

# Methods for epileptic seizures prediction based on features extraction from time series

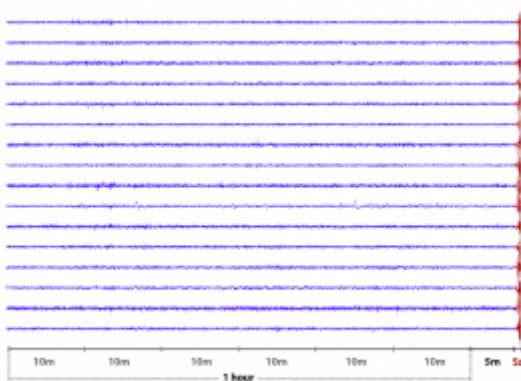


FIGURE 5.1: An example of one hour iEEG recording splitted in ten minutes segments.

Despite the progress of medicine in recent decades, epilepsy is a disease whose knowledge is still limited. About one third of patients with this disease continue to present crises despite pharmacological treatments, surgical interventions, and the medical assistance. The most difficult aspect, from a medical point of view, is to be able to identify the exact moment when the crisis will take place so as to be able to assist the patient with the appropriate therapies. On the other hand, in the last decades numerous methods have been developed for detecting and predicting epileptic seizures by using signals coming primarily from electroencephalograms of diseased patients.

This thesis work is focused on the analysis of a new method based on BOSS, a recently proposed technique to extract the features from time series. This procedure uses the Fourier transform to represent a time series as an histogram containing the occurrences of words having predefined length and alphabet, which can be used as features vectors. The

prediction is then realized through classifiers such as SVM or Random Forest. Experimental tests show the achievement of competitive results.

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