ABSTRACT

A novel system for seizure prediction is proposed for featuring the integration of An Effective Dual Self Attention Residual Network for Seizure Prediction. The dual self attention mechanism within RDANet comprises modules that accomplishes the objective of the system. There are two modules involved, a spectrum attention module and a channel attention module. The spectrum attention module competently conflates original and global features, thus comprehending the system's understanding of the complex frequency patterns present in the EEG signals. The channel attention delves into the correlations among various channels in EEG data, whilst the dual self-attention mechanism enhances the model's ability to discern and cope with intricate patterns. By incorporating both modules, the system analyzes the complex frequency patterns and correlations among different channels in EEG data, thereby improving its predictive performance. The system is designed to be adaptable and scalable, capable of handling varying amounts of data from different sources, and can be easily integrated into existing healthcare infrastructures. This adaptability ensures that the system can be used in diverse settings. The system's ability to provide accurate and timely predictions has the potential to significantly reduce the incidence of sudden unexpected death in epilepsy by enabling preemptive interventions.

The system integrates advanced telehealth concepts such as remote patient monitoring (RPM) to enable real-time analysis of EEG data, facilitating early seizure prediction and intervention. Leveraging telemedicine, video conferencing capabilities, healthcare providers can remotely access, review the seizure prediction results, allowing for timely adjustments to treatment plans and interventions. Additionally, compliance with telehealth regulations ensures the secure transmission and storage of patient data, maintaining the confidentiality and integrity of the telemedicine process within the system. Thus the system exhibits great promise in substantially improving the functioning and quality of life for people living with epilepsy.