

Replication / Computational Neuroscience

[Re] Stimulation-Based Control of Dynamic Brain Networks

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Introduction

- 'Brain stimulation is increasingly used in clinical settings'
- stimulation protocols not optimized
- link control theory and brain modelling to predict the effect of stimulation
- FitzHugh Nagumo vs Wilson-Cowan

Methods

Quickly recapitulate

- FitzHugh Nagumo
- Oscillatory transition parameters
- Intraclass correlation coefficient (ICC)
- Linear network control theory
- Functional and structural effect, fractional activation

Reproduction of experiments

- Replicate Figure 2 (b),c) and d)), 3 states of the FitzHugh Nagumo and comparison to the Wilson-Cowan in b), and for c) our box plots for all subjects, and d) bar plots with our data
- Replicate Figure 3
- Replicate Figure 4 c)
- Replicate Figure 5 a)-d)
- Replicate Figure 6 (?)

I don't think we need to replicate Figure 7 (Structure-function landscape)

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The authors have declared that no competing interests exists.
Code is available at <https://github.com/ChristophMetzner/Muldoon-Replication>.

Reimplementation

- Details on the new implementation (packages/dependencies, other stuff?, maybe just a paragraph in the methods section)

Discussion

- Main similarities and differences between our and original results. Replication: full, partial or not at all?