



**SYNOPSIS**

**ON**

**FACIAL EXPRESSION**

**DETECTION**

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**Submitted By: Shivani**

**Submitted To:**  
**Md. Farmanul Haque**

**B.Tech CSE 'C'**

**191500768**

## **INTRODUCTION**

A Facial expression is the visible manifestation of the affective state, cognitive activity, intention, personality and psychopathology of a person and plays a communicative role in interpersonal relations. It has been studied for a long period of time and obtaining the progress recent decades. Though much progress has been made, recognizing facial expression with a high accuracy remains to be difficult due to the complexity and varieties of facial expressions. Generally, human beings can convey intentions and emotions through nonverbal ways such as gestures, facial expressions and involuntary languages. This system can be significantly useful, nonverbal way for people to communicate with each other. The important thing is how fluently the system detects or extracts the facial expression from image. The system is growing attention because this could be widely used in many fields like lie detection, medical assessment and human computer interface. The Facial Action Coding System (FACS), which was proposed in 1978 by Ekman and refined in 2002, is a very popular facial expression analysis tool. On a day-to-day basis humans commonly recognize emotions by characteristic features displayed as a part of a facial expression. For instance happiness is undeniably associated with a smile or an upward movement of the corners of the lips. Similarly other emotions are characterized by other deformations typical to a particular expression. Research into automatic recognition of facial expressions addresses the problems surrounding their presentation and categorization of static or dynamic characteristics of these deformations of face pigmentation. The system classifies facial expression of the same person into the basic emotions namely anger, disgust, fear, happiness, sadness and surprise. The main purpose of this system is efficient interaction between human beings and machines using eye gaze, facial expressions, cognitive modeling etc. Here, detection and classification of facial expressions can be used as a natural way for the interaction between man and machine. And the system intensity varies from person to person and also varies along with age, gender, size and shape of face, and further, even the expressions of the same person do not remain constant with time. However, the inherent variability of facial images caused by different factors like variations in illumination, pose, alignment, occlusions make expression recognition a challenging task. Some surveys on facial feature representations for face recognition and expression analysis addressed these challenges and possible solutions in details.

## **EXISTING SYSTEM**

1. Technically, the project's goal consists on training a deep neural network with labeled images of static facial emotions.
2. Later, this network could be used as part of a software to detect emotions in real time.
3. Using this piece of software will allow robots to capture their interlocutor's inner state (at some extent).
4. This capability can be used by machines to improve their interaction with humans by providing more adequate responses.
5. Thus, this project fits the purpose and research of the Social Robotics Lab well

## **USE OF THE PROJECT**

1. The system can be used to detect and track a user's state of mind.
2. The system can be used in mini-marts, shopping center to view the feedback of the customers to enhance the business,
3. The system can be installed at busy places like airport, railway station or bus station for detecting human faces and facial expressions of each person. If there are any faces that appeared suspicious like angry or fearful, the system might set an internal alarm.
4. The system can also be used for educational purpose such as one can get feedback on how the student is reacting during the class.
5. This system can be used for lie detection amongst criminal suspects during interrogation
6. This system can help people in emotion related research to improve the processing of emotion data.
7. Clever marketing is feasible using emotional knowledge of a person which can be identified by this system.

# **FEASIBILITY OF PROJECT**

## **Technical Feasibility:**

Python language

## **Operational Feasibility:**

- a)The system will detect and capture the image of face.
- b)The captured image is then (identified which category)

## **Economic Feasibility:**

- a)JAFPE
- b)COHN-KANADE

# FUNCTIONAL SPECIFICATION

- Image capture and face detection
- Feature extraction
- Identify the facial expression

## **SoftwareSpecification:**

- TechnologyImplemented : Deep Learning
- LanguageUsed : Python
- Database :CK+, JAFFE
- UserInterfaceDesign :Jupyter, python
- WebBrowser :Linux, ubuntu

## **HardwareRequirements:**

- Processor :intel core i5
- OperatingSystem : windows 10
- RAM : 4Gb RAM
- Display :1920\*1080 pixels
- Harddisk : SSD 256gb

## **FUTURESCOPE**

Face expression recognition systems have improved a lot over the past decade. The focus has definitely shifted from posed expression recognition to spontaneous expression recognition. Promising results can be obtained under face registration errors, fast processing time, and high correct recognition rate (CRR) and significant performance improvements can be obtained in our system. System is fully automatic and has the capability to work with images feed. It is able to recognize spontaneous expressions. Our system can be used in Digital Cameras wherein the image can be captured only when the person smiles. In security systems which can identify a person, in any form of expression he presents himself. Rooms in homes can set the lights, television to a person's taste when they enter the room. Doctors can use the system to understand the intensity of pain or illness of a deaf patient. Our system can be used to detect and track a user's state of mind, and in mini-marts, shopping center to view the feedback of the customers to enhance the business etc.