

Package ‘GFABS’

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Type Package

Title GFABS

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Description Variable selection for high dimensional varying coefficient smoothed partial rank estimator. The B-splines are used to approximate varying coefficient function. Group Lasso penalty is used to generate a sparse solution.

License GPL (>= 2)

Imports splines, Matrix

Repository github

Encoding UTF-8

LazyData true

RoxygenNote 7.0.2

Archs x64

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GFabs	<i>A Group Forward and Backward Stagewise (GFabs) algorithm for smoothed partial rank loss function (SPR) with the Group Lasso penalty.</i>
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Description

A Group Forward and Backward Stagewise (GFabs) algorithm for smoothed partial rank loss function (SPR) with the Group Lasso penalty.

Usage

```
GFabs(
  W,
  y,
  group,
  status = NULL,
  sigma = NULL,
  weight = NULL,
  model = "spr",
  type = "L2",
  back = TRUE,
  stoping = TRUE,
  eps = 0.01,
  xi = 10^-6,
  iter = 10^4,
  lambda.min = NULL
)
```

Arguments

W	The design matrix.
y	The survival outcome.
group	The grouping vector.
status	The censoring indicator.
sigma	The smoothing parameter in SPR.
weight	The weight vector of groups.
model	The loss function used.
type	The norm of penalty used.
back	The indicator of whether to take backward steps.
stoping	The indicator of whether to stop iteration when lambda is less than lambda.min.
eps	The step size for GFabs.
xi	The threshold for GFabs.
iter	The maximum number of outer-loop iterations allowed.
lambda.min	The smallest value for lambda, as a fraction of lambda.max.

Value

A list.

- beta - estimation of covariates
- lambda - lambda sequence
- direction - direction of GFabs
- active - active sets
- iter - iterations
- BIC - bic criteria
- group - The grouping vector.
- opt - position of the optimal tuning based on BIC.

Examples

```
W = matrix(rnorm(80), 20, 4)
b = c(5, 5, -5, -5)
e = c(0.7*rnorm(20)+0.3*rcauchy(20))
y = W %%% b + e
group <- c(1, 1, 2, 2)
fit <- GFabs(W, y, group)
```

standard	<i>Within group standardization</i>
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Description

Within group standardization

Usage

```
standard(W, group)
```

Arguments

W	A matrix.
group	The grouping vector.

Value

A list

- xx - The standardized matrix.
- center - The colmeans of the original matrix.
- scale - A list whose i^{th} element is the transformation matrix of the i^{th} group.

Examples

```
W = matrix(rnorm(200), 10, 20)
group <- rep(c(1:10), each = 2)
W_tilde <- standard(W, group)
```

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