

Paper ID:	1571066735
Paper Title:	Reducing Computational Costs in Responsive Neurostimulation via Seizure Analyses Based on Three-Dimensional Convolutional Neural Networks
Authors:	Moemi Yamaji, Shinjiro Yamamasu and Yuki Hayashida (Mie University, Japan)
Email:	423m525@m.mie-u.ac.jp

Abstract

Responsive neurostimulation (RNS) is considered an effective treatment for patients with drug-resistant epilepsy. This system is implanted in the head and continuously monitors brain activity via recording electrodes, delivering direct electrical stimulation to suppress seizures when detected. However, the hardware resources of the implanted device and the number of connectable electrode channels are limited. Therefore, this study aimed to systematically reduce the number of channels and computational cost of seizure detection using a Three-Dimensional convolutional neural network (3d-CNN) trained on 3d-ECoG data that preserves both grid electrode spatial configuration and ECoG time series information, analyzing the spatial and temporal dimensions of the 3d- convolutional kernels.
