

Partial Differential Equation-Based Modeling of Brain Response to Stimuli

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Abstract : The brain is the information processing centre of the human body. Stimuli in the form of information are transferred to the brain and then brain makes the decision on how to respond to them. In this research, we propose a new partial differential equation which analyses the EEG signals and make a relationship between the incoming stimuli and the brain response to them. In order to test the proposed model, a set of external stimuli applied to the model and the model's outputs were checked versus the real EEG data. The results show that this model can model the EEG signal well. The proposed model is useful not only for modelling of EEG signal in case external stimuli but it can be used for modelling of brain response in case of internal stimuli.

Keywords : brain, stimuli, partial differential equation, response, EEG signal

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020