Accepted Manuscript

Convolutional neural networks for seizure prediction using intracranial and scalp electroencephalogram

Nhan Duy Truong, Anh Duy Nguyen, Levin Kuhlmann, Mohammad Reza Bonyadi, Jiawei Yang, Samuel Ippolito, Omid Kavehei



 PII:
 S0893-6080(18)30148-5

 DOI:
 https://doi.org/10.1016/j.neunet.2018.04.018

 Reference:
 NN 3945

To appear in: *Neural Networks*

Received date : 23 January 2018 Revised date : 24 April 2018 Accepted date : 26 April 2018

Please cite this article as: Truong, N.D., Nguyen, A.D., Kuhlmann, L., Bonyadi, M.R., Yang, J., Ippolito, S., et al., Convolutional neural networks for seizure prediction using intracranial and scalp electroencephalogram. *Neural Networks* (2018), https://doi.org/10.1016/j.neunet.2018.04.018

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Nhan Duy Truong^{a,b,c}, Anh Duy Nguyen^b, Levin Kuhlmann^{d,e,f}, Mohammad Reza Bonyadi^{g,h}, Jiawei Yangⁱ, Samuel Ippolito^c, Omid Kavehei^{a,b,*}

^aSchool of Electrical and Information Engineering, University of Sydney, Sydney, NSW 2006, Australia

^bNano-Neuro-inspired Research Laboratory, School of Electrical and Information Engineering, University of Sydney, Sydney, NSW 2006, Australia

^cSchool of Engineering, Royal Melbourne Institute of Technology, Melbourne, VIC 3000, Australia

^dCentre for Human Psychopharmacology, Swinburne University, Hawthorn, VIC 3122, Australia

^eNeuroengineering Laboratory, Department of Electrical and Electronic Engineering, University of Melbourne, Parkville, VIC 3010, Australia

^fDepartment of Medicine, St. Vincents Hospital Melbourne, University of Melbourne, Parkville, VIC 3010, Australia

^gCentre for Advanced Imaging, University of Queensland, St. Lucia, QLD 4072, Australia ^hOptimization and Logistics Group, University of Adelaide, Adelaide, SA 5005, Australia ⁱNanochap Electronics and Wenzhou Medical University, 268 Xueyuan West Rd., Wenzhou, China

Abstract

Seizure prediction has attracted growing attention as one of the most challenging predictive data analysis efforts to improve the life of patients with drug-resistant epilepsy and tonic seizures. Many outstanding studies have reported great results in providing sensible indirect (warning systems) or direct (interactive neural stimulation) control over refractory seizures, some of which achieved high performance. However, to achieve high sensitivity and a low false prediction rate, many of these studies relied on handcraft feature extraction and/or tailored feature extraction, which is performed for each patient independently. This

^{*}Corresponding author at School of Electrical and Information Engineering, University of Sydney, NSW 2006, Australia

Email addresses: nhanduy.truong@rmit.edu.au (Nhan Duy Truong),

ngduyanhece@gmail.com (Anh Duy Nguyen), lkuhlmann@swin.edu.au (Levin Kuhlmann), reza@cai.uq.edu.au (Mohammad Reza Bonyadi), jiaweiy@nanochap.com (Jiawei Yang), samuel.ippolito@rmit.edu.au (Samuel Ippolito), omid.kavehei@sydney.edu.au (Omid Kavehei)

Download English Version:

https://daneshyari.com/en/article/6862866

Download Persian Version:

https://daneshyari.com/article/6862866

Daneshyari.com