

Package ‘mcvis’

October 3, 2020

Type Package

Title Multi-Collinearity Visualization

Version 1.0.6

Description

Visualize the relationship between linear regression variables and causes of multi-collinearity. Implements the method in Lin et. al. (2020) <doi:10.1080/10618600.2020.1779729>.

Encoding UTF-8

Imports assertthat, igraph, ggplot2, purrr, magrittr, reshape2, shiny, dplyr, psych, rlang

RoxygenNote 7.1.1

License GPL-3

Suggests testthat (>= 2.1.0), covr, knitr, mplot, rmarkdown

VignetteBuilder knitr

NeedsCompilation no

Author Kevin Wang [aut, cre],
Chen Lin [aut],
Samuel Mueller [aut]

Maintainer Kevin Wang <kevin.wang09@gmail.com>

Repository CRAN

Date/Publication 2020-10-03 05:30:02 UTC

R topics documented:

alt_mcvis	2
mcvis	3
shiny_mcvis	4

Index	6
--------------	----------

alt_mcvis

Multi-collinearity Visualization plots

Description

Multi-collinearity Visualization plots

Multi-collinearity Visualization plots

Multi-collinearity Visualization plots

Usage

```
alt_mcvis(mcvis_result, eig_max = 1L, var_max = ncol(mcvis_result$MC))
```

```
ggplot_mcvis(
  mcvis_result,
  eig_max = 1L,
  var_max = ncol(mcvis_result$MC),
  label_dodge = FALSE
)
```

```
igraph_mcvis(mcvis_result, eig_max = 1L, var_max = ncol(mcvis_result$MC))
```

```
## S3 method for class 'mcvis'
plot(
  x,
  type = c("ggplot", "igraph", "alt"),
  eig_max = 1L,
  var_max = ncol(x$MC),
  label_dodge = FALSE,
  ...
)
```

Arguments

mcvis_result	Output of the mcvis function
eig_max	The maximum number of eigenvalues to be displayed on the plot.
var_max	The maximum number of variables to be displayed on the plot.
label_dodge	If variable names are too long, it might be helpful to dodge the labelling. Default to FALSE.
x	Output of the mcvis function
type	Plotting mcvis result using "igraph" or "ggplot". Default to "ggplot".
...	additional arguments (currently unused)

Value

A mcvis visualization plot

Author(s)

Chen Lin, Kevin Wang, Samuel Mueller

Examples

```
set.seed(1)
p = 10
n = 100
X = matrix(rnorm(n*p), ncol = p)
X[,1] = X[,2] + rnorm(n, 0, 0.1)
mcvis_result = mcvis(X)
plot(mcvis_result)
plot(mcvis_result, type = "igraph")
plot(mcvis_result, type = "alt")
```

mcvis

Multi-collinearity Visualization

Description

Multi-collinearity Visualization

Usage

```
mcvis(
  X,
  sampling_method = "bootstrap",
  standardise_method = "studentise",
  times = 1000L,
  k = 10L
)
```

Arguments

X	A matrix of regressors (without intercept terms).
sampling_method	The resampling method for the data. Currently supports 'bootstrap' or 'cv' (cross-validation).
standardise_method	The standardisation method for the data. Currently supports 'euclidean' (default, centered by mean and divide by Euclidean length) and 'studentise' (centred by mean and divide by standard deviation) and 'none' (no standardisation)
times	Number of resampling runs we perform. Default is set to 1000.
k	Number of partitions in averaging the MC-index. Default is set to 10.

Value

A list of outputs:

- `t_square`: The t^2 statistics for the regression between the VIFs and the tau's.
- `MC`: The MC-indices
- `col_names`: Column names (export for plotting purposes)

Author(s)

Chen Lin, Kevin Wang, Samuel Mueller

Examples

```
set.seed(1)
p = 10
n = 100
X = matrix(rnorm(n*p), ncol = p)
X[,1] = X[,2] + rnorm(n, 0, 0.1)
mcvis_result = mcvis(X = X)
mcvis_result
```

shiny_mcvis

Shiny app for mcvis exploration

Description

Shiny app for mcvis exploration

Usage

```
shiny_mcvis(mcvis_result, X)
```

Arguments

<code>mcvis_result</code>	Output of the mcvis function
<code>X</code>	The original X matrix

Author(s)

Chen Lin, Kevin Wang, Samuel Mueller

Examples

```
if(interactive()){  
  set.seed(1)  
  p = 10  
  n = 100  
  X = matrix(rnorm(n*p), ncol = p)  
  mcvis_result = mcvis(X)  
  shiny_mcvis(mcvis_result = mcvis_result, X = X)  
}
```

Index

`alt_mcvis`, 2

`ggplot_mcvis(alt_mcvis)`, 2

`igraph_mcvis(alt_mcvis)`, 2

`mcvis`, 3

`plot.mcvis(alt_mcvis)`, 2

`shiny_mcvis`, 4