International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

MUSIC RECOMMENDATION SYSTEM

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ABSTRACT

Human emotion plays a vital role in recent times. Emotion is based on human feelings which can be both expressed or not. Emotion expresses the human's individual behavior which can be in different forms. Extraction of the emotion states human's individual state of behavior. The objective of this project is to extract feature from human face and detect emotion and to play music according to the emotion detected. However, many existing techniques use previous data to suggest music and the other algorithms used are normally slow, usually they are less accurate and it even require additional hardware like EEG or physiological sensors. Facial expressions are captured a local capturing device or an inbuilt camera. Here we use algorithm for the recognition of the feature from the captured image. Thus, the proposed system is based on the facial expression captured and will music will be played automatically.

INTRODUCTION

About the Project:-

WEARABLE computing is the study or practice of inventing, designing, building or using body-worn computational and sensory devices that leverages a new type of human-computer interaction with a body-attached component that is always up and running. As the number of wearable computing device users are growing every year, their areas of utilization are also rapidly increasing. They have influenced medical care, fitness, aging, disabilities, education, transportation, finance, gaming, and music industries. Recommendation engines are algorithms which aim to provide the most relevant items to the user by filtering useful information from a huge pool of data. Recommendation engines may discover data patterns in the data set by learning user's choices and produce the outcomes that co-relates to their needs and interests. Most of the recommender systems do not consider human emotions or expressions. However, emotions have noticeable influence on daily life of people. For a rich set of applications including human-robot interaction, computer aided tutoring, emotion aware interactive games, neuro marketing, socially intelligent software apps, computers should consider the emotions of their human conversation partners. Speech analytics and facial expressions have been used for emotion detection. However, in case of human beings prefer to camouflage their expressions, using only speech signals or facial expression signals may not be enough

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to detect emotions reliably. Compared with facial expressions, using physiological signals is a more reliable method to track and recognize emotions and internal cognitive processes of people. Our motivation in this work is to use emotion recognition techniques with wearable computing devices to generate additional inputs for music recommender system's algorithm, and to enhance the accuracy of the resulting music recommendations. In our previous works, we have studied emotion recognition from only GSR signals. In this study we are enriching signals with PPG and propose a data fusion based emotion recognition method for music recommendation engines. The proposed wearable attached music recommendation framework utilizes not only the user's demographics but also his/her emotion state at the time of recommendation. Using GSR and PPG signals we have obtained promising results for emotion prediction.

LITERATURE REVIEW

LITERATURE SURVEY:-

The process of multidimensional reduction by taking the primary data that is lowered to many other classes for sorting out or organizing. Emotion of a user is extracted by capturing the image of the user through webcam. The captured image is enhanced by the process of dimensional reduction by tracking the primary data. These data is converted into binary image format and the face is detected using Fisher Face and Harcascade methods.

The initial or the primary data taken from the human face that is lowered to many other classes. These classes are sorted and organized using the above methods. Emotion is detected by extracting the feature from the human face. The main aim in feature extracting module is to diminish the number of resources required from the large sets of data.

Features in an image consists of 3 parts.

1. Boundaries/edges
2. corners/projection points
3. Field points

SYSTEM ANALYSIS

EXISTING SYSTEM

Recommendation engines are algorithms which aim to provide the most relevant items to the user by filtering useful information from a huge pool of data. Recommendation engines may discover data patterns in the data set by learning user's choices and produce the outcomes that co-relates to their needs and interests. Most of the recommender systems do not consider human emotions or expressions. However, emotions have noticeable influence on daily life of people. For a rich set of applications including human-robot interaction, computer aided tutoring, emotion aware interactive games, neuro marketing, socially intelligent software apps, computers should consider the emotions of their human conversation partners. Speech analytics and facial expressions have been used for emotion detection. However, in case of human beings prefer to camouflage their expressions, using only speech signals or facial expression signals may not be enough to detect emotions reliably. Compared with facial expressions, using physiological signals is a more reliable method to track and recognize emotions and internal cognitive processes of people

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DISADVANTAGES

- Depends on Wearable Physiological Sensors
- Cost efficiency is very high
- Time taken process

PROPOSED SYSTEM

The human face plays an important role in knowing an individual's mood. Camera is used to get the required input from the human face. One of the applications of this input can be for extracting the information to deduce the mood of an individual. The "emotion" derived from the input provided earlier are used to get a list of songs. This tedious task of manually Segregating or grouping songs into different lists are reduced and helps in generating an appropriate playlist based on an individual's emotional features. Facial Expression Based Music Player aims at scanning and interpreting the data and accordingly creating a playlist based the parameters provided. Thus our proposed system focus on detecting human emotions for developing emotion based music player, which are the approaches used by available music players to detect emotions, which approach our music player follows to detect human emotions and how it is better to use our system for emotion detection. A brief idea about our systems working, playlist generation and emotion classification is also given. In this project, we used pycharm tool for analysis.

ADVANTAGE:

- Provide an interface between the music systems.
- Provide a very good entertainment for the users.
- Implement the ideas of machine learning.
- Provide a new age platform for music lovers.
- Bridge gap between growing technologies and music techniques.

IMPLEMENTATION

MODULES:

FACE CAPTURING :

The main objective of this session is to capture images so here we are using the common device i.e, webcam or can use any other physiological devices. For that purpose we are using the computer vision library. This makes it easier to integrate it with other libraries which can also use NumPy and it is mainly used as a real time computer vision. In the initial process when execution starts it starts to access the camera stream and captures about 10 images for further process and emotion detection. So, in the initial phase of this project in order to capture the images and face detection. We use an algorithm that could take the authentic images so classify the images and we are need of lot of positive images that they actually contain images with faces only on the other hand, negative images that contain the images without faces .in order to train the classifier. The classified images are taken as a part of the model.

