Software with Biofeedback to Assist People with Down Syndrome

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 158 - Number 5

Year of Publication: 2017

Authors:
D. Lima, M. Sousa, R. Araújo, J. Hannum, A. Da Rocha, T. Barbosa

10.5120/ijca2017912847

Abstract

Down syndrome is caused by the presence of three chromosomes 21 in all or most cells of a person [1]. A person with Down syndrome has different chronological and functional age, so the same response is not expected as those without the syndrome [2]. This deficiency stems from brain damage and functional imbalances of the nervous system, resulting in some learning difficulties, which can vary from basic literacy to performing daily activities. The applications developed in this work are intended to help these people in their literacy, while monitoring their attention levels and detecting their expressions. The assistance is provided through activities such as pairing vowels and matching words with corresponding images and sounds. On the other hand, a biofeedback algorithm called Attention Meter runs in parallel with the activities, monitoring the user’s attention during the execution. This algorithm is implemented as a framework that can be used by any application running Android or RemixOS. Finally, a performance report of the student engagement and learning is generated for a professional analysis, according to the attention level.
References

13. C. J. Lee, “Externalizing and Interpreting Autonomic Arousal in People Diagnosed with Autism”, Program of Media Arts and Sciences, School of Architectural and Planning in partial fulfillment of the requirements for the degree of Doctor of Philosophi, Massachusetts Institute of Technology, September 2011.
Software with Biofeedback to Assist People with Down Syndrome

Index Terms

Computer Science

Information Sciences

Keywords

Biofeedback, OpenCV, Attention, Activity, Framework