Package 'Factoshiny'

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Type Package

Title Perform Factorial Analysis from 'FactoMineR' with a Shiny
Application

Version 2.7

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Depends R (>= 4.0), FactoMineR (>= 2.3),shiny,FactoInvestigate (>=
1.5),ggplot2

Imports DT,colourpicker,grDevices,tcltk,ggrepel,shinydashboard,shinyjqui,missMDA

Description Perform factorial analysis with a menu and draw graphs interactively thanks to 'FactoMineR' and a Shiny application.

URL <http://factominer.free.fr/graphs/factoshiny.html>

License GPL (>= 2)

Encoding UTF-8

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Factoshiny–package   *Perform classical factorial analysis from FactoMineR within a Shiny app ~~ Factoshiny ~~*

Description

Factoshiny allows to perform CA, PCA, MFA, HCPC and MFA (classical functions from FactoMineR) within a Shiny app. The user can easily change the function parameters and the graphs parameters and can automatically see the restults of the change on the plot. All graphs can be downloaded in png, jpg and pdf.

Details

Factoshiny has been created to be as easy to use as possible. Thus, only the dataset is needed to be informed in the main function.

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

Maintainer: Who to complain to <francois.husson@institut-agro.fr>

References

A website: http://factominer.free.fr/graphs/factoshiny.html

Some videos: https://youtu.be/6y0NDDQcIXo

CAshiny	*Correspondance Analysis (CA) with Factoshiny*

Description

Performs Correspondance Analysis (CA) including supplementary row and/or column points on a Shiny application.

Columns or rows with NA are considered as supplementary in the analysis.

Allows to change CA parameters and graphical parmeters.

Graphics can be downloaded in png, jpg and pdf.

Usage

```
CAshiny(X)
```

Arguments

X   a data frame or a table with *n* rows and *p* columns, i.e. a contingency table or a CAshiny result or a CA result

Value

Returns several tabs:

Graphs   a tab containing the row and column points factor map (with supplementary columns and supplementary rows)

Values   a tab containing the summary of the CA performed, the eigenvalues, the results for the columns, for the rows, for the supplementary columns and for the supplementary rows.

Summary of dataset

           a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.

Data   a tab containing the dataset with a nice display.

The left part of the application allows to change all the elements of the CA and the graphs (axes,variables,colors...)

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

CA, plot.CA
shiny website,
Video showing how to perform CA with Factoshiny

Examples

```
## Not run:
require(FactoMineR)
data(children)
# Correspondance Analysis with Factoshiny:
res.shiny=CAshiny(children)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny2=CAshiny(res.shiny)

#CAshiny on a result of a CA
data(children)
res.ca <- CA (children, row.sup = 15:18, col.sup = 6:8)
res.shiny=CAshiny(res.ca)

## End(Not run)
```

---

catdesshiny	*Categories description*

Description

Description of the categories of one factor by categorical variables and/or by quantitative variables

Usage

```
catdesshiny(X)
```

Arguments

X   a data frame made up of at least one categorical variables and a set of quantitative variables and/or categorical variables

Value

Returns a list including:

test.chi	The categorical variables which characterized the factor are listed in ascending order (from the one which characterized the most the factor to the one which significantly characterized with the proba proba
category	description of each category of the num.var by each category of all the categorical variables
quanti.var	the global description of the num.var variable by the quantitative variables with the square correlation coefficient and the p-value of the F-test in a one-way analysis of variance (assuming the hypothesis of homoscedsticity)
quanti	the description of each category of the num.var variable by the quantitative variables.

Author(s)

Etienne Lancelle, Francois Husson <francois.husson@institut-agro.fr>

References

Husson, F., Le, S. and Pages, J. (2010). Exploratory Multivariate Analysis by Example Using R, *Chapman and Hall*. Lebart, L., Morineau, A. and Piron, M. (1995) Statistique exploratoire multidimensionnelle, *Dunod*.

