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## ERNN: A biologically inspired feedforward neural network to discriminate emotion from EEG signal (Article)

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### Abstract

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Emotions play an important role in human cognition, perception, decision making, and interaction. This paper presents a six-layer biologically inspired feedforward neural network to discriminate human emotions from EEG. The neural network comprises a shift register memory after spectral filtering for the input layer, and the estimation of coherence between each pair of input signals for the hidden layer. EEG data are collected from 57 healthy participants from eight locations while subjected to audio-visual stimuli. Discrimination of emotions from EEG is investigated based on valence and arousal levels. The accuracy of the proposed neural network is compared with various feature extraction methods and feedforward learning algorithms. The results showed that the highest accuracy is achieved when using the proposed neural network with a type of radial basis function. © 2012 IEEE.

### Author keywords

Affective computing   arousal-valence plane   EEG-based emotion recognition   functional connectivity

### Indexed keywords

Affective Computing

arousal-valence  
plane

Audio-visual  
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Biologically inspired

Emotion  
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