Fawzan Hussain

BCI-Neurokey ? Development and Testing of a Non-Invasive Brain Computer Interface

Challenge: Innovation
Category: Senior
Region: South Fraser
City: Surrey, BC
School: Fraser Heights Secondary

Abstract: The objective of this project is to develop a software keyboard interface (BCI-Neurokey) with the Python programming language which analyzes attention levels in the brainwaves sensed by the Neurosky Mindwave EEG. The BCI-Neurokey should be easy-to-use and accurate for someone to type out phrases. The BCI-Neurokey will also be tested on test participants wearing an EEG, to measure the effectiveness and accuracy of the system.

Biography

Fawzan Hussain is a Grade 11 student at the Science Academy Program in Fraser Heights Secondary School in Surrey, British Columbia. He has participated in the South Fraser Regional Science Fair since Grade 7, and Fredericton 2019 will be his second attendance at the CWSF. He is an active member in his school/community through Student Council, Model United Nations, the City of Surrey and leads his school's IT Club. From Python programming to 3D printing, Fawzan is fascinated with creating practical technology applications such as 3D printed assistive devices for people with disabilities. Also, Fawzan is a SHAD Alumni and a Black Belt in Sun Hang Do Martial Arts. In August 2018, Fawzan completed his summer work experience at the Neil Squire Society where he developed the idea to create and test a software keyboard which can be used by people with disabilities. This keyboard, BCI-Neurokey, is activated using attention levels detected from the brainwaves sensed by an EEG. In the future, some improvements to the BCI-Neurokey include different keyboard layouts, using icons as keys and using Artificial Intelligence to predict future words. Fawzan encourages students to follow their passion and persevere when working on a science fair project.