

# REAL-WORLD EFFICACY OF THE MJN-SERAS DEVICE IN EARLY SEIZURE DETECTION

For patients with **drug-resistant epilepsy**, the **mjn-SERAS** device offers a predictive alert system to **enhance safety and promote independence**.

This post-market study, **SERAS-Home**, part of the **EIT Health Amplifier** project, showcases the initial application of the in-ear EEG medical device, **mjn-SERAS**, integrated with an **AI algorithm** in daily life activities.

## METHODOLOGY

This study involved 15 individuals with **drug-resistant epilepsy**, conducted between May 2021 and April 2024 in an **ambulatory setting**.

The **mjn-SERAS**, a CE-marked **wearable device** under the European Medical Device Directive (MDD), continuously monitors patient data and transmits it to a **mobile application** for real-time analysis using advanced AI algorithms.

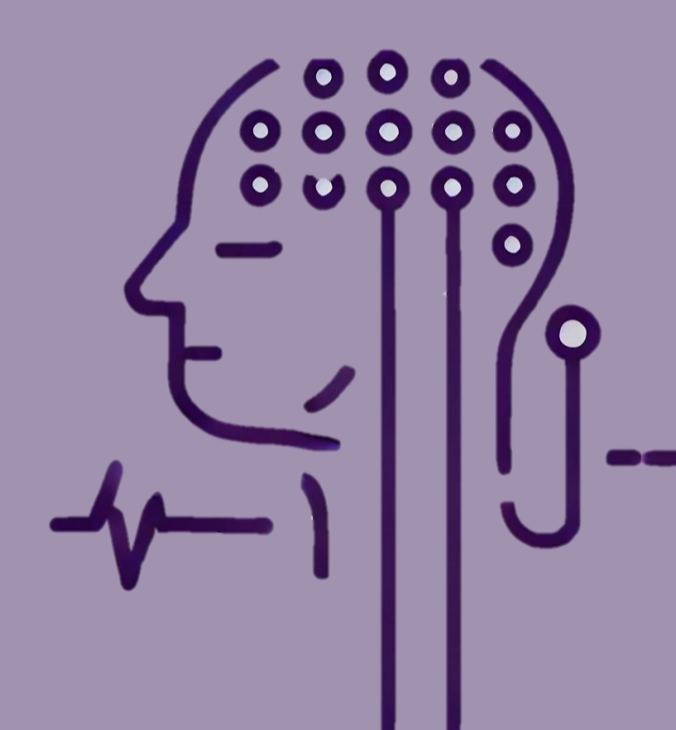
Simultaneously, the device uploads data to **cloud servers** to enhance our **machine learning** models, enabling the development of highly individualized **patient-specific** predictions.



## STUDY DATA



**258 seizures**



**9130 hours of EEG recordings**



**15 subjects with mjn-SERAS device**



**5.7 average usage hours per day**

## Validation split



**3590 hours of EEG recordings**

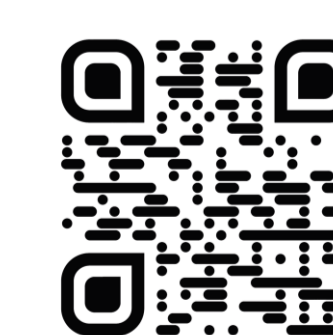


**168 seizures**

## AUTHORS

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## RESULTS



**82% ACCURACY**



**72% SENSITIVITY**



**97% SPECIFICITY**

The average False Alarm Rate (FAR) per day was **0.50** when considering all **interictal periods** and the total number of false positive alerts.

On **interictal days** with false alarms, the FAR per day was reduced to **0.37**.

## CONCLUSIONS

The study reveals a significant **disparity between hospital records and real-world daily life**, with a correlation quality of **70%**.

This discrepancy underscores the need for improvements in EEG recording, filtering, and algorithmic processing to better align clinical data with everyday experiences.

The ongoing evaluation aims to assess how these enhancements could lead to meaningful **improvements in patients' quality of life over time**.

The development of **patient-specific AI models** for early seizure detection has emerged as a critical priority, especially for those with drug-resistant epilepsy

## METHODOLOGY

