Facial Emotion Recognition System using Convolutional Neural Networks

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Introduction

Humans employ diverse modes of communication, including speech, gestures, and emotions. Deciphering emotions solely through facial expressions presents a greater challenge in comparison to speech and gestures.

Our system receives an image capturing the facial expression as input, and subsequently, the model predicts the corresponding emotion.

The objective is to present an artificial neural network with the ability to comprehend human facial expressions, specifically recognizing six distinct categories of emotions: Anger, Fear, Happiness, Sadness, Surprise, and Neutrality.

Application

- **Personalized services:** Predict individual movie reactions through facial expression analysis
- **Public safety:** Analyze crime scene footage to identify potential motives in crimes
- **Education:** Detect emotional reactions to educational programs and customize learning paths
- **Employment:** Monitor employee moods and attention levels
- **Healthcare:** Detect autism or neurodegenerative diseases, observe patients during treatment
- **Customer behavior analysis and advertising:** Analyze shopping emotions for effective marketing

Data Sets

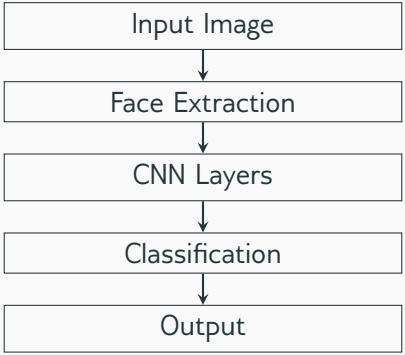
Facial Expression Recognition Challenge - 2013

- 28,000+ face samples training data
- 3500+ test data

Real Time Face Emotion Recognition

- **Programming Language:** Python
- **Convolution Neural Network Algorithm**
- **Image Preprocessing:** OpenCV (to capture live images), Haar Cascade Technique (to detect faces)

System Architecture



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