

Biomedical signals

The analysis of biomedical signals for clinical studies and therapeutic applications can benefit from embedded [devices](#) that can process these signals locally and in real-time. An example is an analysis of [intracranial EEG](#) (iEEG) from [epilepsy](#) patients for the detection of [High-Frequency Oscillations](#) (HFO), which are a [biomarker](#) for epileptogenic brain tissue. Mixed-signal neuromorphic circuits offer the possibility of building compact and low-power neural network processing systems that can analyze data online in real-time.

Sharifshazileh et al. present a [neuromorphic system](#) that combines a neural recording headstage with a [spiking neural network](#) (SNN) processing core on the same die for processing [intracranial EEG](#) (iEEG), and show how it can reliably detect [High-Frequency Oscillations](#) (HFO), thereby achieving state-of-the-art [accuracy](#), [sensitivity](#), and [specificity](#). This is the first feasibility study towards identifying relevant features in iEEG in real-time using mixed-signal neuromorphic computing technologies ¹⁾.

¹⁾

Sharifshazileh M, Burelo K, Sarnthein J, Indiveri G. An electronic neuromorphic system for real-time detection of high frequency oscillations (HFO) in intracranial EEG. Nat Commun. 2021 May 25;12(1):3095. doi: 10.1038/s41467-021-23342-2. PMID: 34035249.

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