Package ‘TrioSGL’

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Type Package

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Title Trio Model with a Combination of Lasso and Group Lasso Regularization

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Description Fit a trio model via penalized maximum likelihood. The model is fit for a path of values of the penalty parameter. This package is based on Noah Simon, et al. (2011) <doi:10.1080/10618600.2012.681250>.

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License GPL

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TrioSGL-package

Trio Model with a Combination of Lasso and Group Lasso Regularization

Description

Fit a trio model via penalized maximum likelihood. The model is fit for a path of values of the penalty parameter. This package is based on Noah Simon, et al. (2011) <doi:10.1080/10618600.2012.681250>. 
Details
TrioSGL

Package: TrioSGL
Type: Package
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Only 1 function: TrioSGL

Author(s)
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References

TrioSGL

Trio Model with a Combination of Lasso and Group Lasso Regularization

Description
Fit a trio model via penalized maximum likelihood. The model is fit for a path of values of the penalty parameter. This package is based on Noah Simon, et al. (2011) <doi:10.1080/10618600.2012.681250>.

Usage
TrioSGL(x, index = NULL, maxit = 10000, thresh = 0.0001, minfrac = 0.01, nlam = 25, lambdas = NULL, alpha = 0.95, gamma = 0.8, step = 1, reset = 20, standardize = FALSE, verbose = FALSE)

Arguments
x SX$ should be an input matrix of dimension n-obs by p-vars. The number of rows must be a multiple of 4 (case followed by 3 pseudo-controls).
index A p-vector indicating group membership of each covariate
maxit Maximum number of iterations to convergence
thresh Convergence threshold for change in beta
min.frac The minimum value of the penalty parameter, as a fraction of the maximum value
nlam Number of lambda to use in the regularization path
lambdas A user specified sequence of lambda values for fitting. We recommend leaving this NULL and letting TrioSGL self-select values

alpha The mixing parameter. alpha = 1 is the lasso penalty. alpha = 0 is the group lasso penalty.

gamma Fitting parameter used for tuning backtracking (between 0 and 1)

step Fitting parameter used for initial backtracking step size (between 0 and 1)

reset Fitting parameter used for taking advantage of local strong convexity in nesterov momentum (number of iterations before momentum term is reset)

standardize Logical flag for variable standardization prior to fitting the model.

verbose Logical flag for whether or not step number will be output

Details
The sequence of models along the regularization path is fit by accelerated generalized gradient descent.

Value
An object with S3 class "TrioSGL"

beta A p by nlam matrix, giving the penalized MLEs for the nlam different models, where the index corresponds to the penalty parameter lambda

lambdas The actual sequence of lambda values used (penalty parameter)

X.transform A list used in predict which gives the empirical mean and variance of the x matrix used to build the model

Author(s)
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References

Examples
trios <- 4 * 10; snps <- 20; size.groups <- 4
index <- ceiling(1:snps / size.groups)
x <- floor(matrix(rnorm(trios * snps, min = 0, max = 3), ncol = snps, nrow = trios))
fit <- TrioSGL(x, index)
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