ANDROID BASED EMOTION DETECTION AND QUOTE SYSTEM

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ABSTRACT:

Emotion Detection is the process of identifying human emotion, most typically from facial expressions. Humans show universal consistency in detecting emotions but also show a great deal of variability between individuals in their abilities. This has been a major topic of study in psychology. In this project, we develop an android application "Emotion Detection and Quote System" in which we identify emotion from facial expression using phone camera and present the relevant quotation to the user. The application strengthen and motivate the user when he/she in sad mood. The emotion detection not only provides fun but also motivates the users.

This application develops using Android UI, JAVA and SQLLite Database.

KeyWords: Scan face, Emotion Detection, Generate Quotation

INTRODUCTION:

Humans have always had the innate ability to recognize and distinguish between faces. Now computers are able to do the same. This opens up tons of applications. Face detection and Recognition can be used to improve access and security like the latest Apple Iphone does (see gif below), allow payments to be processed without physical cards — iphone does this too!, enable criminal identification and allow personalized healthcare and other services. Face detection and recognition is a heavily researched topic and there are tons of resources online. We have tried multiple open source projects to find the ones that are simplest to implement while being accurate.

STATEMENT OF THE PROBLEM:

The problem lies with existing system which is Knowledge-based technique, utilizes domain knowledge and the semantic and syntactic characteristics of language in order to detect certain emotion types. It requires expert knowledge to review and analyze which is time taking process and inefficient.

OBJECTIVE OF THE STUDY:

- ✓ Emotion Detection is the process of identifying human emotion, most typically from facial expressions.
- ✓ Humans show universal consistency in detecting emotions but also show a great deal of variability between individuals in their abilities.
- ✓ In this project, we develop an android application "Emotion Detection and Quote System" in which we identify emotion from facial expression using phone camera and present the relevant quotation to the user.

REVIEW OF LITEARATURE:

Decades of scientific research have been conducted developing and evaluating methods for automated emotion recognition. There is now an extensive literature proposing and evaluating hundreds of different kinds of methods, leveraging techniques from multiple areas, such as signal processing, machine learning, computer vision, and speech processing. Different methodologies and techniques may be employed to interpret emotion such as Bayesian networks, Gaussian Mixture models and Hidden Markov Models and deep neural networks.

Knowledge-based techniques can be mainly classified into two categories: dictionary-based and corpus-based approaches.[4][5] Dictionary-based approaches find opinion or emotion seed

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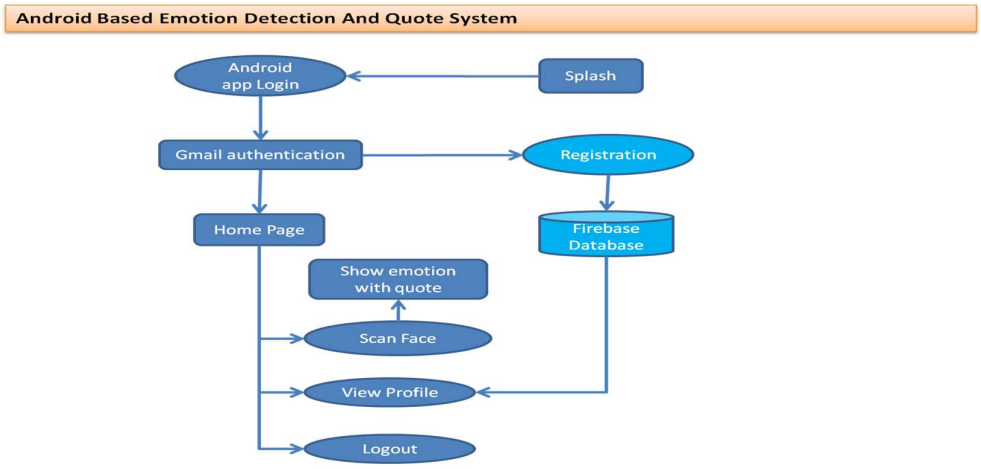
words in a dictionary and search for their synonyms and antonyms to expand the initial list of opinions or emotions. Corpus-based approaches on the other hand, start with a seed list of opinion or emotion words, and expand the database by finding other words with context-specific characteristics in a large corpus. While corpus-based approaches take into account context, their performance still vary in different domains since a word in one domain can have a different orientation in another domain.

Some of the most commonly used machine learning algorithms include Support Vector Machines (SVM), Naive Bayes, and Maximum Entropy. Deep learning, which is under the unsupervised family of machine learning, is also widely employed in emotion recognition. Well-known deep learning algorithms include different architectures of Artificial Neural Network (ANN) such as Convolutional Neural Network (CNN), Long Short-term Memory (LSTM), and Extreme Learning Machine (ELM)[8][9]. The popularity of deep learning approaches in the domain of emotion recognition may be mainly attributed to its success in related applications such as in computer vision, speech recognition, and Natural Language Processing (NLP).

