

# Tracking and Detecting Depression Level using Facial Recognition and PEN&IQ Test

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**Abstract:** *These Human facial expressions convey a lot of information visually rather than articulately. Facial expression recognition plays a crucial role in the area of human-machine interaction. Automatic facial expression recognition system has many applications including, but not limited to, human behaviour understanding, detection of mental disorders, and synthetic human expressions. Recognition of facial expression by computer with high recognition rate is still a challenging task.*

*Two popular methods utilized mostly in the literature for the automatic FER systems are based on geometry and appearance. Facial Expression Recognition usually performed in four-stages consisting of pre-processing, face detection, feature extraction, and expression classification. The human face is an important part of an individual's body and plays an important role in knowing the individual's mood. The face is where a human expresses all his basic emotions. In the existing system, they examine the mental state manually by assessing them but have many disadvantages like we cannot predict any accurate solutions based on the assessment score because we might be not sure what kind of emotions the human user would be all time. To overcome this problem, a novel system is proposed to suggest an effective solution for predicting the mental state dynamically, we propose a hybrid architecture invoking facial based emotion sequence, PEN test and IQ test. By consistent monitoring of a human's emotion and subjecting to PEN and IQ tests, the human's mental state is routed. Combination of the above three techniques provides promising results for mental state and self-control.*

**Keywords:** Depression Level, Conventional Neural Network, classification, algorithms, artificial intelligence, Machine Learning

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