# Package 'BrokenAdaptiveRidge'

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**Type** Package

**Title** Broken Adaptive Ridge Regression with Cyclops

**Version** 1.0.0

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**Description** Approximates best-subset selection (L0) regression with an iteratively adaptive Ridge (L2) penalty for large-scale models. This package uses Cyclops for an efficient implementation and the iterative method is described in Kawaguchi et al (2020) <doi:10.1002/sim.8438> and Li et al (2021) <doi:10.1016/j.jspi.2020.12.001>.

**License** Apache License 2.0

**Depends** R (>= 3.2.2),
Cyclops (>= 3.0.0)

**Imports** futile.logger,
bit64

**Suggests** testthat,
survival,
knitr,
rmarkdown

**Encoding** UTF-8

**RoxygenNote** 7.1.2

## R topics documented:

createBarPrior *Create a BAR Cyclops prior object*

## Description

createBarPrior creates a BAR Cyclops prior object for use with fitCyclopsModel.

## Usage

```
createBarPrior(
  penalty = "bic",
  exclude = c(),
  forceIntercept = FALSE,
  fitBestSubset = FALSE,
  initialRidgeVariance = 10000,
  tolerance = 1e-08,
  maxIterations = 10000,
  threshold = 1e-06,
  delta = 0
)
```

## Arguments

| | |
|---|---|
| penalty | Specifies the BAR penalty; possible values are 'BIC' or 'AIC' or a numeric value |
| exclude | A vector of numbers or covariateId names to exclude from prior |
| forceIntercept | Logical: Force intercept coefficient into regularization |
| fitBestSubset | Logical: Fit final subset with no regularization |
| initialRidgeVariance | Numeric: variance used for algorithm initiation |
| tolerance | Numeric: maximum abs change in coefficient estimates from successive iterations to achieve convergence |
| maxIterations | Numeric: maxium iterations to achieve convergence |
| threshold | Numeric: absolute threshold at which to force coefficient to 0 |
| delta | Numeric: change from 2 in ridge norm dimension |

## Value

A BAR Cyclops prior object of class inheriting from "cyclopsPrior" for use with fitCyclopsModel.

## Examples

```
prior <- createBarPrior(penalty = "bic")
```

createFastBarPrior *Create a fastBAR Cyclops prior object*

## Description

createFastBarPrior creates a fastBAR Cyclops prior object for use with fitCyclopsModel.

## Usage

```
createFastBarPrior(
  penalty = 0,
  exclude = c(),
  forceIntercept = FALSE,
  fitBestSubset = FALSE,
  initialRidgeVariance = 10000,
  tolerance = 1e-08,
  maxIterations = 10000,
  threshold = 1e-06
)
```

## Arguments

| | |
|---|---|
| penalty | Specifies the BAR penalty |
| exclude | A vector of numbers or covariateId names to exclude from prior |
| forceIntercept | Logical: Force intercept coefficient into regularization |
| fitBestSubset | Logical: Fit final subset with no regularization |
| initialRidgeVariance | Numeric: variance used for algorithm initiation |
| tolerance | Numeric: maximum abs change in coefficient estimates from successive iterations to achieve convergence |
| maxIterations | Numeric: maximum iterations to achieve convergence |
| threshold | Numeric: absolute threshold at which to force coefficient to 0 |

## Value

A BAR Cyclops prior object of class inheriting from "cyclopsPrior" for use with fitCyclopsModel.

## Examples

```
nobs = 500; ncovs = 100
prior <- createFastBarPrior(penalty = log(ncovs), initialRidgeVariance = 1 / log(ncovs))
```

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