RESEARCH METHADOLOGY:

To estimate the emotions, they rely on the facial expressions they manage to detect. Then, they have a mapping between emotions and expressions, and all expressions detected increase or decrease the likelihood of each of the emotions. This mapping they are using is based on the FACS [1][2][3] that has been described in the State of the Art section. Through inspection of the documentation it was assessed that although the library works offline, it does not allow customization; only enabling or disabling features. However, it could be useful to test how accurate the results were, so a simple application using the SDK was built.

ARCHITECTURE:



MODULES:

- ✓ User Module
- ✓ Camera Module
- ✓ Emotion Detection Module
- ✓ Quote Generation Module

DESCRIPTION:

User

In this module, user register and login to the system.Here, he can open the app and start scan his/ her facial expression.The system analyzes the facial expression and identified emotion of the users.Based on emotion the system random pick the Quote from the system and it show to the user.

Camera Module

The Android framework includes support for various cameras and camera features available on devices, allowing you to capture pictures and videos in your

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applications."android.hardware.camera2" this package is the primary API for controlling device cameras[6][7]. It can be used to take pictures.In this module, we utilize the camera to read the facial expressions of the user.From the camera data we can identify emotion of the user by utilizing right and left eyes.

Emotion Module

Face detection can be used as part of a software implementation of emotional inference. Emotional inference can be used to help people with different conditions under stand the feelings of people around them.In this module, we implement the emotion detection system that can help people on different moods.

Quote Generation Module

In this module, the system selects the quote based on the emotion detected in the above module. It is very useful to help people in different feelings[10].The system identify the feelings of our face and turn it as a emotion of the person then it chooses the quote relevant to the user mood and show it to the users.

RESULTS:

