Proceedings of the 2001 I IEEE, 2001 (2001)

The existed system supported real-time extraction of facial expressions also as extracting audio features from songs to classify into a selected emotion which will generate a playlist automatically such the computation cost is comparatively low.

[2] H. Immanuel James, J. James Anto Arnold, J. Maria Masilla Ruban, M.Tamilarasan, R. Saranya"

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The system proposed by H. Immanuel James 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.

EXISTING SYSTEM

Currently, there are many existing music player applications. Some of the

interesting applications among them are:

● Saavan and Spotify - These application gives good user accessibility

features to play songs and recommends user with other songs of similar genre.

● Moodfuse - In this application, user should manually enter mood and

genre that wants to be heard and moodfuse recommends the songs-list.

Drawback of existing System:

Existing algorithms are slow, increase cost of the system by using additional

hardware (e.g. EEG systems and sensors) and have quite very less accuracy.

PROPOSED SYSTEM

The proposed system can detect the facial expressions of the user and based on the facial expressions that the image has and extract the facial landmarks, which would then be classified to get a particular emotion of the user. Once the emotion has been classified the songs matching the user's emotions would be shown to the user.

BLOCK DIAGRAM
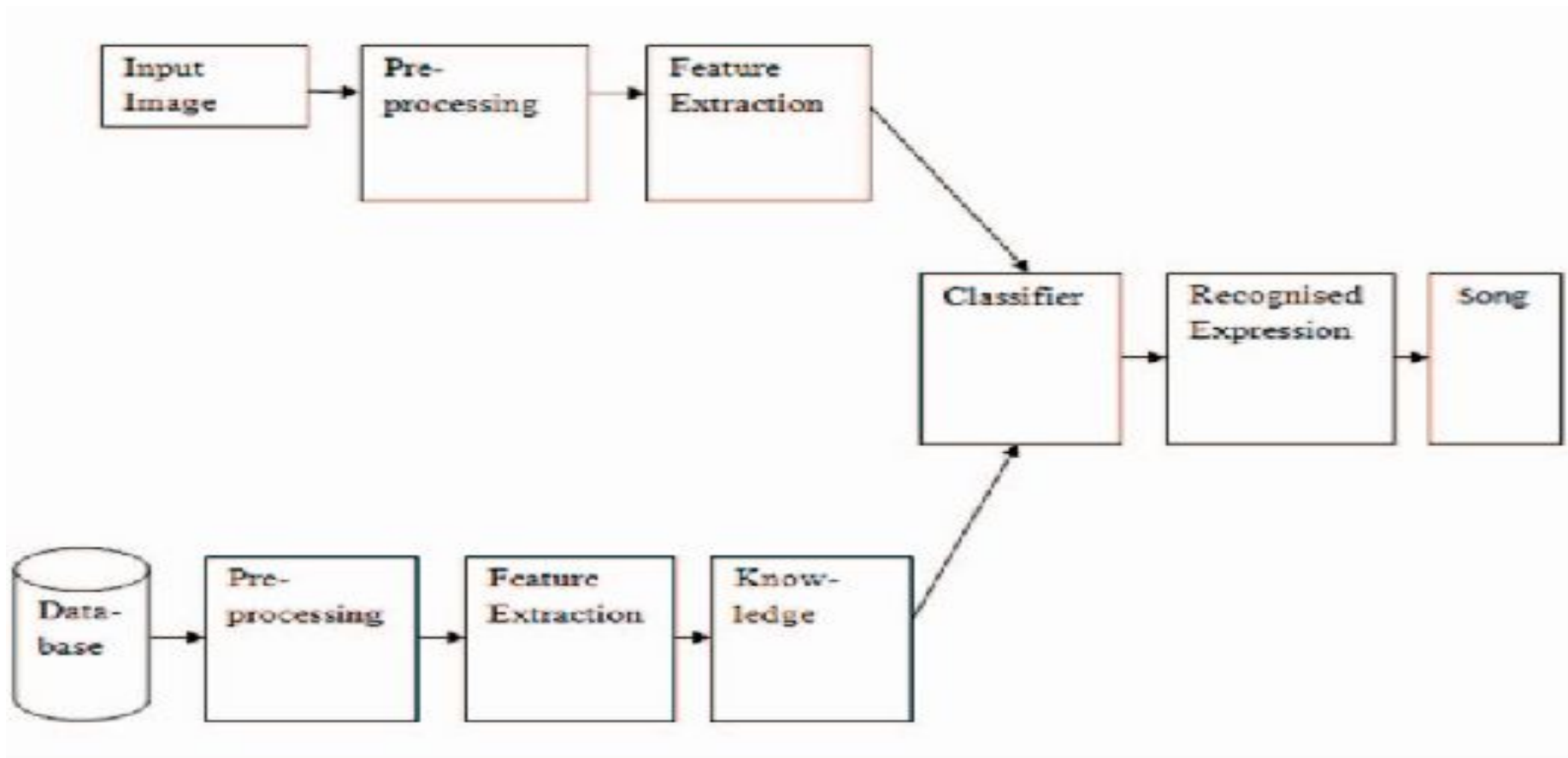
PROPOSED SYSTEM

ADVANTAGES:

- Ease of use.
- Mixed mood detection.
- Improved accuracy.
- Reduced computational time.

SCOPE:

Project Emo player (an emotion-based music player) is a novel approach that helps the user to automatically play songs based on the emotion of the user. It recognizes the facial emotions of the user and plays the songs according to their emotion. The emotions are recognized using a machine learning method Support Vector Machine(SVM)algorithm. The human face is an important organ of an individual's body and it especially plays an important role in the extraction of an individual's behaviors.

METHODOLOGIES

- Import the necessary packages and libraries - pandas, numpy, json, itertools, scikit learn, Matplotlib, spotipy.

- For training - Spatial normalization, Synthetic samples generation ,Image cropping, Down-sampling, Intensity normalization.

IMPLEMENTATION

HARDWARE:

● Processor : Pentium Dual Core 2.00GHZ

● Hard Disk : 500 GB

● RAM : 4GB (minimum)

● Keyboard : 110 keys enhanced

SOFTWARE:

● MATLAB 8.6 Version

● tensorflow 2:0: This is the latest version of the deep learning framework

