

# Package: TrioSGL (via r-universe)

September 2, 2024

**Type** Package

**Encoding** UTF-8

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

**Version** 1.1.0

**Date** 2017-12-18

**Author** Timo Stöcker, Noah Simon, Jerome Friedman, Trevor Hastie, and  
Rob Tibshirani

**Maintainer** Timo Stöcker <timo.stoecker@hhu.de>

**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](https://doi.org/10.1080/10618600.2012.681250)>.

**NeedsCompilation** yes

**License** GPL

**Repository** CRAN

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### Details

Package:	TrioSGL
Type:	Package
Version:	1.1.0
Date:	2017-12-18
License:	GPL
LazyLoad:	yes

Only 1 function: TrioSGL

### Author(s)

Timo Stöcker, Noah Simon, Jerome Friedman, Trevor Hastie, and Rob Tibshirani  
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### References

Simon, N., Friedman, J., Hastie, T., Tibshirani, R. (2011). *A Sparse-Group Lasso*. *Journal of Computational and Graphical Statistics*, 22, 231-245.

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### Description

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### Usage

```
TrioSGL(X, index = NULL, maxit = 10000, thresh = 0.0001, min.frac = 0.01,
        nlam = 25, lambdas = NULL, alpha = 0.95, gamma = 0.8, step = 1, reset = 20,
        standardize = FALSE, verbose = FALSE)
```

**Arguments**

<code>X</code>	<code>\$X\$</code> 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).
<code>index</code>	A p-vector indicating group membership of each covariate
<code>maxit</code>	Maximum number of iterations to convergence
<code>thresh</code>	Convergence threshold for change in beta
<code>min.frac</code>	The minimum value of the penalty parameter, as a fraction of the maximum value
<code>nlam</code>	Number of lambda to use in the regularization path
<code>lambdas</code>	A user specified sequence of lambda values for fitting. We recommend leaving this NULL and letting TrioSGL self-select values
<code>alpha</code>	The mixing parameter. $\alpha = 1$ is the lasso penalty. $\alpha = 0$ is the group lasso penalty.
<code>gamma</code>	Fitting parameter used for tuning backtracking (between 0 and 1)
<code>step</code>	Fitting parameter used for initial backtracking step size (between 0 and 1)
<code>reset</code>	Fitting parameter used for taking advantage of local strong convexity in nesterov momentum (number of iterations before momentum term is reset)
<code>standardize</code>	Logical flag for variable standardization prior to fitting the model.
<code>verbose</code>	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"

<code>beta</code>	A p by nlam matrix, giving the penalized MLEs for the nlam different models, where the index corresponds to the penalty parameter lambda
<code>lambdas</code>	The actual sequence of lambda values used (penalty parameter)
<code>X.transform</code>	A list used in predict which gives the empirical mean and variance of the x matrix used to build the model

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**Examples**

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

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