



# A Review on Real Time Image Processing for Recognition of various type of Dynamic Facial Expression

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**Abstract:** In this paper, various types of dynamic facial expression are recognized by real time image processing using support webcam. Dynamic facial expression recognition is continuous process and gives the results immediately. Real time image processing consists of three modules i.e. face detection, face tracking and facial expression recognition modules. In the following paper, facial expression recognition system works by tracking a face and recognizing the face in four classes of expressions : mental state, physiological activities, verbal and non-verbal communication. In absence of any expression, it is said to be “Neutral” expression and intensity of a particular expression can be identified by the level of its “dissimilarity” from the Neutral expression. Several facial expressions can be represented by only two types of information’s : (i) class to which it belongs (ii) its intensity. So, one of the major perform a which is given maximum importance in this project through which facial expression is supposed to be detected is its intensity.

**Keywords:** Facial expression, recognition, dynamic facial expression, real time.

## I. INTRODUCTION

Facial expressions have a very important role in communication among human beings. Also, faces are amongst the most vital sources to distinguish between two persons as faces vary from person to person with different facial characteristics with having even slightest differences between any identical twins. Therefore, nowadays, faces and facial expressions has become a most vital point of research as they are widely used in recognition systems present in everyday life. Human facial expression vary from time to time depending upon the human emotions. Recognition of human emotions is usually performed through recognition of facial expression. Analysis of facial expressions has numerous potential applications in areas such as psychological studies, synthetic face animation, image understanding, robotics, crowd surveillance, entrance security etc [11]. Dynamic facial expression recognition has become a new research topic and receives more and more attention. The aim of dynamic facial expression recognition is to estimate facial expression type from an image sequence captured during physical facial expression process of a subject. It is motivated by the fact that facial expression can be described by diffeomorphic motions of muscles beneath the face[1]. Facial expression are generated by contractions of facial muscles, which result in temporally deformed facial feature such as eye lids, eye brows, nose, lips and skin texture[11]. Source of facial expression given in fig below:

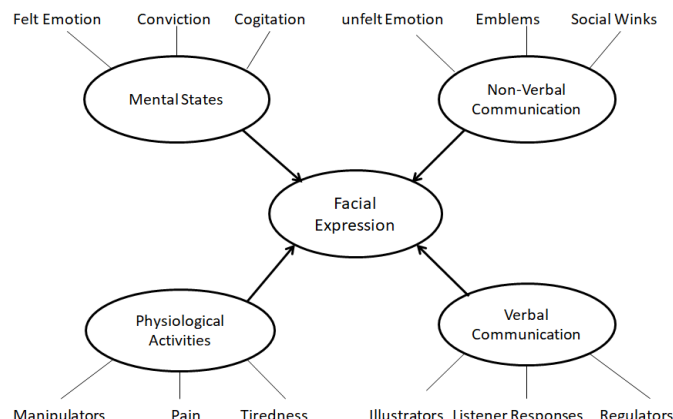


Figure:1 Facial Expressions

A face recognition system is a computer application system which varies and identifies a human face through its digital image and video frame from a source. One of the way to perform facial recognition is comparing from selected facial



expression stored in face database and image. It is used in security systems and can be compared to other such as finger print or eye iris recognition system and all kind of biometrics.

In this paper, though we have performed several facial expression recognition using webcam. It can detect faces and recognize the person's image having different emotions at different times stored in the database. The system is capable of recognizing large number of facial expression with higher and consistent successful rate of facial recognition.

## II. LITERATURE SURVEY

The literature survey describes the various methods for recognizing of dynamic facial expression. The methodologies used by different authors for recognizing of facial expressions are as follows:

In this paper the authors [1], have formulated a new way to tackle the dynamic facial expression recognition problem. It is formulated as a longitudinal atlas construction and diffeomorphic image registration problem. The algorithms used by the authors in this paper are LDDMM registration algorithm. The LDDMM registration algorithm is used to design map, to manipulate and transfer information.

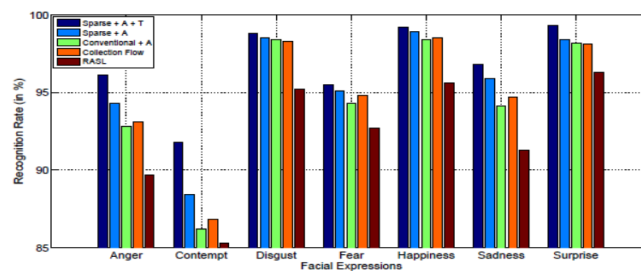


Fig. 02 The average recognition rates of seven different facial expressions on the CK+ database by using different schemes. "RASL" is the standard RASL algorithm with affine transformation model, "Collection Flow" is the collection flow algorithm, "Conventional" is the conventional groupwise registration method used to construct atlas, and "Sparse" is the proposed sparse representation scheme used to construct atlas. "A" denotes image appearance information, and "T" denotes temporal evolution information.

In this paper [2] title is "Automatic facial expression analysis: a survey" the authors finds the great need to work on facial analysis system autonomously as well as it should be improved enough to tackle with natural and manual changes. In this paper [3] "Dynamics of facial expression: Recognition of facial actions and their temporal segments form face profile image sequences" the authors try to make a new facial expression recognition method which depends on facial muscle action that produces expressions. In this paper [4] title is "Robust real-time object detection" the authors in this method user rapid image processing to achieve high detection rate. This paper brings together new algorithms, representations, and insights which are quite generic and may well have broader application in computer vision and image processing.

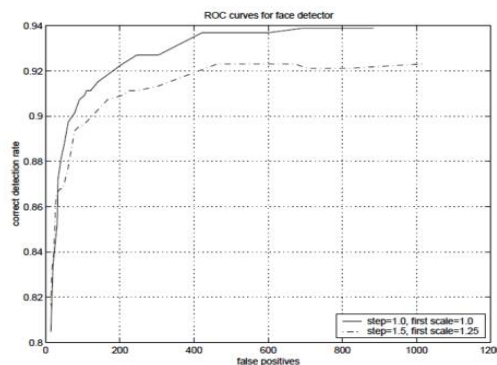


Figure: 03 ROC curves for our face detector on the MIT+CMU test set. The detector was run once using a step size of 1.0 and starting scale of 1.0 (75,081,800 sub-windows scanned) and then again using a step size of 1.5 and starting scale of 1.25 (18,901,947 sub-windows scanned). In both cases a scale factor of 1.25 was used.

In "Atlas construction and sparse representation method is used for the recognition of facial expression" [8] the authors analyzed many experimental results and came to the conclusion that this system is capable of giving higher recognition rate which is enhanced by its 3D facial expression image recognizing feature. The SIFT and SURF algorithm can be used.



### III. CONCLUSION

In this paper, we have proposed a real time image processing for dynamic facial expression recognition using support webcam. The users can see the results immediately. A real-time facial expression recognition system is implemented using the proposed algorithms. Facial expression recognition system tracks a face and recognizes 4 classes of expressions: mental state, physiological activities, verbal and non-verbal communication. Higher successful rates are achieved in experimental procedure carried out during the testing of the system in comparison to other conventional methods. The following method also provides very much higher rate accuracy of facial expression recognition in comparison to the previous ones.

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