

THE COMPLETE MUSIC PLAYER

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Abstract - Music has been a way for people to reduce their stress and since we all have a variety of emotions, music comes in all type of styles. For music system, you need one app for sound equalizing another for video streaming of songs and many others. Our idea is to integrate all these into a single one which would be a boon to the music lovers. This application integrates the Intent APIs of various applications and mapping the data from various databases which is to be segregated and they are integrated onto our music player. Some of the features of this application includes, YouTube linking, Song Mixing, Karaoke and lyrics Syncing etc., Also the emotions of the user will be traced using Artificial Neural Network technology. Primarily, the login credentials of every user will be stored in database and here MongoDB is used. Instead of downloading multiple apps and wasting all storage space, this proposal reduces the use of a lot of applications and will be a complete music solution.

Key Words: Artificial Intelligence, Artificial Neural Networks, Intent APIs, Android, MongoDB

1. INTRODUCTION

The application development sector is advancing day by day. Innovative ideas are born each minute to ease people's work; if not big or groundbreaking, but constructive and leading towards a better tomorrow. Sound and graphics are two intriguing areas of technology which attract the music lovers to explore more into their depths. With the new developments in technology the sophistication level in software has also increased. Also with the idea of "keeping it simple", developing sophisticated applications is a challenge. Facial expressions explains a lot in determining the mood of a person. Whether he's sad, or angry, happy, every emotion on his way has a unique of expressing it. This application work different from traditional application. The user need not go and surf through the songs to play the music. Instead this application recognizes his mood and play music accordingly.

It is impossible to download many applications for a single domain of work. For example., if you are interested in music, it is not applicable to download individual apps for music player, sound equalizer, DJ mixer, video streamer, etc. This application acts as an integration to some of the most common existing applications that people use. With the current music application itself, they can work on these features. This works as an add-on to some existing applications.

2. EXISTING METHODS

Nowadays music plays a very vital role in every individual, current music apps have only the feature of selecting the particular song and playing them and if you want to hear the karaoke, song mixing, you-tube mixing, lyrics identification there are separate apps for them and in searching and downloading the apps where storage space is wasted and it takes more time, in this paper combination all these features is done in a single app and also the emotion of the user will be traced and based on the emotion the song is played. Earlier Hebbian learning algorithm is used and is considered to be a 'typical' unsupervised learning rule.

3. LITERATURE SURVEY

[1]The paper by Matthew E.P.Davies focuses only on the AutoMashUpper, which is used for multi-song mashups. He performed mashups based on the measure the user can define their own values to the tempo as well as they can also add or remove songs from the mash-ups.

[2]Facial expression is the most effective way of expressing emotion in humans.The paper by Sushmita G.Kamble uses PCA algorithm and Euclidean distance classifier to segregate expressions and the music will be played based on the expression captured by the inbuilt camera.Also the use of the camera reduces the designing cost of the system.

[3]This paper is used to implement a karaoke machine which removes the voice of the artist who sang the song.It uses "Out of phase" stereo method for removing the original voice.If the user wants to sing a song along with the music,he can use karaoke.Also the user can record the song that he sings. Nirmal R Bhalani uses MATLAB software to implement the above model.

[4] Music is a form of entertainment that everyone loves to hear. But categorizing music is a difficult task that everyone faces. Some of the methods use speech signal to classify songs which causes high computation time and cost. The paper by Karthik replaces speech signal with human emotions with minimal time computation. The authors used Audio Information Recognition(AIR) and Music Information Retrieval(MIR) to implement the above model.

4. PROPOSED SYSTEM

This music player requires the user to have a profile to access the application. Each person has to input his/her login details before using the application. An account will be created for each person. The login details will be stored in an open source document database- MongoDB. On using the app for the first time, the user has to input his login details and grant permissions for camera and media. This app works in both online and offline mode. A single application can work in different ways: it can sense the emotions of the user and play songs according to that. If a person downloads a music, it will be segregated on the basis of intensity, pitch and rhythm into sad, happy, fun, moody etc. Such that when the person is identified to have such moods, the songs will be played accordingly. If the user listens to a song and feels like mashing up that song with another one of similar waveform, this app can help him do so. There are many sections that together completes this app:

1.1. Emotion Recognition

Emotion based music player is an useful application for music listeners who has a smart phone and an Internet Connection. The proposed algorithm that generates music according to the emotional state of the user. When the user downloads songs into the phone, the mapping of the audio is done. At first the user has to give permissions for accessing the camera and media. The photo of the user is taken through the camera and it is stored. In this work, a neural network based on the Cohn-Kanade database has been tried on. Powell's direction set is used here to minimize the error function. Mostly face detection is done in either holistic approach instead of an analytical approach. Facial feature extraction in our work is done by real time facial recognition system, as developed by Sebe and Cohen [5]. A vector of motion features of certain regions of face is got as output. Usually back propagation is commonly used for emotion classification. For back propagation, the ability to cope with very noise data is high and its effectiveness increases with a large number of input fields. The essential requirement of a neural network is to produce results with minimized error function. The typical neural network propagate backwards the error function's partial differential. Some methods like Powell's set direction method, annaeling, downhill simplex are used for minimization of error.

