

Package ‘smrlasso’

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Type Package

Title LASSO Spatial Median Regression

Version 1.0

Date 2026-09-01

Author Michail Tsagris [aut, cre]

Maintainer Michail Tsagris <mtsagris@uoc.gr>

Depends R (>= 4.0)

Imports Compositional, glmnet, Rfast, stats

Description

Penalized spatial median regression using LASSO. The iteratively reweighted least squares algorithm is used to solve the spatial median regression problem and weighted LASSO is employed.

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NeedsCompilation no

Repository CRAN

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Contents

smrlasso-package	1
cv.smrlasso	2
smr.lasso	3

Index	5
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smrlasso-package	<i>LASSO Spatial Median Regression</i>
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Description

Penalized spatial median regression using LASSO. The iteratively reweighted least squares algorithm is used to solve the spatial median regression problem and weighted LASSO is employed.

Details

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Maintainers

Michail Tsagris <mtsagris@uoc.gr>.

Author(s)

Michail Tsagris <mtsagris@uoc.gr>

cv.smrlasso

Cross-validation for the LASSO spatial median regression

Description

Cross-validation for the LASSO spatial median regression.

Usage

```
cv.smrlasso(y, x, lambda = NULL, tol = 1e-06, eps = 1e-6, step_min = 1e-12, max_bt = 50,
nolds = 10, folds = NULL, seed = NULL)
```

Arguments

y	A matrix with multivariate data.
x	A matrix with predictors.
lambda	If you have a sequence of lambda values pass it here, otherwise leave it NULL
tol	The tolerance value to terminate the IRLS algorithm.
eps	A small number to be added in the weights during the IRLS algorithm.
step_min	The minimum step to to modify the matrix of coefficients while performing the backtracking line search while searching.
max_bt	The maximum number of iterations the line search will perform.
nolds	The number of folds to create.
folds	If you already have a list with the folds pass it here, otherwise leave it NULL.
seed	IF you want the same folds to be created set a seed number.

Details

K-fold cross-validation to choose the optimal value of lambda in the spatial median regression using LASSO is performed.

Value

A list including:

runtime	The runtime of the cross-validation process.
norma	A vector with the L_1 norm at each value of lambda.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

See Also

[smr.lasso](#)

Examples

```
x <- matrix(rnorm(100 * 20), 100, 20)
y <- matrix(rnorm(100 * 3), 100, 3)
mod <- smr.lasso(y, x)
```

smr.lasso

LASSO spatial median regression

Description

LASSO spatial median regression.

Usage

```
smr.lasso(y, x, lambda = NULL, tol = 1e-06, eps = 1e-6,
step_min = 1e-12, max_bt = 50, xnew = NULL)
```

Arguments

y	A matrix with multivariate data.
x	A matrix with predictors.
lambda	If you have a sequence of lambda values pass it here, otherwise leave it NULL
tol	The tolerance value to terminate the IRLS algorithm.
eps	A small number to be added in the weights during the IRLS algorithm.

step_min	The minimum step to to modify the matrix of coefficients while performing the backtraking line search while searching.
max_bt	The maximum number of iterations the line search will perform.
xnew	If you have new predictors for which you want to predict the response values pass it here, otherwise leave it NULL.

Details

The spatial median regression using LASSO is performed.

Value

A list including:

info	A matrix with 4 columns, the values of lambda, and then for each value of lambda, the number of non-zero coefficients, the iterations required by the IRLS and the L_1 norm.
be	A list with the estimated matrix of coefficients for each value of lambda.
est	A list with the predicted values for each value of lambda.

Author(s)

Michail Tsagris.

R implementation and documentation: Michail Tsagris <mtsagris@uoc.gr>.

See Also

[cv.smrlasso](#)

Examples

```
x <- matrix(rnorm(100 * 20), 100, 20)
y <- matrix(rnorm(100 * 3), 100, 3)
mod <- smr.lasso(y, x)
```

Index

`cv.smrlasso`, [2](#), [4](#)

`smr.lasso`, [3](#), [3](#)

`smrlasso-package`, [1](#)