A new system to make Alzheimer diagnosis from the analysis of the rough EEG

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In this paper we propose a new complex algorithm able to classify in blind way the original EEG tracing of each subject, without any preliminary pre-processing. The medical need in this field is to make an early differential diagnosis between subjects affected by Mild Cognitive Impairment, early Alzheimer subjects, and healthy elderly subjects, only by recording and analyzing few minutes of their EEG. In the last twenty years many powerful learning machines and algorithms were proposed to face this hard problem with different and interesting results. Among these algorithms, a new Artificial Adaptive System, named I-FAST, was able to classify few minutes of the EEG track of a subject as AD, as MCI or as a Control subject with high accuracy (92%-94%). A updating of this system is presented here: we have added a new algorithm to I-FAST system, named MS-ROM (Multi Scale Ranked Organizing Map), able to classify the rough EEG of AD, MCI and Control subject with accuracy between 94%-97%.

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