Paradigm Free Mapping vs Total Activation

Eneko Uruñuela[a,b], César Caballero-Gaudes[a]

[a] *Basque Center on Cognition, Brain and Language, Spain*
[b] *University of the Basque Country, Spain*

Abstract

Here's where the fantastic abstract will go.

Keywords: deconvolution, paradigm free mapping, total activation

1. Introduction

- Talk about our motivation for this paper.
- We could mention iCAPs Neuron, and papers with applications like PFM, TA, clinical patient papers with iCAPs.
- Apart from [[Richard F. Betzel]]'s work, we could mention the connection with the [[Multiplication of Temporal Derivatives]] method
  - See [1]
  - See [2]
  - These are basically calculating the derivative, which is the same as applying a high-pass filter and calculating the correlation.

Here is a sample reference: [3].

2. Theory

- What is deconvolution and different formulations presented as a review.
- Analysis vs synthesis
  - TA paper but without the spatial regularization
  - PFM paper
  - In gitelman it's an **H** multiplied by a fourier term.

3. Results

- Methods on how we're doing simulations and results (with simulations and experimental data)
  - Different SNRs and maybe even use CAPs
  - Selection of HRF explained if both use the same but it's different from what's used for simulating.
    - What happens? For example with gamma for simulating.
  - Selection of regularization parameter
    - Present with real data on a voxel

4. Discussion

- Pros and cons of each formulation: analysis vs synthesis
- Link with other approaches
- Finish with conclusions and a moving forward
  - We have to refine the deconvolution
  - HRF variability there are three: conference proceeding by Philippe, ISBI 2012 by césar, and Farouj with different formulation. Say conceptual differences among those.
  - Mention stability-selection
  - Debiasing
  - Connected to debiasing other deconvolution algorithms that are based on norm lower than 1.

References

References

[1] J. M. Shine, O. Koyejo, P. T. Bell, K. J. Gorgolewski, M. Gilat, R. A. Poldrack, Estimation of dynamic functional connectivity using multiplication of temporal derivatives, NeuroImage 122 (2015) 399–407.

[2] J. M. Shine, P. G. Bissett, P. T. Bell, O. Koyejo, J. H. Balsters, K. J. Gorgolewski, C. A. Moodie, R. A. Poldrack, The dynamics of functional brain networks: integrated network states during cognitive task performance, Neuron 92 (2016) 544–554.

[3] D. R. Gitelman, W. D. Penny, J. Ashburner, K. J. Friston, Modeling regional and psychophysiologic interactions in fmri: the importance of hemodynamic deconvolution, Neuroimage 19 (2003) 200–207.