Pre-Ictal Phase Detection with SVMs

Julián R. Cózar[1], Vesna Zeljković[2], José Mª González-Linares[1],

Nicolás Guil[1], Milena Bojic[3], Ventzeslav Valev[4]

[1] Computer Architecture Department, University of Málaga, Málaga, Spain

[2] School of Engineering & Computing Sciences, New York Institute of Technology, Nanjing Campus, USA, vzeljkov@nyit.edu

[3] University Clinic for Internal Diseases, Clinical Hospital Center "Dr Dragisa Misovic - Dedinje", Belgrade, Republic of Serbia

[4] IAPR Fellow, School of Computing, University of North Florida, Florida, USA

Abstract— **Over 50 million persons worldwide are affected by epilepsy. Epilepsy is a brain disorder known for sudden, unexpected transitions from normal to pathological behavioral states called epileptic seizures. Epilepsy poses a significant burden to society due to associated healthcare cost to treat and control the unpredictable and spontaneous occurrence of seizures. There is a need for a quick screening process that could help neurologist diagnose and determine the patient's treatment. Electroencephalogram has been traditionally used to diagnose patients by evaluating those brain functions that may correspond to epilepsy. The objective of this paper is to implement a novel detection technique of pre-ictal state that announces epileptic seizures from the online EEG data analysis. Unlike most published methods, that are aimed to distinguish only the normal from the epilepsy state, in this work the pre-ictal state is introduced as a new patient status, thus differentiating three possible states: normal (healthy), pre-ictal and epileptic seizure. In this manner, the patient should get timely alert about the possible seizure attack so that she/he can stop with its activities and take safety precautions.**

EEG signal; Epilepsy; Pre-ictal; Classification; Wavelet Transform; SVM.

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