Package: IterativeHardThresholding (via r-universe)

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Type Package

Title Iterative Hard Thresholding Extensions to Cyclops

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Maintainer Marc A. Suchard <msuchard@ucla.edu>

Description Fits large-scale regression models with a penalty that restricts the maximum number of non-zero regression coefficients to a prespecified value. While Chu et al (2020) <doi:10.1093/gigascience/giaa044> describe the basic algorithm, this package uses Cyclops for an efficient implementation.

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Depends R (>= 3.2.2), Cyclops (>= 1.3.0)

Imports ParallelLogger

Suggests testthat, knitr, rmarkdown

Encoding UTF-8

RoxygenNote 7.2.0

NeedsCompilation no

Author Marc A. Suchard [aut, cre], Patrick Ryan [aut], Observational Health Data Sciences and Informatics [cph]

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Repository https://msuchard.r-universe.dev

RemoteUrl https://github.com/cran/IterativeHardThresholding

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Contents

`createFastIhtPrior` *Create a fastIHT Cyclops prior object*

Description

`createFastIhtPrior` creates a fastIHT Cyclops prior object for use with `fitCyclopsModel`.

Usage

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

Arguments

`K`	Maximum # of non-zero covariates
`penalty`	Specifies the IHT 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

An IHT Cyclops prior object of class inheriting from `"cyclopsPrior"` for use with `fitCyclopsModel`.

Examples

```
nobs = 500; ncovs = 100
prior <- createFastIhtPrior(K = 3, penalty = log(ncovs), initialRidgeVariance = 1 / log(ncovs))
```

createIhtPrior *Create an IHT Cyclops prior object*

Description

createIhtPrior creates an IHT Cyclops prior object for use with fitCyclopsModel.

Usage

```
createIhtPrior(
  K,
  penalty = "bic",
  exclude = c(),
  forceIntercept = FALSE,
  fitBestSubset = FALSE,
  initialRidgeVariance = 0.1,
  tolerance = 1e-08,
  maxIterations = 10000,
  threshold = 1e-06,
  delta = 0
)
```

Arguments

K	Maximum # of non-zero covariates
penalty	Specifies the IHT 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: maximum 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

An IHT Cyclops prior object of class inheriting from "cyclopsPrior" for use with fitCyclopsModel.

Examples

```
prior <- createIhtPrior(K = 10)
```

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