Package 'mslasso'

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Type Package

Title Monotone Splines Lasso

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Description Functions to fit the monotone splines lasso and adaptive monotone splines lasso.

License GPL (>=2)

Depends scoop

R topics documented:

`mslasso-package` *Monotone splines lasso*

Description

Procedures for fitting the monotone splines lasso and the adaptive monotone splines lasso in additive models.

Details

Package:	mslasso
Type:	Package
Version:	1.0
Date:	2014-03-23
License:	GPL (>=2)

Author(s)

Linn Cecilie Bergersen Maintainer: Linn Cecilie Bergersen <linncb@math.uio.no>

References

Linn Cecilie Bergersen, Kukatharmini Tharmaratnam, Ingrid K. Glad, Monotone splines lasso, Computational Statistics & Data Analysis, Available online 29 March 2014, ISSN 0167-9473.

Chiquet, Julien; Grandvalet, Yves; Charbonnier, Camille. Sparsity with sign-coherent groups of variables via the cooperative-Lasso. The Annals of Applied Statistics 6 (2012), no. 2, 795–830.

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adaptive.monotone *Function to fit the adaptive monotone splines lasso.*

Usage

```
adaptive.monotone(Xf, Yf, familyf, num.knotsf, w)
```

Arguments

`Xf`	Covariate matrix
`Yf`	Response variable.
`familyf`	Specification for the model link functions. Only `"gaussian"` is supported.
`num.knotsf`	Number of knots in spline representation.
`w`	`NULL` if method = `"monotone.lasso"`, vector of weights if method is `"adaptive.monotone`

Details

For the adaptive monotone splines lasso w should be a vector of weights computed according to Bergersen et. al (2014).

Value

Returns adaptive monotone splines lasso fit. See documentation of the `scoop` package for interpretation of the object returned.

Author(s)

Linn Cecilie Bergersen <linncb@math.uio.no>

`cvmslasso` *Function computing the cross-validation curve for the monotone splines lasso and the adaptive monotone splines lasso.*

Description

Function computing the cross-validation mean squared error for the monotone splines lasso and the adaptive monotone splines lasso.

Usage

```
cvmslasso(Xfcv, Yfcv, K, method, num.knots, w)
```

Arguments

`Xfcv`	Covariate matrix
`Yfcv`	Response variable
`K`	Number of cross-validation folds.
`method`	`"monotone.lasso"` if no adaptive step is used, `"adaptive.monotone"` if weights are provided for the adaptive monotone splines lasso.
`num.knots`	Number of knots for the spline representation
`w`	NULL if method = `"monotone.lasso"`, vector of weights if method is `"adaptive.monotone"`

Details

For the adaptive monotone splines lasso w should be a vector of weights computed according to Bergersen et. al (2014).

Value

Returns the cross-validated mean squared error

Author(s)

Linn Cecilie Bergersen <linncb@math.uio.no>

References

Linn Cecilie Bergersen, Kukatharmini Tharmaratnam, Ingrid K. Glad, Monotone splines lasso, Computational Statistics & Data Analysis. (2014)

monotone.lasso *Function to fit the monotone splines lasso.*

Description

Function fitting the monotone splines lasso.

Usage

```
monotone.lasso(Xf, Yf, familyf, num.knotsf)
```

Arguments

Xf	Covariate matrix.
Yf	Response variable.
familyf	Specification for the model link functions. Only "gaussian" is supported.
num.knotsf	Number of knots for the splines representation.

Value

Returns monotone splines lasso fit. See documentation of the scoop package for interpretation of the object returned.

Author(s)

Linn Cecilie Bergersen <linncb@math.uio.no>

See Also

http://stat.genopole.cnrs.fr/logiciels/scoop

monotone.splines *Function for construction of monotone slines basis*

Description

The function constructs a matrix representing the original covariates by their monotone splines basis with a given number of knots.

Usage

```
monotone.splines(Xf, num.knots)
```

Arguments

Xf	Covariate matrix
num.knots	Number of knots

Details

The function transforms each covariate by to its monotone splines basis and returns the spline representation of all of them in a new matrix.

Value

Z matrix with the monotone splines basis representation of the covariate matrix.

Author(s)

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