

Optimal selection of electrode position combinations for emotion recognition using evoked electroencephalogram signals

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The study of complex human emotions has for long been an area attracting biomedical scientists. Studies related to bio-potentials associated with the human brain in the presence of

external stimulus which triggers emotions of love, anger, fear, contentment are in vogue. This paper deals with the optimal selection of combinations of electrode positions to acquire evoked EEG signals from seven male subjects. The selection of combinations of frontal (Fz), central (Cz) and parietal (Pz) electrodes viz-a-viz the responses of the subjects to different types of emotions have been analyzed. The emotions have been classified into four categories namely low valence high arousal, high valence high arousal, high valence low

arousal and low valence low arousal and responses of the subjects classified. The four-class classification is done in two steps. First, the emotion is classified as low or high arousal followed by the second classification as low or high valence. For each classification a pair of electrodes is employed, say Fz for arousal and Pz for valence. The results of seven male subjects for 160 stimuli have shown the best mean four-class classification accuracy of 70.23% using Fz (for arousal) and Pz (for valence).

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