

2024-1-15

The codes are to implement simulation studies. The algorithm fits the regression model through a nonparametric distributed (NPD) based on domain decomposition.

Required packages

Our code requires the following packages:

```
# required packages  
require(TPSTsimulation)
```

```
## Loading required package: TPSTsimulation
```

```
## Warning in library(package, lib.loc = lib.loc, character.only = TRUE,  
## logical.return = TRUE, : there is no package called 'TPSTsimulation'
```

```
# install.packages("TPSTsimulation_0.1.0.tar.gz", repos = NULL, type = "source")  
require(pracma)
```

```
## Loading required package: pracma
```

```
require(Matrix)
```

```
## Loading required package: Matrix
```

```
##  
## Attaching package: 'Matrix'
```

```
## The following objects are masked from 'package:pracma':  
##  
##      expm, lu, tril, triu
```

```
require(parallel)
```

```
## Loading required package: parallel
```

Code for simulation studies in the paper

Code for the results of TPST^D in Tables 1 in the simulation studies: *main.eg_distributed.R*

Code for the results of TPST^G in Tables 1 in the simulation studies: *main.eg_global.R*

Main functions, package structure ,and data

Major functions

- *dataGeneratorHS.R*: generates population datasets for model fitting.
- *tpst.npd.master.parLapply.R*: combine results from local estimators and generate the predicted values under TPST^D.
- *tpst.npd.global.R*: generate the predicted values under TPST^G.

Functions for model fitting

- *TPST_est.R*: fit the regression model.
- *tpst.npd.worker.parLapply.R*: perform TPST smoothing method and fit the model for each subregion.

Data

- Δ_1 : V1.rda and Th1.rda
- Δ_2 : V2.rda and Th2.rda