Unstructured-Data Content Search Based on Optimized EEG Signal Processing and Multi-Objective Feature Extraction

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Abstract : Over the last few years, the amount of data available on the globe has been increased rapidly. This came up with the emergence of recent concepts, such as the big data and the Internet of Things, which have furnished a suitable solution for the availability of data all over the world. However, managing this massive amount of data remains a challenge due to their large verity of types and distribution. Therefore, locating the required file particularly from the first trial turned to be a not easy task, due to the large similarities of names for different files distributed on the web. Consequently, the accuracy and speed of search have been negatively affected. This work presents a method using Electroencephalography signals to locate the files based on their contents. Giving the concept of natural mind waves processing, this work analyses the mind wave signals of different people, analyzing them and extracting their most appropriate features using multi-objective metaheuristic algorithm, and then classifying them using artificial neural network to distinguish among files with similar names. The aim of this work is to provide the ability to find the files based on their contents using human thoughts only. Implementing this approach and testing it on real people proved its ability to find the desired files accurately within noticeably shorter time and retrieve them as a first choice for the user.