This app integrates Google Voice typing. If the user needs to play the song according to his wishes, he just has to say. The user could tell his emotion so those particular songs related to the mood will be traced out. He doesn't need to go and search for the song completely. Using AI, the user's taste in music will be mapped. According to this pattern, songs will be added directly onto the queue.

The output of doing a real time face recognition as mentioned above is,

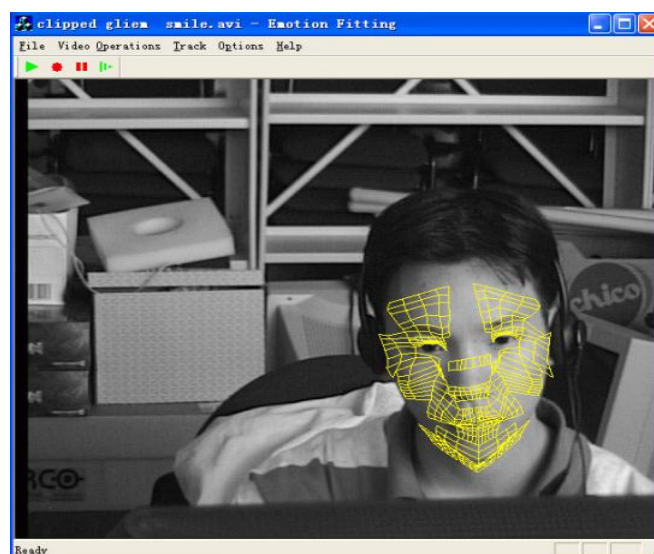


Fig.1.A snap shot of the real time face tracker.

1.2. Mixing of Songs

A very careful experience designed to allow DJs and aspiring mixers to program mixes using their single-timeline player. The user can play a track, the suggestions for the songs that goes well with the current song being played will be given below. The suggested songs will sync well with the waveform of the current song being played. This function operates only in online mode. The user can select the language whose suggestions are to be displayed. The "AI" part comes where you just let the app mix by itself. Also some real time effects, sound equalizer, and fully control DJing can be used.

All the people using our application will be connected together like a community. If an user creates a new mixing of songs, then he could publish it with everyone who uses that app. The users could get likes, comments, follow requests for the song he did.

4.3. YouTube Linking

If the user needs to hear the original version of the song, the X-factor music, The Voice music programs for the current song being played, he could easy go in video mode. The YouTube links will be displayed for the song he wants. The user need not go and surf the YouTube for this. Every song in the music player will be linked to various versions of song. Not only the YouTube links, the videos will be available. To do this in application, the YouTubePlayerView has to be initialized. Download and Configure YouTube Android Player API in Android Studio. Registering the Application in Google Developer Console and obtain Android API key. Integrating YouTube Android Player API in your Android Application. The android application has to be configured using the YouTube Data API V3.

4.4. Other features.

Some other features that is given as an add-on are:

- i. Integrating Karaoke into the music application. The user can download the karaoke. The karaoke of the songs will be generated. The user download the karaoke for the respective song he wishes for and record his song which could be later published.
- ii. The lyrics of each song will be stored in the database. When the user downloads the song, he can download the lyrics of the particular songs he want.
- iii. If the user searches for a particular song, artist, title and if it is not available in the music player, then he/she can request for the song in the feedback comments. The song will be added to the database as soon as possible and this will be notified to the user who requested for it.
- iv. If the user cannot recall the song, but has a strong interest in identifying the song he forgot, then the Google voice is integrated such that a small hum or whistle of the song will be enough to identify the full song.

5. METHODOLOGIES

i. Android studio

Android studio is an integrating development environment for Google's Android operating system. It is developed by Google and JetBrains in the year 2013.

ii. MongoDB

MongoDB is a cross-platform document-oriented database program. It is classified as a NOSQL database program, MongoDB uses JSON-like documents with schemata. MongoDB is developed by MongoDB Inc.

iii. JavaScript

JavaScript programs the behavior of web pages. Many desktop and server programs use JavaScript. Node.js is the best known. Some databases, like MongoDB and CouchDB, also use JavaScript as their programming language.

