Emusic: An Emotion Based Music Player using Microsoft Face API

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Abstract— Music is a significant entertainment medium. With progression of innovation, the advancement of manual work has picked up a great deal of consideration. As of now, there are numerous customary music players that expect tunes to be physically chosen and sorted out. Client, need to make and refresh play-list for every state of mind, which is tedious. A portion of the music players have propelled highlights like giving verses and prescribing comparative tunes dependent on the vocalist or type. Albeit a portion of these highlights are pleasant for client, there is space to improve in the automation with regards to music players. Choosing melodies consequently and sorting out these dependent on the client's state of mind gives clients a superior encounter. This can be accomplished through the system reacting to the user's emotion, saving time that would have been spent entering information manually. Feelings can be communicated through motions, discourse, outward appearances, and so on. For the framework to comprehend a client's temperament, we utilize outward appearance using the cell phone's camera, we can catch the client's outward appearance. There are numerous feeling acknowledgment frameworks which take caught picture as information and decide the feeling. For this application, we are utilizing Microsoft API SDK for acknowledgment of feeling. The framework incorporates a novel calculation [EMO-algorithm] that sorts out tunes dependent on the client's feelings and inclinations. This calculation recommends client's melodies to play dependent on their feeling.

Keywords: Emotion, Facial Expression, Face Detection, Microsoft FACE API

I. INTRODUCTION

Music player assumes an essential job in everybody's life. The greater part of the music lover's clients ended up in a boisterous situation when they don't discover songs relating to their state of mind in the circumstance. So we now have a emotion based music player.

The main goal of this paper is to create an effective and exact calculation that would create a playlist dependent on current enthusiastic state and conduct of the client. Face discovery and facial element extraction from picture is the initial phase in feeling based music player. For the face identification to work viably, we have to give an information picture which ought not be obscure and tilted.

We have created tourist spots focuses for facial highlights. The subsequent stage is the arrangement of feeling for which we have utilized multi-class Microsoft FaceAPI grouping. The created tourist spots indicates are given the FaceAPI to preparing reason. The feeling arranged by FaceAPI is then passed to music player and in like manner music will be played.

II. LITERATURE SURVEY

A literature survey is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic.

Different systems and methodologies have been proposed and created to arrange human enthusiastic condition of conduct. The proposed methodologies have concentrated uniquely on the a portion of the essential feelings. With the end goal of highlight acknowledgment, facial highlights have been arranged into two noteworthy classifications, for example, Appearance-based component extraction and Geometric based element extraction. Geometric based component extraction procedure considered just the shape or major conspicuous purposes of some significant facial highlights, for example, mouth and eyes.

A precise and effective measurable based methodology for breaking down removed outward appearance highlights was proposed by Renuka R. Londhe. The paper was altogether based on the examination of the alterations in back and forth movements on the face and powers of looking at pixels of pictures. Support Vector Machine (SVM) was used in the request removed features into 6 critical general sentiments like ire, dismay, fear, happy, troubling, and stun.

Numerous approaches have been designed to extract facial features and audio features from an audio signal and very few of the systems designed have the capability to generate an emotion based music playlist using human emotions and the existing designs of the systems are capable to generate an automated playlist using an additional

Different applications recommend pride need (not client explicit) tune play-records. Application like state of mind meld incorporate highlights like manual determination of tunes, mostly Shuffle, play-list Some popular music applications like Saavn, Spotify provide users do need play-lists that needs to be created and updated manually. These applications center n general order instead of explicit city to each client. A devoted primate plication that centers more around client inclinations, needs and the formation of dynamic play-list is required to streamline the client experience. It ought to contain client explicit play-list produced dependent on the use and ought to be e customer in arrangement.

Numerous generally utilized Facial demeanor arrangement methods like Viola and Jones and so forth, can be utilized for introductory stage to catch and decide the client's feeling, however these strategies have high computational necessity. The option is to utilize a cloud-based web administration that procedure calculation in the cloud. The present framework utilizes, Microsoft API SDK for feeling acknowledgment, a framework that has officially broke down feelings from more than million countenances.

This SDK enables the application to catch and decide feeling from an image. Afterward, this feeling can be utilized to association of client's play-list.

