Face Expression Recognition Through Image Processing

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---**ABSTRACT**--

The verbal, vocal and non-verbal signals are used in human-human communicationto communicate with others. The Facial expressions are a form of nonverbal communication to recognize them whichhelps to improve the interaction between human-machine. This paper proposes a system for the illuminant invariant system for the facial expressions by the images.Information from the human face is computed by the technique called constrained local models (CLM), which is used to fit a dense model to view an unseen image in the form of iterative manner. The SVM classifier is used to classify theacquired image into different emotion categories. Results which is surpassed human performance and show pose-invariant of the performance. The lighting conditions which varies can influence theprocess of fitting and reduce the recognition precision shown. Results proves that reliable facial expression recognition with the changing lighting conditions.

Keywords- **Expressions, recognition**

I. INTRODUCTION

With advances in computing and telecommunications technologies, digital images and video are playing key roles in the present information era. Human face is an important biometric object in image and video databases of surveillance systems. . Face recognition has a critical role in biometric systems and is attractive for numerous applications including visual surveillance and security. Because of the general public acceptance of face images on various documents, face recognition has a great potential to become the next generation biometric technology of choice.

II. RELATED WORK

Face images are also the only biometric information available in some legacy databases and international terrorist watch-lists and can be acquired even without subjects' cooperation.Though there has been a great deal of progress in face detection and recognition in the last few years, many problems remain unsolved. Research on face detection must confront with many challenging problems, especially when dealing with outdoor illumination, pose variation with large rotation angles, low image quality, low resolution, occlusion, and background changes in complex real-life scenes. The design of face recognition algorithms that are effective over a wide range of viewpoints, complex outdoor lighting, occlusions, facial expressions, and aging of subjects, is still a major area of research. Before one claims that the facial image processing / analysis system is reliable, rigorous testing and verification on real-world datasets must be performed, including databases for face analysis and tracking in digital video.

III. PROPOSED SYSTEM

The application is used to analyze the users face expression and recognize it.The expressions are classified into five such as "Angry", "sad", "Happy" ,"Neutral" ,"Disgust".The probability bar is also added which shows the percentage of the expression which is shown.Image preprocessing for face detection / recognition.Color-based facial image processing and analysis. De-blurring and super-resolution for robust face detection / recognition. The outdoor illumination where it is dealt with the outdoor sunlight to get rid of the face and expressions that hold with it.

There is a large variation in the pose that is been given by the user to take care of it and need to be recognized to identify it to pass the major test cases. The other factor is the ageing where it varies between midterm and long term ageing depends on the user and need to identify its emotions. It also varies with the different critical emotions such as Disguise and Occlusion. It also has its even low quality and low resolution so that the application find its own difficulties to overcome those low quality images.

There is also some quite few problems that occur in generalisation due to lack of training examples shown to the user and so it leads to its major issue in solving it.
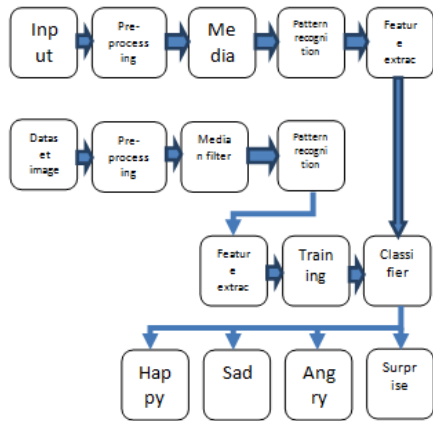
Fig 1: Architecture of the proposed system.

Fig 2: Happy.

Fig 3: Angry.

IV.   IMPLEMENTATION

The proposed system is implemented using open cv which is generated by using the cascade algorithm to get its datasets.

Using the datasets the training is given by python cascade algorithm to train the users along with the code.

