Author Contributions Checklist Form

This form documents the artifacts associated with the article (i.e., the data and code supporting the computational findings) and describes how to reproduce the findings.

Part 1: Data

☐ This paper **does not** involve analysis of external data (i.e., no data are used or the only data are generated by the authors via simulation in their code).

☒ I certify that the author(s) of the manuscript have legitimate access to and permission to use the data used in this manuscript.

Abstract

We use ERP data (.csv) publicly available at `http://dsenturk.bol.ucla.edu/supplements.html`. The dataset consists of ERP signals of a single subject with autism spectrum disorder (ASD), evaluated at one electrode, one condition, and 72 trials, each having 250 time points.

Availability

☒ Data **are** publicly available
☐ Data **cannot be made** publicly available

If the data are publicly available, see the *Publicly available data* section. Otherwise, see the *Non-publicly available data* section, below.

Publicly available data

☒ Data are available online at: http://dsenturk.bol.ucla.edu/supplements.html
☐ Data are available as part of the paper's supplementary material.
☐ Data are publicly available by request, following the process described here:

☐ Data are or will be made available through some other mechanism, described here:

Non-publicly available data

Discussion of lack of publicly available data:

Description

File format(s)

☒ CSV or other plain text:

☒ Software-specific binary format (.Rda, Python pickle, etc.): .RData

☐ Standardized binary format (e.g., netCDF, HDF5, etc.):

☐ Other (described here):

Data dictionary

☐ Provided by the authors in the following file(s):

☐ Data file(s) is (are) self-describiing (e.g., netCDF files)

☒ Available at the following URL:

http://dsenturk.bol.ucla.edu/Supplementary_Materials_code.pdf

Additional information (optional)

Part 2: Code

Abstract

The code is wrapped up as a R package dgp that includes the functions, simulated data as well as raw real data for implementing the proposed method and conducting simulation study and real data analysis. To download and install the package, please run the R code
library(devtools)
devtools::install_github("chenghanyustats/dgp")

The source code for this R package and vignettes on how to reproduce our computational results are available at https://github.com/chenghanyustats/dgp

Description

Code format(s)

☒ Script files
    ☒ R   ☐ Python   ☐ Matlab
    ☐ Other:
☒ Package
    ☒ R   ☐ Python   ☐ MATLAB toolbox
    ☐ Other:
☒ Reproducible report
    ☒ R Markdown   ☐ Jupyter notebook
    ☐ Other:
☐ Shell script
☐ Other (described here):

Supporting software requirements

Version of primary software used

R version 4.3.1

Libraries and dependencies used by the code

Rsolnp 1.16, emulator 1.2-21, mvnfast 0.2.8, KernSmooth 2.23-22, doParallel 1.0.17

Supporting system/hardware requirements (optional)

Parallelization used

☐ No parallel code used
☒ Multi-core parallelization on a single machine/node
   Number of cores used: 6
☐ Multi-machine/multi-node parallelization
   Number of nodes and cores used:

License

☒ MIT License (default)
☐ BSD
☐ GPL v3.0
☐ Creative Commons
☐ Other (described here):

Additional information (optional)

Part 3: Reproducibility workflow

Scope

The provided workflow reproduces:

☐ Any numbers provided in text in the paper

☒ The computational method(s) presented in the paper (i.e., code is provided that implements the method(s))

☐ All tables and figures in the paper

☒ Selected tables and figures in the paper, as explained and justified here:

Reproduced selected figures and tables reported in the paper include Figure 1, 4, 5, 6; Figure 2, 3, Table 1, Table 2, all with n = 100; and Table 3 with n = 1000. Results for different sample sizes in Figure 2, Figure 3, Table 1, Table 2, and Table 3 can be reproduced by simply modifying the sample size (n) in the provided code.

Workflow details

Format(s)

☒ Single master code file

☐ Wrapper (shell) script(s)

☒ Self-contained R Markdown file, Jupyter notebook, or other literate programming approach

☒ Text file (e.g., a readme-style file) that documents workflow

☐ Makefile

☐ Other (more detail in 'Instructions' below)

Instructions

Please first either clone our Github repository or visit its webpage by going to
https://github.com/chenghanyustats/dgp

1. Read the README file for general information about the code and package
2. Install the dgp package through GitHub devtools::install_github("chenghanyustats/dgp")
3. Knit simulation.Rmd (in the folder "vignettes") for reproducing the simulation results
4. Knit erpdata.Rmd (in the folder "vignettes") for reproducing the ERP data analysis results

Expected run-time

Approximate time needed to reproduce the analyses on a standard desktop machine:

☒ <1 minute

☒ 1-10 minutes

☐ 10-60 minutes

☐ 1-8 hours

☐ >8 hours

☐ Not feasible to run on a desktop machine, as described here:

Additional documentation (optional)

Notes (optional)