III. METHODOLOGY

The proposed calculation in this includes a feeling music suggestion framework that gives the age of an altered playlist in agreement to the client's passionate state. The proposed technique includes following modules

Emotion Based Music player is a helpful application for all music lovers with a smartphone. The application is available by any individual who has Spotify. The application is intended to meet the accompanying needs of the clients as follows:

1) Creating an account or signing up, signing in
2) Adding songs
3) Removing songs
4) Updating songs
5) Personalized play-list
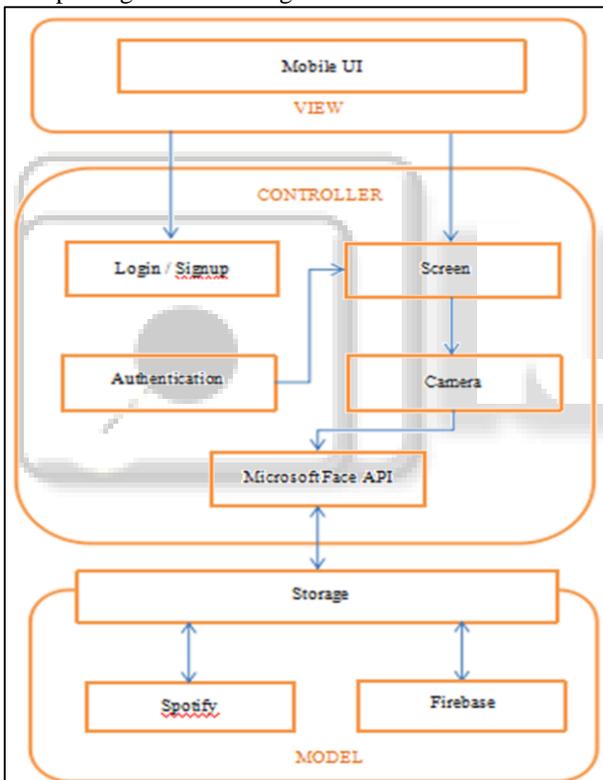6) Capturing emotion using camera

Fig. 3.1: System Architecture of Emotion-Based Music Player

Input Image: According to design outline capturing picture is the primary task to be performed. The input is a real time photo of the user's face. There are sure conditions while catching picture, for example, user ought to be close to camera and furthermore face ought not be tilted.

IV. DESIGN AND SYSTEM ARCHITECTURE

Fig. 4.1 Computer Vision API

The Azure Cognitive Services Face API provides algorithms that are used to detect, recognize, and analyze human faces in images. The ability to process human face information is important in many different software scenarios. Example scenarios are security, natural user interface, image content analysis and management, mobile apps, and robotics.

The Face API provides several different functions. Each function is outlined in the following sections. Read on to learn more about them.

The Face API detects human faces in an image and returns the rectangle coordinates of their locations. Optionally, face detection can extract a series of face-related attributes. Examples are head pose, gender, age, emotion, facial hair, and glasses.

Face landmarks are a set of easy-to-find points on a face, such as the pupils or the tip of the nose. By default, there are 27 predefined landmark points. The following figure shows all 27 points:
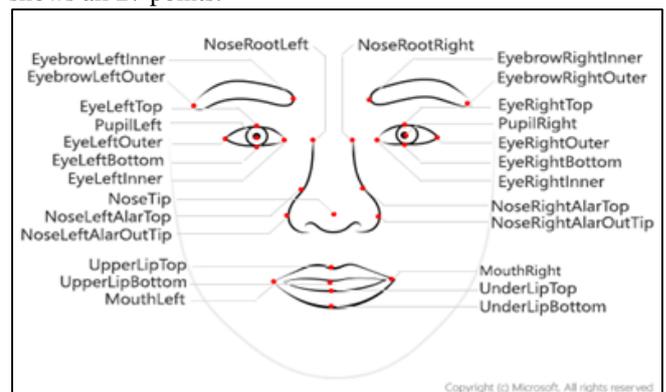

Fig. 4.2: Face Landmarks

The coordinates of the points are returned in units of pixel.

A list of emotions with their detection confidence for the given face. The emotions returned are happiness, sadness, neutral, anger, contempt, disgust, surprise, and fear. This process works as described below:

1) Get the locations and dimensions of faces in an image.