● Scikit learn: To use ML related utilities.

● Pandas and NumPy: A must for all ML tasks in python. We will use this to manipulate data.

● Matplotlib: Visualizing model performance and data

RESULT

Recommended songs from 'EDM' Playlist for Neutral Mood ¶

```
In [22]:  Recommend_Top40(imageToMoodDetection(Image_path))
```

Up All Night   Big Pimpin' / Papercut   Toni   Fake   What They Want

Heroes   Stand Up   Intentions   Intentions (feat. Quavo)   Falling

CONCLUSION

The Emotion Detected By the (SVM) Support vector Machine Algorithm proved to the best algorithm to analyze the datasets that are trained. The computational time is reduced by the best optimized packages which optimizes the data that is trained with accurate metrics. The developed System is efficient to detect the emotion and accuracy is prominent to select the song as well as the playlist based on the K-Means Algorithm which is fed for the trained datasets provides an efficiency in accuracy under the playlist gathering. The Integral Image Calculation provided a efficient and optimization in computation Time.The Goal is achieved by reducing the computation time by using the python packages under tensorflow and the Convolution Architecture to reduce the raw data that gets generated in the data collection phase this makes the application to run in a stable mode.

FUTURE ENHANCEMENT

In future Music Player can be enhanced with Google play music, so songs which are not present in local storage can also be played and to access the whole application in speech based. The Emotion Based Music System will be of great advantage to users looking for music based on their mood and emotional behavior. It will help reduce the searching time for music thereby reducing unnecessary time and hence increasing the overall accuracy and efficiency of the system.

REFERENCE

1) Viola, P., and Jones, M. Rapid object detection using a boosted cascade of simple features. Proceedings of the 2001 IEEE Computer Society Conference on, vol. 1, pp. 511-518 IEEE, (2001)

2) H. Immanuel James, J. James Anto Arnold, J. Maria Masilla Ruban, M. Tamilarasan, R. Saranya" EMOTION BASED MUSIC RECOMMENDATION SYSTEM": pISSN: 2395-0072 , IRJET 2019

3) Hafeez Kabani, Sharik Khan , Omar Khan , Shabana Tadvi"Emotion Based Music Player" International Journal of Engineering Research and General Science Volume 3, Issue1, January-February , 2015

4) Shlok Gikla, Husain Zafar, Chuntan Soni, Kshitija Waghurdekar"SMART MUSIC INTEGRATING AND MUSIC MOOD RECOMMENDATION"2017

5) T.-H. Wang and J.-J.J. Lien, "Facial Expression Recognition System Based on Rigid and Non-Rigid Motion Separation and 3D Pose Estimation" J. Pattern Recognition , vol. 42,no. 5,pp. 962-977, 2009.