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Authors:

Zaghloul Saad Zaghloul, Nelly Elsayed, Magdy Bayoumi

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Abstract

Controlling the surrounding world and predicting future events has always seemed like a dream, but that could become a reality using a Brain Computer/Machine Interface (BCI/BMI). Epilepsy is a group of neurological diseases characterized by epileptic seizures. It affects millions of people worldwide, with 80% of cases occurring in developing countries. This can result in accidents and sudden, unexpected death. Seizures can happen undetectably in newborns, comatose, or motor impaired patients, especially due to the fact that many medical personnel are not qualified for EEG signal analysis. Therefore, a portable automated detection and monitoring solution is in high demand. Thus, in this study a system of a wireless wearable adaptive for early prediction of epilepsy seizures is proposed, works via minimally invasive wireless technology paired with an external control device (e.g., a doctors' smartphone), with a higher than standard accuracy (71%) and prediction time (14.56 sec). This novel architecture has not only opened new opportunities for daily usable BCI implementations, but they can also save a life by helping to prevent a seizure's fatal consequences.

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Index Terms

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Keywords

Brian Computer Interface, BCI, AIS, EEG, Epilepsy Seizure, Detection, Prediction, VLSI.