Title

Exploring cognitive states through real-time classification and sonification of braindata

Permalink

Journal

Proceedings of the Annual Meeting of the Cognitive Science Society, 41(0)

Authors

Harel, Yann
Bellemare, Antoine
Dehgan, Arthur
et al.

Publication Date

2019

Exploring cognitive states through real-time classification and sonification of brain data

Yann Harel

Universit de Montral, Montral, Quebec, Canada

Antoine Bellemare

Concordia University, Montreal, Quebec, Canada

Arthur Dehgan

Universit de Montral, Montral, Quebec, Canada

Anne-Lise Saive

Universit de Montral, Montral, Quebec, Canada

Karim Jerbi

Universit de Montral, Montral, Quebec, Canada

Abstract

With the recent advances in EEG technology and the popularization of low-cost mobile EEG devices, brain-computer interface (BCI) systems and neurofeedback tools have become more accessible. Real-time EEG signal processing is increasingly popular in the context of digital arts projects powered by a neuroaesthetic approach. CoCo Brain Channel is one such project : designed to use real-time processing of EEG signal in order to generate a musical environment, it provides the user with a means to hear and control his own brain activity. This is achieved by hooking-up a commercial mobile EEG device to a music generation algorithm built in PureData. The generative algorithm uses features from EEG signals to modulate harmonic and rhythmic structures of multiple oscillators. The result is a continuous musical soundscape reflecting the evolution of EEG signals. Improvements and possible applications for basic research will be discussed.