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Classification of Artefactual signals of Multicenter Intracranial EEG

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ABSTRACT

Differentiating artefactual signals from iEEG signals has become a time/labour-consuming task to be handled by humans which makes it impractical for a large amount of data. By identifying the limitations of the existing solutions and introducing a new method that is accurate and efficient in identifying artefacts will make the noise cancellation of the iEEG signal more successful.

This project intends to substantially streamline the process, allowing for more effective research, by analysing and developing methods for smoothing misrepresented, noisy data, as well as algorithms for primitive pattern recognition. Numerous signal processing techniques were analysed, and novel iEEG signal processing algorithms were developed to address the issues. The basic premise of this research was that there was minimal chance of properly detecting each noise spike, and the only logical alternative was to emphasize all probable spikes.

The approach has a baseline precision of 74.6 per cent and increases in accuracy as the occurrence of spikes increases, reaching its highest precision of 87.5 per cent. The result is a solution that accepts a path of raw Intracranial Electroencephalogram input and graphically depicts all potential spikes for researchers by simultaneously analysing and comparing several data streams.

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      C.3 Signal processing systems

      I.5.4 Signal processing

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      Intracranial EEG, Signal Processing, Noice Filtering, Pattern Recognition