2) Get the locations of various face landmarks, such as pupils, nose, and mouth, in an image.
3) Guess the gender, age, emotion, and other attributes of a detected face.

Emotion-Based Music Player is installed on a mobile device, where the client can get to their modified play-records and play songs as per their feelings. The activity changes are described below:

1) Login(/Signup) phase: Users need to make a profile so as to store individual data. In the event that the user as of now has a record, they can sign in to their record to get to altered play-records just as songs.
2) Face Capture phase: As soon as the validation stage is done, the application will access the camera to capture the user's picture.
3) FaceAPI Call: After the image is captured, the application sends image captured to Microsoft FaceAPI. There, the captured image is processed and the image feedback is sent to the application.
4) Emo-phase: In this phase, the application receives the image information and recognizes the emotion based and displays it. This emotion is sent to spotify database to fetch the corresponding emotion play-list.
5) Display phase: Here, the songs are organized based on EMO-algorithm and the user can play any song from the list displayed. The user has the option to add, remove, modify the songs and also can change category and interest level of a song at any time in the application. The application also has a recommendation tab where the system notice the user of songs that are rarely played.

V. RESULT AND ANALYSIS

A. Installation Initial Process (With Permission):

During installation of apk, the permissions are to be granted accordingly, which include:
1) Permission to access camera
2) Permission to access the internal storage
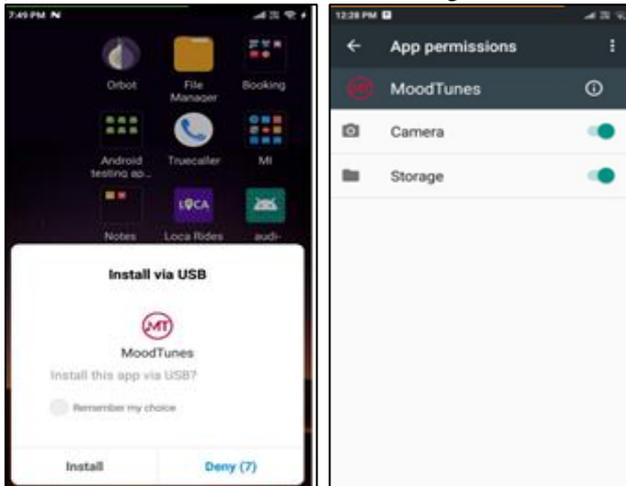
B. App Login Process (After installation):

A login page is the first activity of the application, to provide a unique access to the user of the application. The user of the application gets to create his own identity while using the application. This process is carried out by the sign up activity.

C. Authenticating Process:

The user of the application has to wait once there is either a login attempt a sign up process before using the application. This process is carried out by the login/sign up activity.
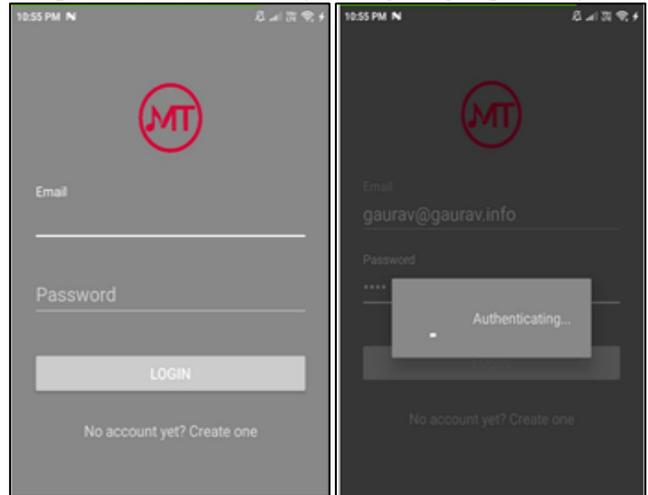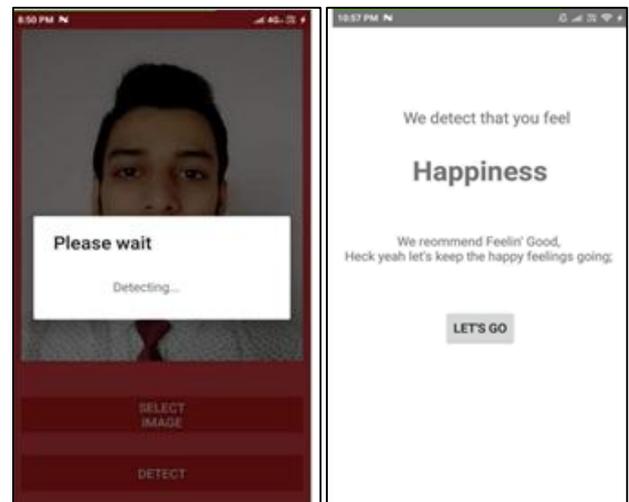

