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MINI PROJECT SYNOPSIS 2020-21

## **Music Playing System using Emotion Detection**

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## Introduction:

Music is an important entertainment medium. With advancement of technology, the optimization of manual work has gained a lot of attention. Currently, there are many traditional music players that require songs to be manually selected and organized. User, have to create and update play-list for each mood, which is time consuming. Some of the music players have advanced features like providing lyrics and recommending similar songs based on the singer or genre.

Although some of these features are enjoyable for user, there is room to improve in the field of automation when it comes to music players. Selecting songs automatically and organizing these based on the user's mood gives user's a better experience. This can be accomplished through the system reacting to the user's emotion, saving time that would have been spent entering information manually. Emotions can be expressed through gestures, speech, facial expressions, etc. For the system to understand a user's mood, we use facial expression. Using the mobile device's camera, we can capture the user's facial expression. There are many emotion recognition systems which take captured image as input and determine the emotion.

Recent studies confirm that humans respond and react to music and that music has a high impact on person's brain activity. The average American listens up to four hours of music every day. People tend to listen to music based on their mood and interests. This project focuses on creating an application to suggest songs for user based on their mood by capturing facial expressions.

Fisher face algorithm is an algorithm which work on the basis of LDA and PCA concepts. Linear discriminant analysis (**LDA**) is a supervised Learning method of machine learning. Now supervised Learning is that where we use such data whose answer is also given to the model to learn it. It works on the concept of dimensionality reduction. Which reduce the execution time among classification?

- **Principal Component Analysis (PCA)** is a one kind of conversion from correlated variables to uncorrelated in the form of mathematical values.

It is mostly used for the observing data and from that by some probabilistic calculation generate models. The flow of Fisher face is like it takes classified images then it will reduce the dimension of the data and by calculating its statistical value according the given categories it stores numeric values in .xml file. While prediction it also calculates the same for given image and compare the value with the computed dataset values and give according result with confidence value.

**Project Description:**

This project focuses on creating an application to suggest songs for user based on their mood by capturing emotions from face detections. Facial expression is a form of nonverbal communication.

Computer vision is an interdisciplinary field that helps convey a high-level understanding of digital images or videos to computers. In this system, computer vision components are used to determine the user's emotion through facial expressions.

Once the emotion is recognized, the application suggests a play-list for that emotion, saving a lot of time for a user over selecting and playing songs manually

**Objectives:**

The objectives of the project are the following:

- Analyse sentiments of people using machine learning
- Detect Emotions Using Face OpenCV (e.g., when they are sad etc.)
- Program model to analyse sentiment and building recommendation systems.

**Motivation:**

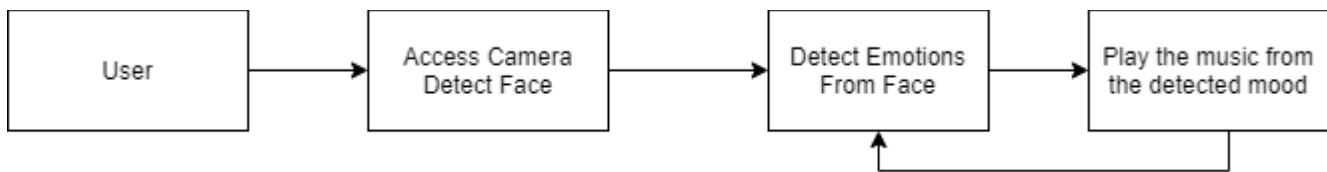
As a music lover, I've always felt that music players should do far more things than just playing songs and allowing users to create play-lists. A music player should be intelligent and act according to user's preferences. A music player should help users organize and play the songs automatically without putting much effort into selection and re-organization of songs. The Emotion-Based Music Player provides a better platform to all the music listeners, and ensures automation of song selection and periodic updating of play-lists. This helps users organize and play songs based on their moods.

## Literature Survey:

The Following Research Papers were referred for getting ideas about the project, features and implementation

1. <http://sci.tamucc.edu/~cams/projects/523.pdf>
2. [https://www.researchgate.net/publication/333280259\\_Emousic\\_Emotion\\_and\\_Activity-Based\\_Music\\_Player\\_Using\\_Machine\\_Learning](https://www.researchgate.net/publication/333280259_Emousic_Emotion_and_Activity-Based_Music_Player_Using_Machine_Learning)
3. [http://www.ijircce.com/upload/2017/february/205\\_Emotion\\_NC.pdf](http://www.ijircce.com/upload/2017/february/205_Emotion_NC.pdf)
4. <https://www.ijcaonline.org/archives/volume141/number4/patel-2016-ijca-909598.pdf>
5. <http://troindia.in/journal/ijcesr/vol5iss3part8/64-68.pdf>
6. <https://www.irjet.net/archives/V4/i3/IRJET-V4I3203.pdf>
7. <https://iopscience.iop.org/article/10.1088/1757-899X/912/6/062007/pdf>
8. <https://easychair.org/publications/preprint/8RFk>
9. <http://journalstd.com/gallery/istj-192.pdf>
10. <https://www.ijariit.com/manuscripts/v5i2/V5I2-1899.pdf>

## Methodology:



## Tools and Technologies:

- Any Mobile or PC with internet connectivity
- A Web Browser that support camera access
- HTML, CSS, JavaScript, Python
- Jupyter Notebook and Visual Studio Code

## Expected Outcome:

- Learn Project management
- Learn working with data sets and process it
- Learn to solve real world problems
- Learn ML and Recommendation concepts better
- Achieve higher efficiency in training models

## Conclusion:

By Developing this project, we aim at upbringing a deployable, productive and theme-oriented project, thereby upskilling ourselves with the required tools and technologies.