FACE DETECTION:

The face recognition is considered as one of the best way to determine a person's mood. this image processing system is used for reducing the face space dimensions using the principal component analysis(PCA) method and then it applies fishers linear discriminant (FDL) or the LDA method to obtain the

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feature of the image characteristics, we especially use this because it maximizes the training process classification in between classes. this algorithm helps to process for image recognition is done in fisher face while, matching faces algorithm we use minimum euclidean it helps us to classify the expression that implies the emotion of the user. Fisher face with open CV mainly it mainly emphasis on the class specific transformation matric so, they don't take illustrative images as the subject. And emotion is mainly concluded by the model that the value evaluated from the process can help us to deduce the mood of the user. by comparing the data sets that each emotion is compared with tens of stored images and scale gives the exact emotion so that it can play the music based on the recommendation made by the system by using the following steps and methods. And it does not depend on the other personal details like the other existing software's. Linear classification step in the face detection process. It helps to simplify the linear classification rather than SVM. It is for decreasing the computational time so, that the classification process will take and makes a better detection.

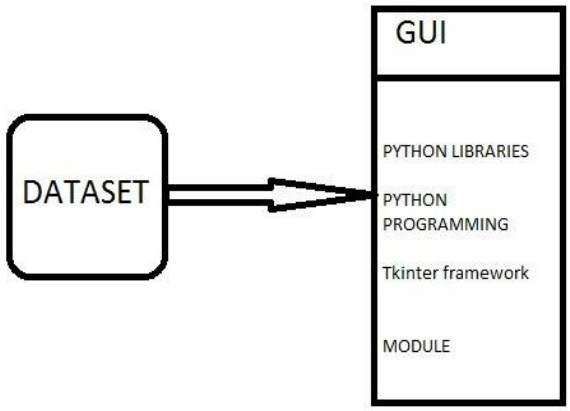
EMOTION CLASSIFICATION:

When the face is detected successfully, a box will appear as and it overlay the image to extract the face and for the further analysis. in the next step The images that are extracted previously will processed using the function .The code will extract the facial spatial positions from the face image and it is based on the pixel's intensity values that are indexed at each point and it uses boosting algorithm. It is performs the comparison between the input data and with stored one so it can predict the class that contain the emotion. If it contains one of the four emotions anger, sad, neutral or happy. And detection of the emotion as seems to be decreasing speed command and it will be executed so that it can reduce the speed of the wheelchair so, that we could prevent the user from endangerment.

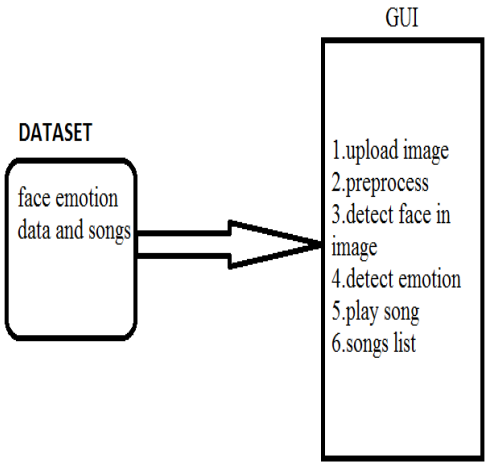
SYSTEM DESIGN

System Architecture:-

TECHNICAL ARCHITECTURE



SOFTWARE ARCHITECTURE



CONCLUSION

In this study, a framework for enhancing music recommendation engines performance via physiological signals has been introduced.

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Emotion recognition from multi-channel physiological signals was performed, data fusion techniques were applied to combine data from GSR and PPG sensors and FLF has been implemented. Considering emotion state of the listener improves the performance of recommendations. Recognizing arousal and valence values directly from only GSR and PPG signals is a challenging task. We have showed that there is relationship between GSR and PPG signals and emotional arousal and valence dimensions. For GSR only signal, we have obtained 71.53% and 71.04% accuracy rate for arousal and valence prediction respectively. For photoplehysmography only signal, we have obtained 70.93% and 70.76% accuracy rate for arousal and valence prediction respectively. Fusing GSR and PPG signals we have obtained the results, 72.06% and 71.05% accuracy rate for arousal and valence prediction respectively. Although there is only slight improvement using fusion in emotion recognition accuracy, the proposed framework is promising for music recommendation engines in terms of adding multi modal emotion phenomenon into music recommendation logic. Performance can be improved with the advancement of wearable sensor technologies and using different type of sensors. Using more than one sensor may also help for failure management. As future work, we will consider different combination of sensors that handle the failures of wearable sensors and additional sensors usage to increase performance. The results of this study can be used to increase user experience of multimedia tools and music recommendation engines. Since there is high correlation between physiological GSR and PPG data and affective state and cognitive state of a person multimedia recommendation engines can benefit from physiological computing systems.

Future Enhancements

The music player that we are using it can be used locally and nowadays everything became portable and efficient to carry but it the emotion of a person can be taken by different of wearable sensors and easy to use rather than the whole manual work it would be possible using GSR (galvanic skin response) and PPG (plethysmography physiological sensors).that would give us enough data to predict the mood of the customer accurately. This system with enhanced will be able to benefit and the system with advanced features and needs to be constantly upgraded. The methodology that enhances the automatic playing of songs is done by the detection. The facial expression's are detected with the help of programming interface that is present in the local machine. An alternative method that is based on the additional emotions which are being excluded in our system.

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