The Anaconda editor is used to implement and run the python file since it has its own data and training sets. This training sets are imported in our application to identify the expressions detected on the face. The face is identified and recognized using the tensor flow where it identifies the frames of the face and id makes the face which is identified.
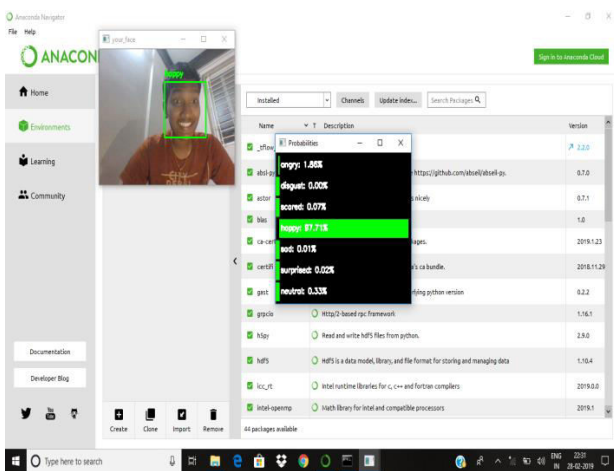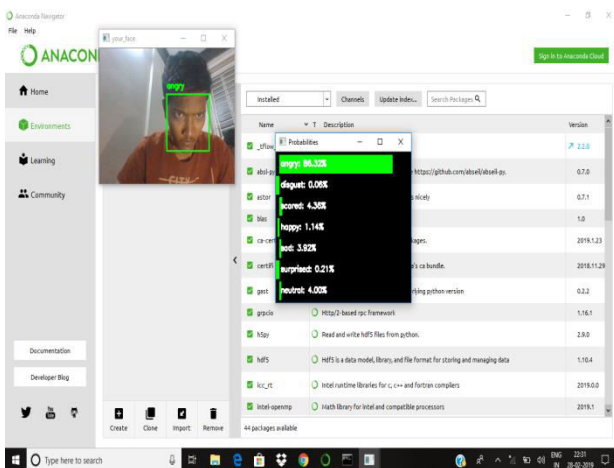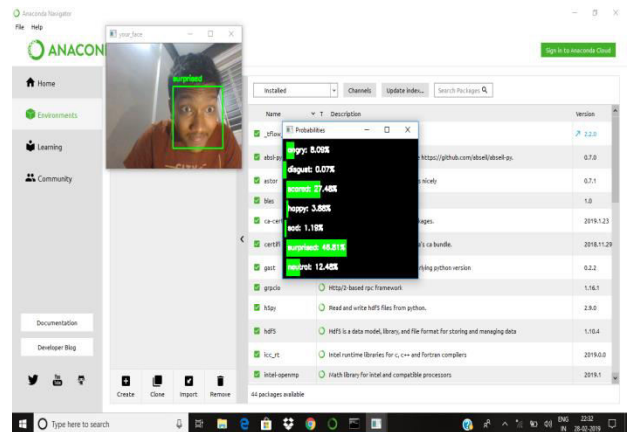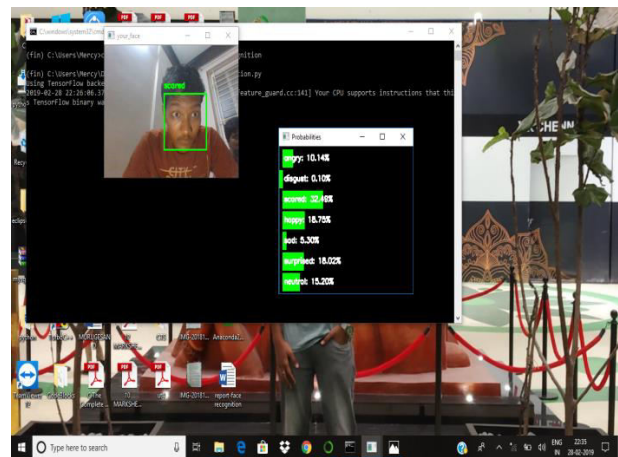

Fig 4: Surprised.

Fig 5: Scared.

V.   CONCLUSION

The current paper deals with the users to identify the recognition of the face of the user related to the users who are accessing the application. The facial gesture of the application can be identified through the application.

The application deals with the real time processing solutions and the systems related to the face expressions.

It also has its own face based surveillance and can also be used for Biometrics and multimedia applications. The

application is to recognize and identify the expression of the face in a very compressed domain. These factors the system going to generate a profile for student thus students can identify their strength and weakness and choose course with much more confident and knowledge.

VI. FUTURE ENHANCEMENTS

Can be integrated with social Media: with the rising development in artificial intelligence and machine learning an face expression recognition can be identified which depends on the user on seeing the post or news

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