

Automatic detection of interictal spikes using data mining models.

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Abstract

A prospective candidate for epilepsy surgery is studied both the ictal and interictal spikes (IS) to determine the localization of the epileptogenic zone. In this work, data mining (DM) classification techniques were utilized to build an automatic detection model. The selected DM algorithms are: Decision Trees (J 4.8), and Statistical Bayesian Classifier (naïve model). The main objective was the detection of IS, isolating them from the EEG's base activity. On the other hand, DM has an attractive advantage in such applications, in that the recognition of epileptic discharges does not need a clear definition of spike morphology. Furthermore, previously 'unseen' patterns could be recognized by the DM with proper 'training'. The results obtained showed that the efficacy of the selected DM algorithms is comparable to the current visual analysis used by the experts. Moreover, DM is faster than the time required for the visual analysis of the EEG. So this tool can assist the experts by facilitating the analysis of a patient's information, and reducing the time and effort required in the process.