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Analysis of Alcoholic and Non-alcoholic EEG signals

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This paper analyses the effect of Electroencephalogram (EEG) signals correlated with alcoholic and non-alcoholic subjects and the possibilities of detecting the alcohol consumed by people from controls, using EEG signals. EEG records the electrical activity from the brain, and is useful for assessing the current mental status of a person. EEG data from 20 alcoholic and 20 non-alcoholic subjects were used for the analysis. Band power, power spectral density and mean frequency were used as features and Support Vector Machines was used for classifying EEG signals. The classification accuracy for the whole EEG signal is 98.52% and 98.83% for a single electrode AF4 across all EEG bands. The data is further analysed to find the classification accuracy for each EEG sub bands. The accuracy of sub bands are as follows: Delta 98.89%, Theta 98.65%, Alpha 98.89%, Beta 98.89%, and Gamma 98.89%. The result indicates that consumption of alcohol has a huge influence in brain signals and it can be detected using a single electrode.

Keywords: Electroencephalogram, EEG, alcoholic subjects