D. Image Selection Process:

The user gets to click an image to detect the face expression of the user in the current state or can choose an image from their gallery.
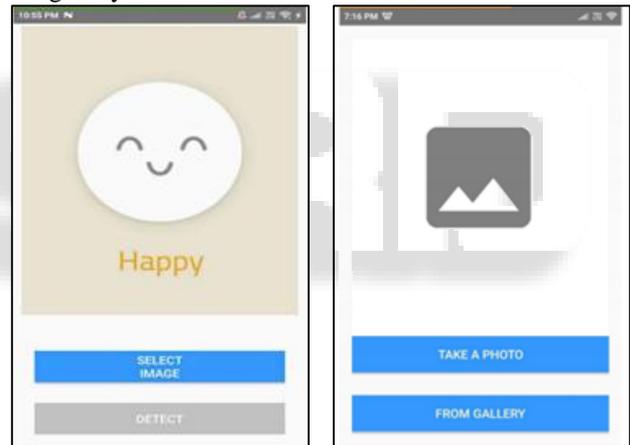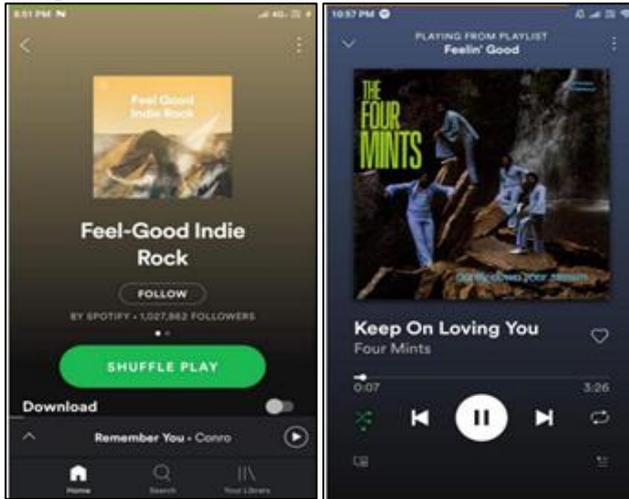

Once the image is taken/chosen accordingly by the user, the application further awaits for the detection of the face emotion

E. Music Generation Process:

Once the emotion of the user is known, music playlists are generated using Spotify accordingly for the user which are user specific.

A dataset consisting of facial image of 10 individuals was selected for user independent experiment and dataset of 4 individuals was selected for user dependent experimentation.

VI. CONCLUSION AND FUTURE SCOPE

The Emotion-Based Music Player is used to automate and give a better music player experience for the end user. The application settles the essential needs of music audience members without upsetting them as existing applications do: it utilizes innovation to build the collaboration of the framework with the user from multiple points of view. It facilitates crafted by the end-user by catching the picture utilizing a camera, deciding their feeling, and recommending an altered play-list through a further developed and intuitive framework. The user will also be noticed of songs that are not being played, to help them free up storage space.

The Emotion Based Music System will be of incredible favour to users searching for music dependent on their temperament and feeling. It will help lessen the hunting time down music in this manner decreasing the superfluous computational time and along these lines expanding the general precision and productivity of the application. The system will not only reduce physical stress but will also act as a boon for the music therapy systems and may also assist the music therapist to therapeutic a patient. Likewise with its extra features

The future extension in the application would to structure a system that would be useful in music treatment and give the music therapist the assistance expected to treat the patients experiencing scatters like mental pressure, nervousness, intense discouragement and mental trauma.

The proposed system also tends to avoid in future the unpredictable results produced in extreme bad light conditions and very poor camera resolution.

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