ABSTRACT

EEG signal processing is one of the methods used in neuroscientific analysis. However, the EEG signal processing process still requires considerable time and complexity. Therefore, an application is needed to streamline the EEG signal processing process. The aim of this research is to design an application that facilitates the EEG signal processing and neuroscientific analysis, which we named Neuros-16. This application is expected to assist researchers and academics in conducting neuroscientific analysis more effectively and efficiently.

Neuros-16 is constructed with four main subsystems, namely input, which allows users to input 16-channel EEG datasets in .edf format; pre-processing, which performs normalization and filtering; processing, which extracts information using Fast Fourier Transform (FFT), First Order Statistics (FOS), and channel selection methods; and output, which enables users to export their processed results.

Verification testing was conducted after the implementation of the design was completed. Based on the test results, each subsystem of Neuros-16 has functioned according to the expected output and provided a satisfactory user experience. Additionally, Neuros-16 has been validated to perform EEG signal analysis and processing through comparison with previous research results.

Keywords: Neuroscience, Brain Activity, EEG, Neuros-16.