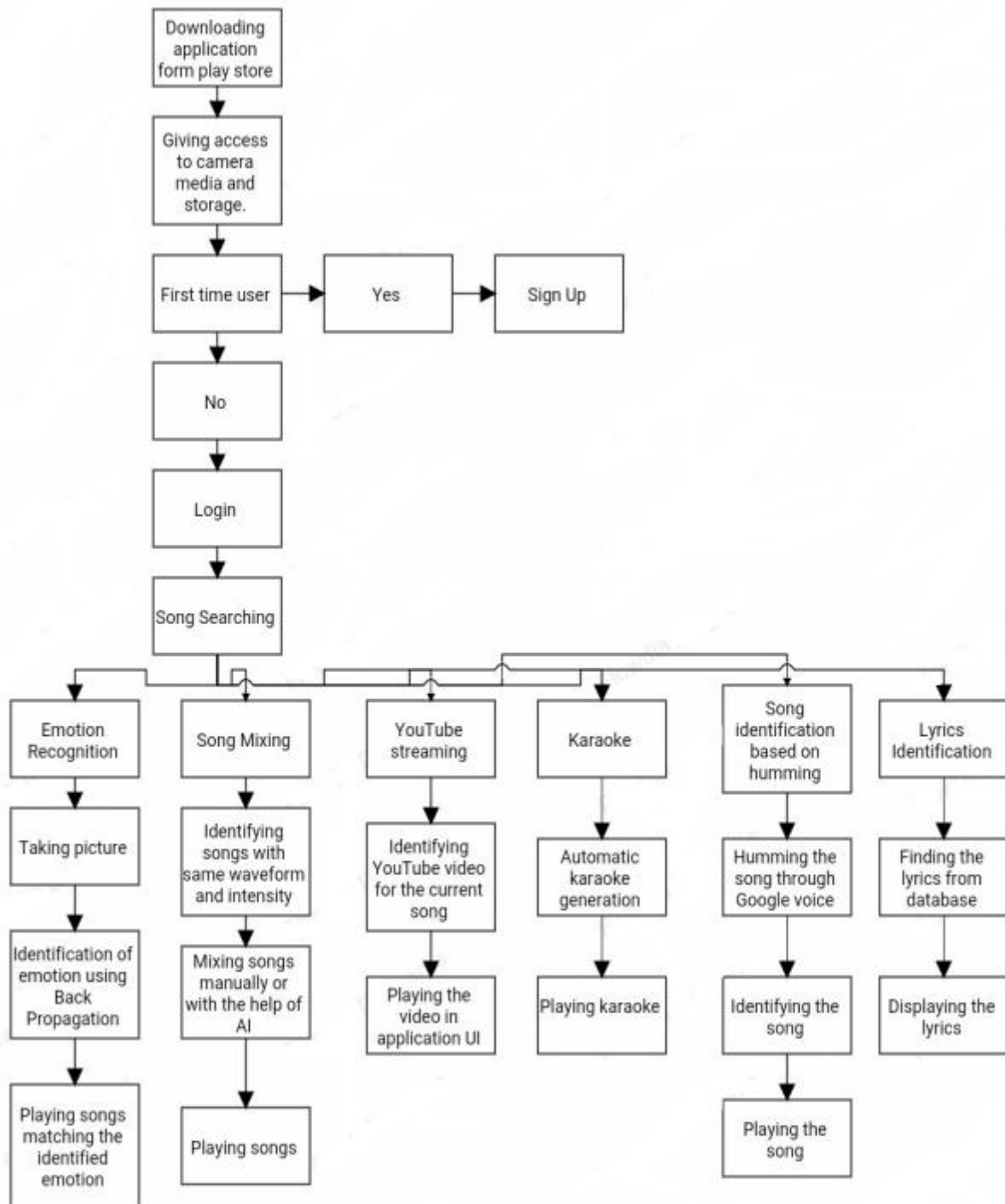
iv. XML and Java

The primary language used to develop Android Apps is Java. Java and XML(Extensible Markup Language) are the basic requirements to work on Android Studio.

v. Cohn-Kanade Database

The Cohn-Kanade AU-coded facial expression database is for research in automatic facial image analysis and synthesis and for perceptual studies.

6. ARCHITECTURAL DESIGN



7. RESULTS

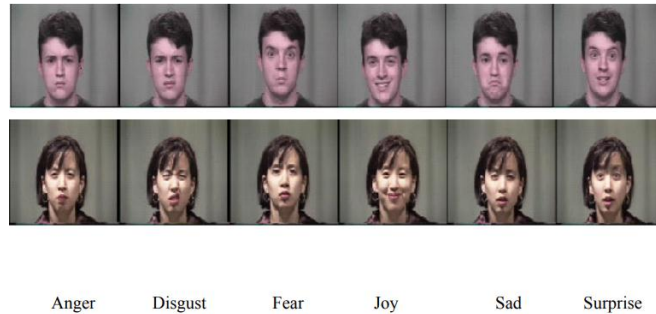


Fig.3. Images from Cohn-Kanade Database

	Neutral	Joy	Disgust
Neutral	82.78	8.71	8.51
Joy	19.67	77.05	3.28
Disgust	25.00	6.82	68.18

Table 1. Results on Cohn-Kanade Data set

6. CONCLUSION AND FUTURE SCOPE

This application can work effectively with high processing speed compared to the traditional methods. This proposed framework will reduce much complexity. Presently, the user has to download many It will ease the people’s difficulty in combining different features into a single app. These APIs can be made compatible with all the music applications people use. The lower versions of Android like 7 or 8 should be able to work in this. This system could be made to work with other operating systems like Windows, iOS.

7. REFERENCES

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