The 1th International Epilepsy Congress

Neuroscience Departement, Mashhad, Iran 02-04 October, 2024

*The Neuroscience Journal of Shefaye Khatam*

Volume 12, No. 4, Suppl. 1

# Poster Presentation

## The Role of Artificial Intelligence in Predicting and Preventing Seizures

**Abolfazl Hajihashemi***

Department of Biomedical Engineering, Faculty of Engineering, University of Isfahan, Isfahan, Iran

***Published:*** *30 December 2024*

### *Abstract*

***Introduction:*** Seizures, a hallmark of epilepsy, significantly impact the quality of life for millions worldwide. Despite advancements in seizure management, accurate prediction and prevention remain elusive. Artificial intelligence (AI) has emerged as a promising tool to address these challenges. ***Materials and Methods:*** This review delves into the contemporary role of AI in seizure prediction and prevention. AI algorithms, particularly machine learning, have been employed to analyze electroencephalographic (EEG) data, clinical records, and wearable device data to identify patterns predictive of impending seizures. These models can learn complex temporal relationships within neural activity, enabling earlier and more accurate seizure forecasts. Moreover, AI-powered systems can personalize treatment strategies by considering individual patient characteristics and seizure patterns. ***Results:*** Recent studies have shown that deep learning models, such as convolutional neural networks and recurrent neural networks, can achieve high levels of accuracy in seizure prediction. Furthermore, AI is being integrated with wearable devices to enable continuous monitoring and real-time seizure alerts, empowering patients to take proactive measures. While the potential of AI in seizure management is immense, several challenges persist. These include the need for large, high-quality datasets, the development of interpretable models, and the ethical considerations surrounding the use of AI in healthcare. Addressing these challenges is crucial for the widespread adoption of AI-based seizure prediction systems. ***Conclusion:*** AI has emerged as a transformative force in the field of epilepsy. By leveraging the power of machine learning, AI can enhance seizure prediction, personalize treatment, and ultimately improve the lives of individuals living with epilepsy. Continued research and development in this area are essential to fully realize the potential of AI in seizure management.

***Keywords:*** 1. Epilepsy 2. Learning 3. Therapeutics

**Corresponding Author:** Abolfazl Hajihashemi

**Email:** *omidhajihashmi711@gmail.com*



[ DOI: 10.61186/shefa.12.4.S1.7 ]