Less is more in seizure detection: Global Window-in-the-brain (G-WiB) Machine learning seizure detection with 2-channels EEG

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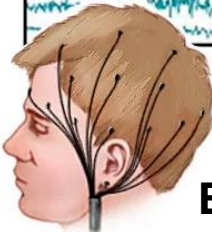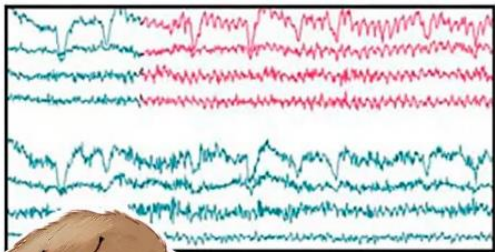
BACKGROUND

- We previously shown 4-channels EEG + machine learning algorithm detect seizures with >80% accuracy
- Resource-limited countries need machine learning algorithm to function with 2-channels

AIM

- To determine the feasibility of machine learning seizure detection using only 2-channels of EEG

METHODS

- A prospective data informatics study
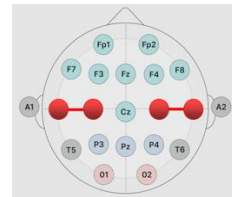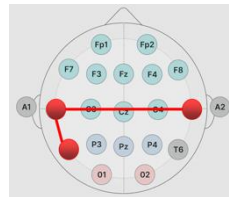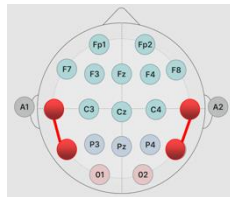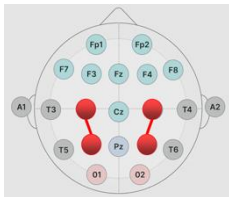

Clinical Grade EEG (n = 40) (HIC + LMIC Children's Hospitals)

Bipolar Montages

Unipolar Montages
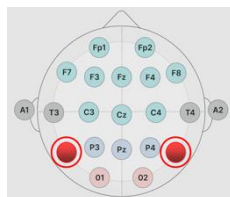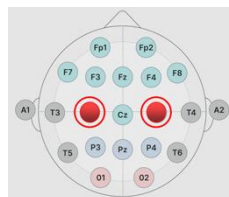
6x 2-channels EEG Montages

WiB + G-WiB Machine Learning Seizure Detection Algorithms

Machine Learning Detected Seizures

Neurologists Seizure Marking (Gold Standard Performance Comparison)

G-WiB Algorithm Performance

RESULTS

- 2-channels EEG machine learning seizure detection was possible
- 4/6 montages achieved seizure detection accuracy > 75%
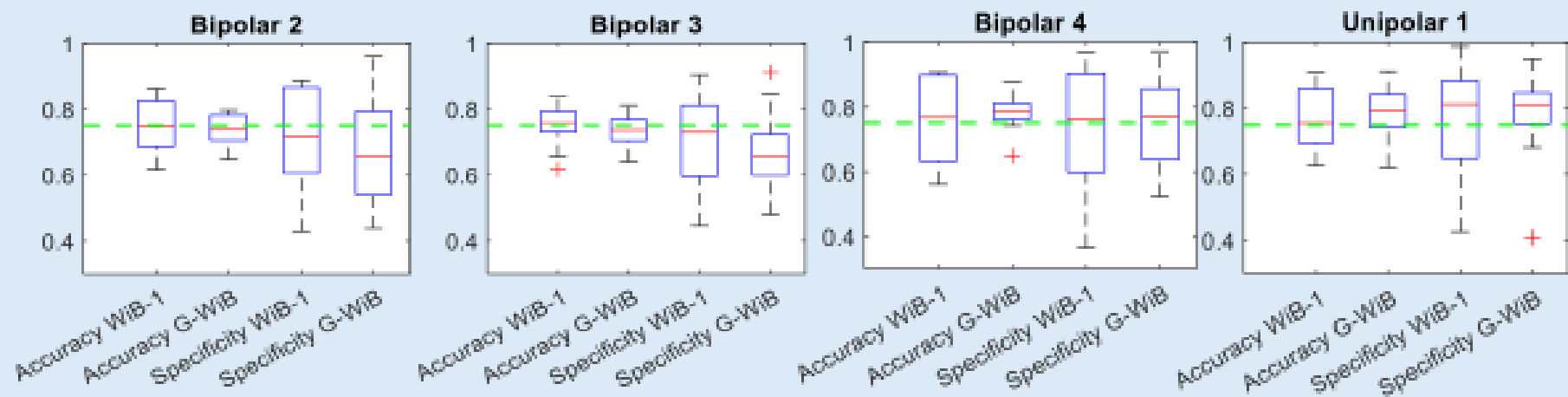
CONCLUSION

- Machine learning seizure detection with very low-density EEG montage is feasible and warrants further investigations and validations.