Abstract

Specific learning Disabilities (SLD) is a generic term that refers to a heterogeneous group of disorders manifested by significant, unexpected, specific and persistent difficulties in the acquisition and use of efficient reading (Dyslexia), writing (Dysgraphia) or math (Dyscalculia) abilities despite conventional instructions, intact senses, normal intelligence and adequate education. Conventional methods for the diagnosis of SLD are subjective of nature. This paper
proposes an objective view towards the quantification of SLD features with Functional Magnetic Resonance Imaging (fMRI) using image processing techniques. Research works on brain imaging points that dyslexia, dysgraphia and dyscalculia represents fMRI brain signal activities in specific regions of the brain that are distinguishable from healthy brain fMRI's. The analysis of features extracted from the pre-processed fMRI images quantifies the classification of SLD, depth of severity, degree of recovery and post doctoral therapy.

Reference

- Ioannis I. Andreadis, Giorgos A. Giannakakis, Charalabos Papageorgiou, and
Konstantina S. Nikita. Detecting Complexity Abnormalities in Dyslexia Measuring Approximate Entropy of Electroencephalographic Signals. 31st Annual International Conference of the IEEE EMBS Minneapolis, Minnesota, USA, September 2-6, 2009
- A Primer on MRI and Functional MRI (version 2.1, 6/21/01), Douglas C. Noll, Ph.D., Departments of Biomedical Engineering and Radiology University of Michigan.

Index Terms

Computer Science Wireless

Key words

Specific Learning Disability (SLD)
Dyslexia
Dysgraphia, Dyscalculia
fMRI
Feature detection