**CNN-BASED EMOTION DETECTION MODEL FROM SPEECH RECOGNITION, FACIAL EXPRESSION IN MULTIMODAL EMOTION DETECTION**

**ABSTRACT**

In the contemporary landscape of human-computer interaction and affective computing, the accurate recognition and interpretation of human emotions hold paramount importance. The study introduces a state-of-the-art multimodal emotion detection system that integrates cutting-edge techniques in speech recognition, facial expression analysis, and video processing. Traditional methods in emotion detection have exhibited limitations, particularly in capturing the nuanced and dynamic nature of human emotional states. Recognizing these challenges, this research endeavors to develop a robust framework that seamlessly combines multiple modalities to enhance emotion detection accuracy. Through a comprehensive review of existing methodologies, including rule-based systems and feature-based approaches, we identify key shortcomings such as limited scalability and inability to handle complex emotional expressions. Motivated by the need for more effective and versatile emotion detection systems, we propose a novel approach centered around Convolutional Neural Networks (CNNs). CNNs offer the advantage of automatic feature learning and hierarchical representation, thereby facilitating the extraction of discriminative emotional cues from speech, facial expressions, and video data. By harnessing the power of CNNs, our proposed model aims to transcend the limitations of traditional methods, enabling more accurate and robust emotion detection across diverse contexts and scenarios. Extensive experimentation and evaluation on benchmark datasets demonstrate the efficacy of our multimodal CNN-based approach in accurately recognizing and classifying a wide range of emotional states. This research contributes to the advancement of affective computing by providing a scalable, adaptable, and high-performance solution for multimodal emotion detection, with potential applications spanning human-computer interaction, virtual reality, mental health monitoring, and beyond.