

Multimodal Stress Detection Using Deep Learning

Satish Singh

Department of Computer Science and Engineering (AIML), Bansal Institute of Engineering and Technology, Lucknow, India

Abhijit Sharma

Department of Computer Science and Engineering (AIML), Bansal Institute of Engineering and Technology, Lucknow, India

Nandini Singh

Department of Computer Science and Engineering (AIML), Bansal Institute of Engineering and Technology, Lucknow, India

Pradeep Chauhan

Department of Computer Science and Engineering (AIML), Bansal Institute of Engineering and Technology, Lucknow, India

Sameer Awasthi

Department of Computer Science and Engineering (AIML), Bansal Institute of Engineering and Technology, Lucknow, India

Abstract

Stress, which can cause physical and mental disorders, is one of the most significant health problems of the twentieth century. Traditional approaches to stress detection are based on self-reported questionnaires or one-dimensional measurements (such as heart rate or face analysis), which sometimes produce inaccurate or incorrect results. To overcome this constraint, this study proposes FusionNet, a multimodal deep learning system designed to combine different physiological inputs, facial expressions, and audio for stress detection. By combining data from the DEAP and WESAD datasets, the proposed approach uses the complementing characteristics of many modalities to increase the precision of classification. Our outcomes demonstrate the reliability and resilience of our approach by demonstrating that multimodal fusion performs noticeably better than unimodal models, with accuracy rising from 70% to 83%.

Keywords

Deep Learning, DEAP, Emotion, Multi modal Learning, Physiological Signals, Recognition, Stress Detection, WESAD.

