# Package 'GFabs'

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**Type** Package

**Title** GFABS

**Version** 0.1.0

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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

## R topics documented:



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

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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 threshhold 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)
```

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`standard` *Within group standardization*

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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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