DEVELOPING MUSCLE MEMORY USING HUMAN TO HUMAN INTERFACE

Harsha Niroshana Yapa

149161C

Department of Computational Mathematics

University of Moratuwa

Sri Lanka

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Declaration

I declare that this dissertation does not incorporate, without acknowledgment, any material previously submitted for a Degree or a Diploma in any University and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organization.

UOM Verified Signature

Name of Student

Harsha Niroshana Yapa

Signature of Student

Date: 09/02/2018

Supervised by

Prof. Asoka S. Karunananda

Name of Supervisor(s)

Signature of Supervisor(s)

Date:

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Abstract

The Learning is something very crucial for the development of the human race. Humans are not a species that bring their intellect hard coded to their DNA, instead they learn things by observation and repeating the activity until it develop muscle memory. In this research, an attempt was made to minimize the time associated with the learning and memorizing of these repetitive tasks by using a Human to Human Interface, where it will capture neural impulses from one human and feed to second human, allowing the second human to develop same type of muscle memory.

As humans, we learn different things by observing how others perform it. If we take an example, children learn to write letters by observing the how their parents write them, or parents may actually hold their kids' hand and guide them on writing letters. When parent hold his/her child's hand and guide them, muscles on Child's hand send sensory signals to brain claiming the way to perform this particular action. However imagine action like learning to play piano, this is complex activity which needs insane amount of time of practicing. A research has been conducted to identify neural impulses generated when piano player is playing a song. Special EEG capturing device is constructed to capture neural impulses from Median, Ulnar, and Radial nerves of the Piano Player's Hands. The EEG signals were captured using the non-invasive methods. The captured signal is then processed through filter, where it will remove all the noises and unwanted EEG signals/muscle Contractions generated due to Blood Flow, etc. These processed signals then feed to TENS device, where it generate artificial stimulation as form of electric current. This new feed of current then applied to trainee's nerves using the passive techniques. Also this stage, there is a noise added to the signal, due to method used in administering the stimulation to trainee's hand. Once the signal applied to respective nerves on the second human (trainee), his hands are moved according to the trainers hand movements.

This solution has been tested using three test subjects (2 men and 1 women), with an average age of 28 years, and results show rapid increase in the effectiveness of the learning when this interface is used. The Error rate while playing piano using Human-to-Human interface was 1.4167 where conventional method showed rate of 2.1666. In conclusion, Human to Human interface assisted learning was 32.69% error free than the conventional method of learning.

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