Package 'MInt'

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Type Package

Title Learn Direct Interaction Networks

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Description Learns direct microbe-microbe interaction networks using a Poisson multivariate-normal hierarchical model with an L1 penalized precision matrix. Optimization is carried out using an iterative conditional modes algorithm.

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Depends R (>= 3.1.2), glasso (>= 1.8), trust (>= 0.1-6), MASS (>= 7.3-35), testthat (>= 0.9.1)

Suggests knitr

VignetteBuilder knitr

NeedsCompilation no

Repository CRAN

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R topics documented:

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bootstrap	*Bootstrap*

Description

This function bootstraps a model learned by `estimate` to obtain confidence intervals on each parameter.

Usage

```
bootstrap(mfit, nboot = 10, seed = 1)
```

Arguments

mfit	A MInt model object.
nboot	The number of bootstraps to perform.
seed	Random number generator seed.

Value

A MInt object.

We should export this at some point.

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estimate	*Estimate parameters*

Description

This function performs iterative conditional modes to obtain maximum *a posteriori* estimates for β (covariate coefficients), w (latent abundances), and P (the precision matrix).

Usage

```
estimate(mfit)
```

Arguments

mfit	- a MInt model object.

Value

A MInt model object with the following attributes:

`optim`	List containing optimization details
`optim$lambda`	Value of the L1 penalty used during optimization
`data`	List containing the raw data
`data$design`	File path of the design matrix
`data$response`	File path of the response matrix
`data$fmla`	Formula used to model each response in terms of the design variables
`data$y`	Raw numerical data for the response matrix
`data$xd`	Design matrix in categorical form
`data$x`	Design matrix in numerical form
`param`	List containing parameter estimates
`param$beta`	p-covariates x o-responses matrix of regression coefficients
`param$w`	n-samples x o-responses matrix of latent abundances
`param$P`	o-responses x o-responses precision matrix

Examples

```
x <- system.file("extdata", "x.txt", package="MInt");
y <- system.file("extdata", "y.txt", package="MInt");
m <- mint(y,x,fmla = ~feature1 + feature2)
m <- estimate(m)
```

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    mint   *Construct MInt object*

Description

Constructs a MInt object that maintains the data and parameter estimates for the underlying Poisson-multivariate normal hierarchical model.

Usage

```
mint(y, x, fmla = ~1)
```

Arguments

y	A file path to the response matrix.
x	A file path to the design matrix.
fmla	An object of class "[formula](#)" (or one that can be coerced to that class): a symbolic description of the model to be fitted.

Value

mint A MInt object.

Examples

```
x <- system.file("extdata", "x.txt", package="MInt");
y <- system.file("extdata", "y.txt", package="MInt");
m <- mint(y,x,fmla = ~feature1 + feature2)
```

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