

# Chapter 4

## A Predictive Model Emotion Recognition on Deep Learning and Shallow Learning Techniques Using EEG Signal

**Vidhya R.**

*SRM Institute of Science and Technology, India*

**Sandhia G. K.**

*SRM Institute of Science and Technology, India*

**Jansi K. R.**

*SRM Institute of Science and Technology, India*

**Nagadevi S.**

*SRM Institute of Science and Technology, India*

**Jeya R.**

*SRM Institute of Science and Technology, India*

### ABSTRACT

*Social, psychological, and emotional well-being are all aspects of mental health. Mental illness can cause problems in daily life, physical health, and interpersonal connections. Severe changes in education, attitude, or emotional management of students cause suffering are defined as children's mental disorders. Artificial intelligence (AI) technology has lately been advanced to help intellectual fitness professionals, especially psychiatrists and clinicians, in making choices primarily based totally on affected person records along with medical history, behavioural records, social media use, and so on. There is a pressing need to address core*

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*mental health concerns in children, which can progress to more serious problems if not addressed early. As a result, a shallow learning technique-assisted integrated prediction model (SLIPM) has been presented in this research to predict and diagnose mental illness in children early. Convolutional neural networks (CNN) are built first in the proposed model to learn deep-learned patient behavioural data characteristics.*

## **INTRODUCTION**

Emotion popularity is a method for knowledge and extracting the modern human intellectual kingdom or modes of mind. Emotion is a critical issue of being human, and it has a good sized effect on each day sports like communication, interaction, and learning. The purpose of this studies is to broaden an EEG-primarily based totally emotion detection gadget which could inform the distinction among 3 distinctive emotions: positive, neutral, and negative(Fink, M 2017)(Bahari, F., and Janghorbani, A 2013). Up to this date, numerous modelling methods for computerized emotion popularity were documented. However, the temporal dependency belongings become now no longer absolutely investigated all through the emotion process. Furthermore, computerized emotion popularity is an critical and hard subject matter withinside the subject of human-system interaction (HMI). The development of Artificial Intelligence (AI) technology, emotion popularity has grow to be a important thing of studies withinside the domain names of neurology, pc science, cognitive science, and scientific science. Furthermore, emotion detection from speech, gesture, and posture turns into intricate for inarticulate or bodily challenged individuals who can not speak or explicit their sentiments via gesture or posture. As a result, EEG is a viable method for extracting human emotion and has already been used in numerous investigations to analyse human emotion. Nowadays, machines, particularly robots, are used in a wide range of industries, hospitals, and even domestic applications. As robots grow increasingly widespread in many aspects of daily life, people are establishing higher expectations for them. The super ability of decision making, self-thinking, and emotion detecting is hoped for to improve human-machine interaction. Emotion recognition assurance is an unavoidable requirement for making a robot more practical for real-world applications. The patient's affective information, which includes his or her emotional state, is a critical aspect in determining his or her mental and physical well-being. The emotional state of a patient has a substantial impact on treatment management.

Many signals have been authorised, adopted, and roughly divided into non-physiological and physiological signals in the practical application of emotion recognition. Speech, gesture, facial expression, movement, voice intonation, and

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