An approach to diagnose depression in clinical setup using support vector machines

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Abstract

This work presents an approach for clinical diagnosis of depression. The study was based on EEG data obtained from publicly available database of Karunya university. Research includes 96 data points out of those 48 belong to control and rest of 48 belong to patients preliminarily diagnosed with depression. It was observed that the measured potential difference between ground electrode and other electrode shows fluctuations, negative and positive values. This study was aimed to find patterns in above mentioned three variables. Significance of variables was obtained from statistical analysis which was performed using student's independent t-test. The classification model was built using support vector machines, Radial Basis Function (RBF) was used as a kernel function which provided 86.46% accuracy in classification of test data. Sensitivity and specificity was calculated to be 81.25% and 91.67%. Study suggests that in clinical setup depression can be diagnosed by analyzing these variables using support vector machines. A comparison of models was also carried out with k-means clustering and decision tree models, however Support Vector Machine model provided the highest accuracy in all tested models.

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