

Accepted Manuscript

Title: Complex Sparse Spatial Filter for Decoding Mixed Frequency and Phase Coded Steady-State Visually Evoked Potentials

Author: Naoki Morikawa Toshihisa Tanaka Md Rabiul Islam



PII: S0165-0270(18)30098-0
DOI: <https://doi.org/doi:10.1016/j.jneumeth.2018.04.001>
Reference: NSM 7976

To appear in: *Journal of Neuroscience Methods*

Received date: 4-12-2017
Revised date: 29-3-2018
Accepted date: 3-4-2018

Please cite this article as: Naoki Morikawa, Toshihisa Tanaka, Md Rabiul Islam, Complex Sparse Spatial Filter for Decoding Mixed Frequency and Phase Coded Steady-State Visually Evoked Potentials, *Journal of Neuroscience Methods* (2018), <https://doi.org/10.1016/j.jneumeth.2018.04.001>

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.

Title: “Complex Sparse Spatial Filter for Decoding Mixed Frequency and Phase Coded Steady-State Visually Evoked Potentials” I would like to concern the following issues about our proposed research:

- Innovation and Significance: We established the model and optimization for a so-called complex sparse spatial filter (CSSF) that efficiently identifies the frequency and phase of SSVEP that is the response to mixed frequency-phase coded visual stimuli. The proposed CSSF enables us to

- a) exclude electrodes that have no or little contribution to SSVEP detection;
- b) reduce the computational complexity because of a simple inner product operation for detection;
- c) achieve high information transfer rate for the 16-target SSVEP BCI.

Author names and affiliations: Naoki Morikawa, Department of Electronic and Information Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei-shi, Tokyo, Japan.

Toshihisa Tanaka, Department of Electrical and Information Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei-shi, Tokyo, Japan and RIKEN Brain Science Institute, 2-1, Hirosawa, Wako-shi, Saitama, Japan.

Md Rabiul Islam, Department of Electronic and Information Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei-shi, Tokyo, Japan.

Corresponding author: Toshihisa Tanaka

Mailing address: Department of Electrical and Information Engineering, Tokyo University of Agriculture and Technology, 2-24-16 Naka-cho, Koganei-shi, Tokyo, Japan.

Phone and Fax: +81-42-388-7439

Email: tanakat@cc.tuat.ac.jp

Download English Version:

<https://daneshyari.com/en/article/8840289>

Download Persian Version:

<https://daneshyari.com/article/8840289>

[Daneshyari.com](https://daneshyari.com)