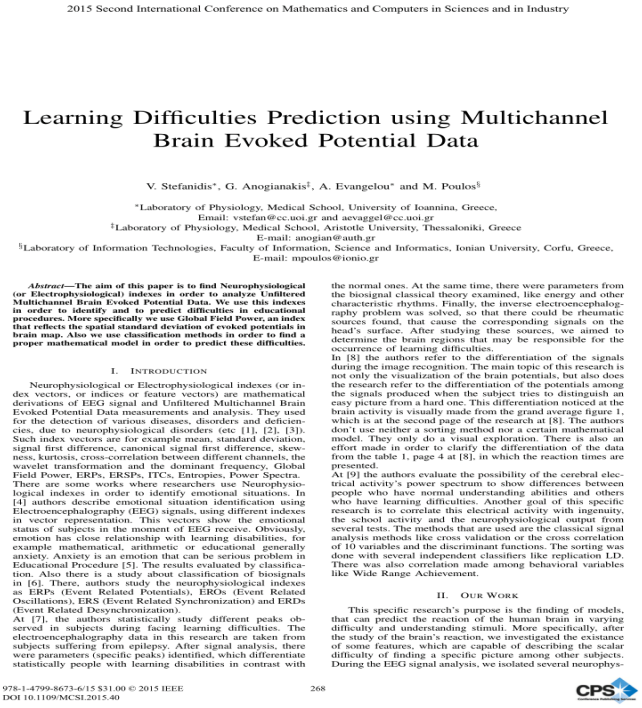
Investigating The Issues Of Reading Disabilities



2015 Second International Conference on Mathematics and Computers in Sciences and in Industry

Learning Difficulties Prediction using Multichannel Brain Evoked Potential Data

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***Abstract*—The aim of this paper is to find Neurophysiological (or Electrophysiological) indexes in order to analyze Unfiltered Multichannel Brain Evoked Potential Data. We use this indexes in order to identify and to predict difficulties in educational procedures. More specifically we use Global Field Power, an index that reflects the spatial standard deviation of evoked potentials in brain map. Also we use classification methods in order to find a proper mathematical model in order to predict these difficulties.**

I. Introduction

Neurophysiological or Electrophysiological indexes (or index vectors, or indices or feature vectors) are mathematical derivations of EEG signal and Unfiltered Multichannel Brain Evoked Potential Data measurements and analysis. They used for the detection of various diseases, disorders and deficiencies, due to neurophysiological disorders (etc [1], [2], [3]). Such index vectors are for example mean, standard deviation, signal first difference, canonical signal first difference, skewness, kurtosis, cross-correlation between different channels, the wavelet transformation and the dominant frequency, Global Field Power, ERPs, ERSPs, ITCs, Entropies, Power Spectra.
There are some works where researchers use Neurophysiological indexes in order to identify emotional situations. In [4] authors describe emotional situation identification using Electroencephalography (EEG) signals, using different indexes in vector representation. This vectors show the emotional status of subjects in the moment of EEG receive. Obviously, emotion has close relationship with learning disabilities, for example mathematical, arithmetic or educational generally anxiety. Anxiety is an emotion that can be serious problem in Educational Procedure [5]. The results evaluated by classification. Also there is a study about classification of biosignals in [6]. There, authors study the neurophysiological indexes as ERPs (Event Related Potentials), EROs (Event Related Oscillations), ERS (Event Related Synchronization) and ERDs (Event Related Desynchronization).
At [7], the authors statistically study different peaks observed in subjects during facing learning difficulties. The electroencephalography data in this research are taken from subjects suffering from epilepsy. After signal analysis, there were parameters (specific peaks) identified, which differentiate statistically people with learning disabilities in contrast with the normal ones. At the same time, there were parameters from the biosignal classical theory examined, like energy and other characteristic rhythms. Finally, the inverse electroencephalography problem was solved, so that there could be rheumatic sources found, that cause the corresponding signals on the head's surface. After studying these sources, we aimed to determine the brain regions that may be responsible for the occurrence of learning difficulties.
In [8] the authors refer to the differentiation of the signals during the image recognition. The main topic of this research is not only the visualization of the brain potentials, but also does the research refer to the differentiation of the potentials among the signals produced when the subject tries to distinguish an easy picture from a hard one. This differentiation noticed at the brain activity is visually made from the grand average figure 1, which is at the second page of the research at [8]. The authors don't use neither a sorting method nor a certain mathematical model. They only do a visual exploration. There is also an effort made in order to clarify the differentiation of the data from the table 1, page 4 at [8], in which the reaction times are presented.
At [9] the authors evaluate the possibility of the cerebral electrical activity's power spectrum to show differences between people who have normal understanding abilities and others who have learning difficulties. Another goal of this specific research is to correlate this electrical activity with ingenuity, the school activity and the neurophysiological output from several tests. The methods that are used are the classical signal analysis methods like cross validation or the cross correlation of 10 variables and the discriminant functions. The sorting was done with several independent classifiers like replication LD. There was also correlation made among behavioral variables like Wide Range Achievement.

II. Our Work

This specific research's purpose is the finding of models, that can predict the reaction of the human brain in varying difficulty and understanding stimuli. More specifically, after the study of the brain's reaction, we investigated the existance of some features, which are capable of describing the scalar difficulty of finding a specific picture among other subjects. During the EEG signal analysis, we isolated several neurophys-

978-1-4799-8673-6/15 $31.00 © 2015 IEEE
DOI 10.1109/MCSI.2015.40

We have been specialist internet booksellers since and sellers of second hand, rare and out-of-print books by catalogue since We have access to.The present experiment investigated the popular view that reading disability is Reading, Writing and Speech Problems in Children, Chapman and Hall.Students with specific learning disabilities (LDs) must present documentation of indicating problems with the disability documentation provided by students.Examining an Effective Encoding and Decoding Prevention Instruction Model Download PDF PDF download for Ameliorating Reading Disabilities Early.Main Author: Spache, George Daniel, Format: Book. Language: English. Published: Boston: Allyn and Bacon, c Subjects: Reading disability. Tags.Language Basis of Reading and Reading Disabilities: Evidence From a Longitudinal Investigation Most of these children had problems in both phonological processing and oral language. Regression analyses further.conducted to investigate the relationship between learning disabilities and their learning problems are due to disabilities of mobility, vision or hearing, mental.An Investigation of Methods to Detect Feigned Reading Disabilities Archives of Clinical Neuropsychology, Volume 25, Issue 2, 1 March research investigating the means of mediating these students' participation in GIsML outcomes; (b) how his learning problems, principally with regard to print .The issue of identifying reading difficulties and disabilities in English language . Examining Reading Development in the Native and Target.There is a high comorbidity between a specific learning disability in reading (RD) . Given this potential dichotomy it is of interest to assess the memory problems of Hence, future research should further investigate the role of medication in.Standardized assessments of attention problems and reading achievement This distinction has not been made in many investigations, however, making it.Discrimination Evidence for Examining Fourth Grade Students'. Learning Disability Problems. Abdulhameed S. Hassan1 & Ibrahim S. Al-.