Package 'wideRhino'

June 11, 2025

Title High-Dimensional Methods via Generalised Singular Decomposition

Version 1.0.2

Description Construct a Canonical Variate Analysis Biplot via the Generalised Singular Value Decomposition, for cases when the number of samples is less than the number of variables. For more information on biplots, see Gower JC, Lubbe SG, Le Roux NJ (2011) <doi:10.1002/9780470973196> and for more information on the generalised singular value decomposition, see Edelman A, Wang Y (2020) <doi:10.1137/18M1234412>.

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Encoding UTF-8

RoxygenNote 7.3.2

Depends R (>= 4.1.0)

Imports geigen, Matrix, MASS, ggplot2, dplyr

Suggests knitr, rmarkdown, testthat

Config/Needs/website rmarkdown

NeedsCompilation no

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Repository CRAN

Date/Publication 2025-06-11 15:10:02 UTC

Contents

`.calibrate.axis` *Calibrate axis*

Description

Calibrate axis

Usage

```
.calibrate.axis(
  j,
  Xhat,
  means,
  sd,
  axes.rows,
  ax.which,
  ax.tickvec,
  ax.orthogxvec,
  ax.orthogyvec
)
```

Arguments

`j`	j
`Xhat`	Xhat
`means`	means
`sd`	sd
`axes.rows`	axes.rows
`ax.which`	ax.which
`ax.tickvec`	ax.tickvec
`ax.orthogxvec`	ax.orthogxvec
`ax.orthogyvec`	ax.orothogyvec

Value

Calibrated axes

axes_coordinates *Provide axes coordinates*

Description

Provide axes coordinates

Usage

```
axes_coordinates(bp, which.var = 1:bp$p)
```

Arguments

bp	Object
which.var	which variable(s) to find coordinates

Value

Axes coordinates

CVAbiplot *Plot the CVA biplot*

Description

Plot the CVA biplot

Usage

```
CVAbiplot(
  x,
  which.var = 1:x$p,
  var.label = FALSE,
  group.col = NULL,
  zoom.out = 50
)
```

Arguments

x	Object from CVA
which.var	which variable to display on the biplot
var.label	whether to display label for variable name
group.col	vector of colours for the groups in the data
zoom.out	percentage to zoom out of the plot

Value

A CVA biplot based on the GSVD

Examples

```
data(sim_data)
CVAgsvd(X=sim_data[,2:301],group = sim_data[,1])|>
CVAbiplot(group.col=c("tan1","darkcyan","darkslateblue"),which.var = 1:10,zoom.out=80)
```

`CVAgsvd` *CVA Biplot using the GSVD*

Description

Create a CVA biplot using the generalised singular value decomposition when number of variables (p) is larger than the number of samples (n).

Usage

```
CVAgsvd(X, group)
```

Arguments

`X`	n x p data matrix
`group`	vector of size n showing the groups

Details

If p < n, then the solution defaults to the standard CVA biplot.

Value

An object with components of a CVA biplot

Examples

```
CVAgsvd(X=iris[,1:4],group = iris[,5]) |>
CVAbiplot(group.col = c("orange","red","pink"))
```

`get.GSVD` *Get GSVD Get the components of the GSVD decomposition*

Description

Get GSVD Get the components of the GSVD decomposition

Usage

```
get.GSVD(A, B)
```

Arguments

`A`	Matrix A
`B`	Matrix B

Value

Returns components from the GSVD decomposition

`sim_data` *Simulated Data*

Description

Class Group variable: 0, 1, 2

X1 Variable 1 ...

X300 Variable 300

Format

A data set with 100 rows and 301 columns

Source

simulated data

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