



Human Facial Expression(Emotion) Recognition

A MAJOR PROJECT SYNOPSIS

Submitted by

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1. PROBLEM STATEMENT

- Develop a facial expression recognition model in Keras
- Build and train a convolutional neural network (CNN)
- Deploy the trained model to a web interface with Flask
- Apply the model to real-time video streams and image data.

2. ABSTRACT

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. Automatic recognition of facial expressions can be an important component of natural human-machine interfaces; it may also be used in behavioural science and in clinical practice. An automatic Facial Expression Recognition system needs to perform detection and location of faces in a cluttered scene, facial feature extraction, and facial expression classification.

3. INTRODUCTION

Pattern recognition is the automated recognition of patterns and regularities in data. It has applications in statistical data analysis, signal processing, image analysis, information retrieval, bioinformatics, data compression, computer graphics and machine learning.

Pattern recognition is the process of recognizing patterns by using a machine learning algorithm. Pattern recognition can be defined as the classification of data based on knowledge already gained or on statistical information extracted from patterns and/or their representation.

Image processing is the field of signal processing where both the input and output signals are images. One of the most important applications of Image processing is Facial expression recognition. Our emotion is revealed by the expressions in our face. Facial Expressions plays an important role in interpersonal communication. Facial expression is a non-verbal scientific gesture which gets expressed in our face as per our emotions.

3. SOFTWARE AND HARDWARE REQUIREMENTS

Functional Requirements:

System Purpose:

- To be able to detect face from live feed.
- To be able to fetch the images per second and give the desired output accordingly.

Users:

- Users should be able to use the app efficiently in order to detect facial emotion.
- Users must be able to use the camera for providing input for the app or there must be option to input pre-recorded video.

Responsibilities:

Primary responsibility is to provide users direct access for accurate result information on given input.

Software Requirements:

- Anaconda environment
- Jupyter Notebook
- Python3 with libraries such as TensorFlow, Keras, pandas etc.
- Ubuntu 16.04 or above

Hardware Requirements:

- Processor: 64 bit
- RAM: 8 GB
- Hard Disk: 1 TB