Real Time Mobile Expression Detection Using Android

Sayyed Mohamed Adnan
Padre Conceicao College of Engg. Verna, Goa

Abstract—Determining and recognizing human emotions for interaction between humans and machine plays an important role in communication systems. Facial expression analysis is the most expressive way to display human emotion. In this project, we propose a novel detecting and recognition method for facial expression and emotion on mobile cameras and formulate a classification model for facial emotion using the variance of the estimated landmark points. Three types of facial emotion are recognized and classified: neutral, happy or sad. Depending on the emotion the music player will play the music accordingly. This project implements an efficient extraction of facial point features which is more suitable for using mobile devices.

I. INTRODUCTION

Expanded and broad utilization of the versatile camera inserted in advanced mobile phones has brought forth a wide assortment of individual and business applications. The potential part of PC vision advancements to developing application with smartphone cameras has experienced considerable changes in the user interface past the fundamental capacity of the camera for taking pictures.

Automatic facial expression recognition and emotion recognition have been effectively considered in an assortment of range, for example, human-computer interaction, mechanical technology, education and entertainment. Widespread smart phones have excited impressive enthusiasm for human cooperation through clients' feeling on cell phones. With the swift advances in processing power and memory, even the real time video processing related to computer vision is within the bounds of possibility in smart phones.

II. OVERVIEW

The main user of the app will be the general public, both the young and the old. The users are not required to have technical knowledge in the computer field. The graphical user interface provides an easy way of using the app.

We show a productive methodology for real-time expression recognition running on smartphones. The proposed framework is so straightforward and proficient that it runs easily on the cell phones.

We have successfully achieved our goal of making an android app that detects human expression and plays music accordingly. Despite the fact that confronting restricted computational power specific to the cellphones, our application keeps running with satisfactory speed.

Genuine endeavors are ensured code is solid and of big business quality. All inclusive access through free permit to the item plan will be accessible. The code for the application is composed in Java language which can be adjusted and maintained easily.

III. DETAILED COMPONENT

A block diagram is an outline of a framework in which the foremost parts or capacities are spoken to by squares associated by lines that demonstrate the connections of the pieces. They are rigorously utilized as a part of building in equipment outline, electronic configuration, programming plan, and process flow graphs.
The detailed working of the face detection is given in figure. The library is first loaded when the app starts along with the XML. Each frame is processed to detect the feature.
Once the user opens the app the app detects the emotion in an interval of 10sec and then the user is presented with a confirmation. After the user confirms the emotion the apps fetches the songs based on the emotion.

Figure 3: user workflow

This figure gives the overall working of the application.

Figure 4: Dataflow Diagram
IV. INTERFACE

Figure 5: Confirmer interface

The figure is one of the confirmation pages of the application.

Figure 6: Music interface.

The figure is the interface of the music player with all the basic functionality of a music player.
V. RESULTS

An Android app that captured video frames to detect facial features along with an integrated music player was successfully created from the ground up. The separate components of feature detection and music player worked successfully independently; they were both integrated together on the Android platform.

The application was tested on Samsung Note 3 neo, with Quad-core 1.3 GHz Cortex A7 & dual-core 1.7 GHz Cortex A15 processor, 2GB of RAM and a 2mp front facing camera, running Android 4.4.2 kitkat OS.

The process of choosing the happy and sad songs are manually made into the device. The other processes of deciding which songs to play on different emotions can be done in the following ways:

1. Including songs in the application setup itself but this will increase the size of the app.
2. Tagging the songs as happy and sad during the initial setup of the app.
3. Developing an AI which can classify audio into different emotions.

In future work, the proposed framework might be coordinated with an assortment of versatile applications or frameworks with no remote servers. The different algorithms mentioned in chapter 2 can also be implemented to compare results. The algorithms can also be integrated together as one algorithm can overcome the deficiency of the other and get better and accurate results. Emotion detection can play a very useful role in “internet of things” as all gadgets connected to the internet can adjust their settings based on how the user is feeling.

REFERENCES

[2] Locating Facial Features with an Extended Active Shape Model, Stephen Milborrow, Fred Nicolls
[5] opencv face detection document
[7] Real-time Mobile Facial Expression Recognition System Myunghoon Suk and Balakrishnan Prabhakaran, Department of Computer Engineering, the University of Texas at Dallas, Richardson, TX 75080
[8] www.stackoverflow.com
[12] Real-time Recognition of Facial Expression using Active Appearance,Model with Second Order Minimization and Neural Network,Hyun-Chul Choi and Se-Young Oh, Senior Member, IEEE
[14] CLICK AND SHARE: A FACE RECOGNITION TOOL FOR THE MOBILE COMMUNITY,Sara Casti, Fabio Sorrentino, Lucio Davide Spano, Riccardo Scateni,Dipartimento di Matematica e Informatica, University of Cagliari,Cagliari, Via Ospedale 72
[15] Facial Action Recognition Combining Heterogeneous,Features via Multikernel Learning,Thibaud Senechal, Member, IEEE, Vincent Rapp, Member, IEEE, Hanan Salam,Renaud Segueri, Kevin Bailly, and Lionel Prevost
[16] LOCAL BINARY PATTERN PROBABILITY MODEL BASED FACIAL FEATURE LOCALIZATION, Xiong Tao1,2, Xu Lei2, Wang Kongqiao2, Li Jiangwei2, Ma Yong2, 1Beijing University of Posts and Telecommunications, Beijing, China, 2Nokia Research Center, Beijing, China