

Electroencephalogram Cepstral Distances in Alzheimer's Disease Diagnosis

Pedro Miguel Rodrigues^a, Diamantino Freitas^a and João Paulo Teixeira^b

^a Faculty of Engineering, University of Porto, Porto, Portugal

^b Politechnic Institute of Bragança, Bragança, Portugal

Abstract

Alzheimer's disease (AD) represents one of the greatest public health challenges worldwide nowadays, because it affects millions of people all over the world and it is expected that the disease will increase considerably in the near future. This study is the first application attempt of cepstral analysis on Electroencephalogram (EEG) signals to find new parameters in order to achieve a better differentiation between EEGs of AD patients and Control subjects. The results show that the methodology that uses a combined Wavelet (WT) Biorthogonal (Bior) 3.5 and cepstrum analysis was able to describe the EEG dynamics with a higher discriminative power than the other WTs/spectrum methodologies in previous studies. The most important significance figures were found in cepstral distances between cepstrums of theta and alpha bands ($p=0.00006<0.05$).

Keywords: Alzheimer's Disease; Cepstrum; Wavelet Transform; Electroencephalogram signals; Cepstral distances.
