RECOGNIZING EMOTIONAL STATES WITH WEARABLES WHILE PLAYING A SERIOUS GAME

ABSTRACT

Facial emotion recognition is a critical task in computer vision with numerous applications ranging from human-computer interaction to mental health monitoring. This code presents a real- time facial emotion recognition system utilizing a convolutional neural network (CNN) trained onthe FER-2013 dataset. The system captures video frames from a webcam feed, detects faces using Haar cascade classifier, and extracts facial regions. These regions are preprocessed and fed into thepre-trained CNN model, which predicts the emotion expressed in the face. The model recognizes seven basic emotions: neutral, happiness, surprise, sadness, anger, disgust, and fear. Detected emotions are overlayed on the video feed in real-time. This implementation provides a simple yet effective approach for real-time facial emotion recognition, demonstrating the potential of deep learning in understanding human expressions.

Video Capture: The system interfaces with a webcam to capture video frames in real-time,forming the basis for subsequent facial emotion analysis.

Face Detection: Utilizing a Haar cascade classifier, the system identifies and localizes faceswithin each video frame. This step is crucial for isolating the regions of interest (facial regions) necessary for emotion analysis.

Facial Region Extraction: Following face detection, the system extracts facial regions fromthe video frames. These regions provide the input data for subsequent emotion recognition.

Preprocessing: Prior to feeding the facial regions into the pre-trained CNN model, the system preprocesses the data. This step may involve resizing the facial regions to conform to the input dimensions required by the CNN and normalizing pixel values to ensure consistency across inputs.