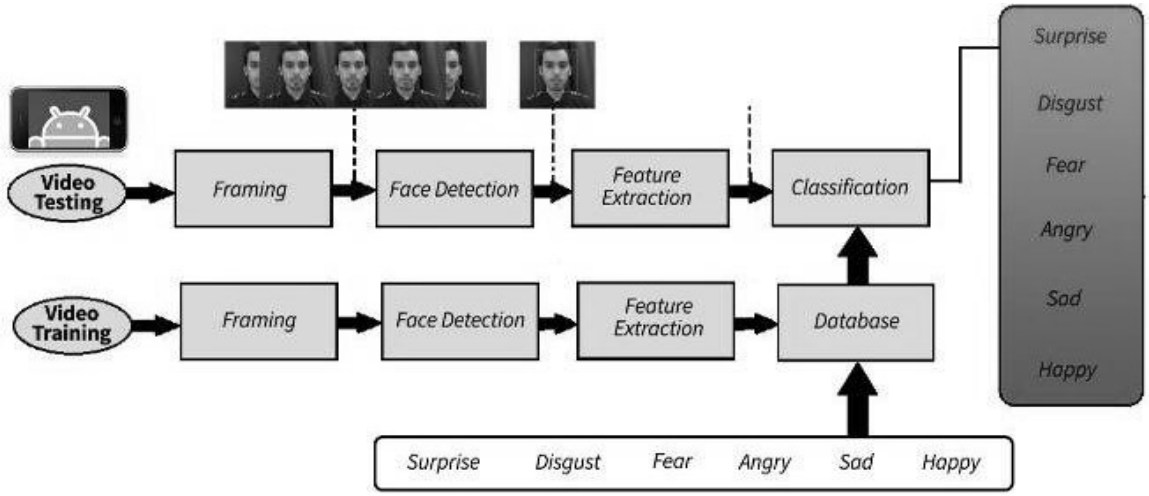

FIG-1: Overview structure of the facial expression recognition

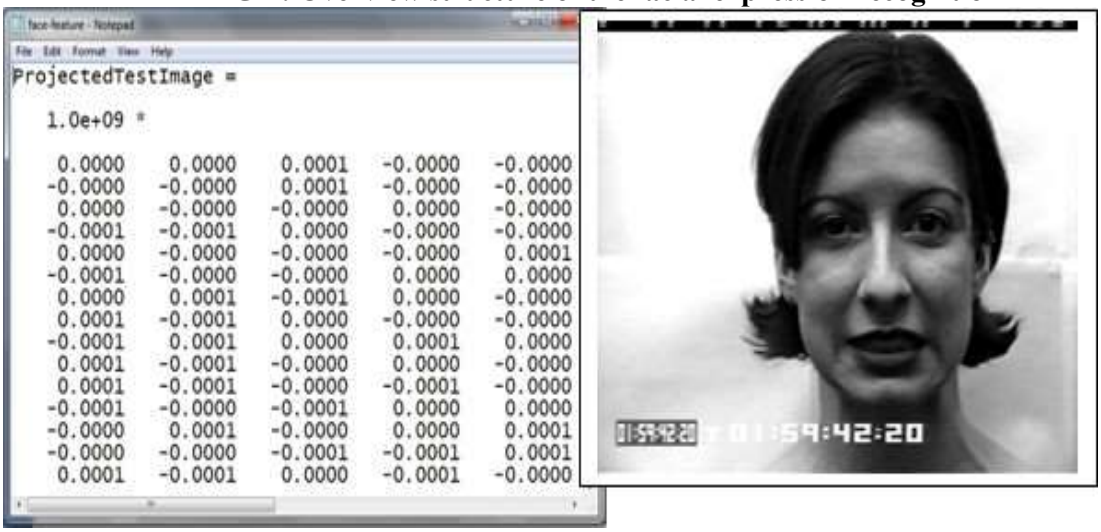

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TABLE I. CONFUSION MATRIX ON THE CLASSIFICATION

Predicted True	Fear	Surprise	Happy	Sad	Angry	Disgust
Fear	116	2	1	3	4	4
Surprise	0	118	4	3	2	3
Happy	3	4	115	2	2	4
Sad	5	2	3	115	2	3
Angry	3	2	2	1	119	3
Disgust	2	4	2	3	4	115

FIG-3: Testing result from the mobile phone

The image is divided into patches of size S1 x S2. They have been selected by choosing rows and columns of partition to be 7 and 6 respectively [17]. For each patch p, two points P1 = (x1, y1) and P2 = (x2, y2) are generated from i.e. uniform distribution [16, 18].

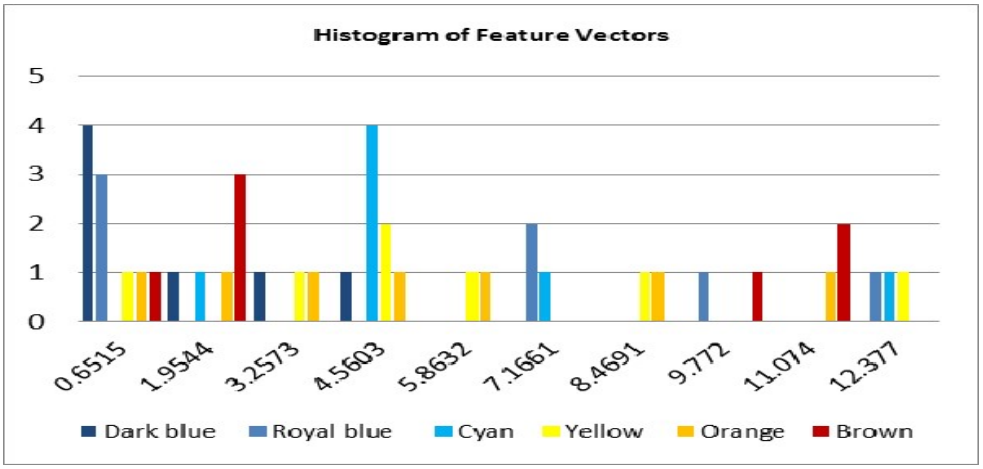

FIG-4: Histogram of BRIEF descriptors

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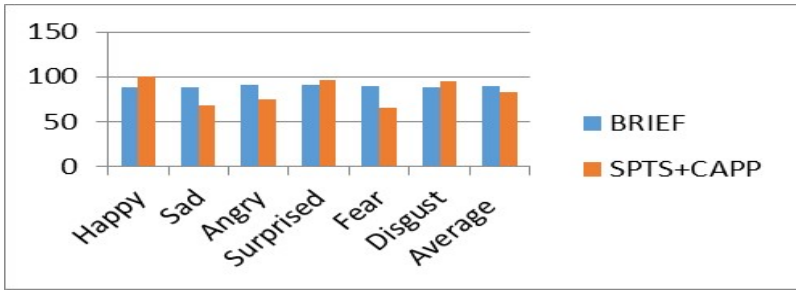

Figure 7: Performance comparison on BRIEF and SPTS+CAPP

The result analysis describes that the entire project was executed successfully and also having quality and performance by analyzing the flow of data and output screens. In my project the modules like User, camera, emotion detection and Quote Generation are independent modules. Because my project follows the top down approach and bottom up approach.

CONCLUSION:

In this project we implement an android application called "Emotion Detection and Quote System" using Facial Recognition System. This application can useful to identify the human emotions based on facial features. This system allows users to recognize their emotions and give the best quotation based on their emotion. This system is helpful to motivate the people who are in sad mood by providing motivational quotation. This system efficiently and effectively recognize the emotions of humans.

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