**Real time Facial Emotion Recognition**

**Abstract:**

This paper presents a deep learning-based model for real-time automatic mood estimation using facial expressions in images. The model is built on a Convolutional Neural Network (CNN) architecture, customized to learn individual facial parameters and map them into facial Action Units (AUs). These parameters are then translated into the Pleasure, Arousal, and Dominance (PAD) space, which forms the basis for mood categorization. The experimental framework defines four primary mood categories: "Exalted", "Calm", "Anxious", and "Bored", based on the Pleasure–Arousal (PA) plane, along with additional categories for positive and negative Pleasure states. The model's performance is evaluated on a stimulus video shown to participants, where their facial expressions are recorded and analyzed. Results demonstrate that the CNN-based model achieves a 94% accuracy in classifying moods in the Pleasure dimension, and 73% accuracy in the PA categorization, highlighting the model's ability to accurately estimate moods based on facial expressions. The findings suggest that facial expressions are a reliable indicator of subjective emotional states, offering potential applications in real-time mood assessment systems for diverse fields such as human-computer interaction, healthcare, and user experience.

**Keywords:** Affective analysis, mood estimation, CNN, facial expressions, real-time tracking, computer vision, emotion recognition