Current Capabilities
in Machine Emotion Recognition

Abstract

Automatic emotion recognition is becoming increasingly vital across various sectors where emotion analysis plays a crucial role.This technology has applications in customer service, marketing, healthcare, education, automotive, entertainment, and security, allowing for real-time emotional insights that enhance user experiences and optimize system responses. Despite its growing significance, emotion recognition remains challenging due to the complexity of emotions, cultural variability, and the technological barriers associated with accurate detection. This paper provides a scoping review of state-of-the-art methods in machine emotion recognition, covering capabilities such as facial expression-based emotion recognition (FER), eye-tracking, pupillometry, electrooculography (EOG), microexpression analysis, and gait analysis. The review also explores body language and posture recognition, hand gestures, touch dynamics, wearable devices, and speech and text analysis, including spoken and written text. Furthermore, physiological signal-based methods, including respiration rate analysis (RR), galvanic skin response (GSR), electroencephalography (EEG), electromyography (EMG), skin temperature measurements (SKT), electrocardiography (ECG/EKG), and heart rate variability (HRV), are discussed in-depth. This overview can provide a basis for further exploration into machine-based emotion recognition.