See Also

catdes

Examples

```
## Not run:
require(FactoMineR)
data(wine)
catdesshiny(wine)

## End(Not run)
```

| condesshiny | *Continuous variable description* |

Description

Description continuous by quantitative variables and/or by categorical variables

Usage

```
condesshiny(X)
```

Arguments

X   a data frame made up of at least one quantitative variable and a set of quantitative variables and/or categorical variables

Value

Returns a list including:

quanti   the description of the num.var variable by the quantitative variables. The variables are sorted in ascending order (from the one which characterized the most to the one which significantly characterized with the proba proba)

quali   The categorical variables which characterized the continuous variables are listed in ascending order

category   description of the continuous variable num.var by each category of all the categorical variables

Author(s)

Etienne Lancelle, Francois Husson <francois.husson@institut-agro.fr>

See Also

condes

Examples

```
## Not run:
require(FactoMineR)
data(decathlon)
condesshiny(decathlon)

## End(Not run)
```

Factoshiny   *Choose the Factoshiny function to perform the analysis*

Description

Choose betwwen all the available functions of the package

Usage

```
Factoshiny(X, language="auto")
```

Arguments

X	a data frame with *n* rows (individuals) and *p* columns (numeric variables) or a Factoshiny result
language	string corresponding to the language you want for the interface. "french" or "english" are available; by default "auto" will automatically find the language of your computer

Value

Open a web interface that allows you to choose the method you want to use on your dataset

Author(s)

Francois Husson

Examples

```
## Not run:
require(FactoMineR)
data(decathlon)
# Principal Component Analysis with Factoshiny:
res.shiny <- Factoshiny(decathlon)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny2=Factoshiny(res.shiny)

#PCAshiny on a result of a PCA
res.pca <- PCA(decathlon, quanti.sup = 11:12, quali.sup=13)
res.shiny=Factoshiny(res.pca)

## End(Not run)
```

FAMDshiny   *Factor Analysis for Mixed Data with Factoshiny*

Description

Performs Factor Analysis for Mixed Data (FAMD) with supplementary individuals, supplementary quantitative variables and supplementary categorical variables on a Shiny application.
Allows to change FAMD parameters and graphical parmeters.
Graphics can be downloaded in png, jpg and pdf.

Usage

```
FAMDshiny(X)
```

Arguments

X   a data frame with *n* rows (individuals) and *p* columns (numeric variables and categorical variables), or a FAMDshiny result or a FAMD result

Value

Returns several tabs:

Graphs	a tab containing the individuals factor map, the variables factor (quantitative and categorical) map and the correlation circle.
Values	a tab containing the summary of the FAMD performed, the eigenvalues, the results for the variables, the results for the individuals, the results for the supplementary variables and the results for the supplementary individuals.
Summary of dataset	a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.
Data	a tab containing the dataset with a nice display.

The left part of the application allows to change all the elements of the FAMDA and the graphs (axes,variables,colors...)

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

FAMD,plot.FAMD
shiny website

Examples

```
## Not run:
require(FactoMineR)
data(geomorphology)
# FAMD with Factoshiny:
res.shiny=FAMDshiny(geomorphology)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny2=FAMDshiny(res.shiny)


## End(Not run)
```

HCPCshiny   *Hierarchical Clustering on Principal Components (HCPC) with Factoshiny*

Description

Performs Hierarchical Clustering on Principal Components (HCPC) o results from a factor analysis on a Shiny application.
Allows to change HCPC parameters and graphical parmeters.
Graphics can be downloaded in png, jpg and pdf.

Usage

```
HCPCshiny(res)
```

Arguments

res   Either the result of a factor analysis or a dataframe, the result of a HCPCshiny
                app or an HCPC result

Value

Returns several tabs:

Graphs   a tab containing the factor map,individuals colores by cluster, the 3D map (same graph but with tree above) and the tree map

Values   a tab containing the description of classes (by variables and by axes) and the parangons of each cluster

Summary of dataset

                  a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.

Data   a tab containing the dataset with a nice display.

The left part of the application allows to change the number of cluster very easily. Some parameters from the graphs can also be changed. By default, the numeric value of the number of clusters is set to the value advised by the HCPC function.

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

HCPC, plot.HCPC
shiny website,
Video showing how to perform clustering with Factoshiny

Examples

```
## Not run:
require(FactoMineR)
data(decathlon)
# HCPC with Factoshiny on a result of a factor analysis:
res.pca <- PCA(decathlon, quanti.sup = 11:12, quali.sup=13)
res.shiny=HCPCshiny(res.pca)

# HCPC with Factoshiny on a dataframe:
data(wine)
res.shiny2=HCPCshiny(wine)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny3=HCPCshiny(res.shiny2)


## End(Not run)
```

MCAshiny   *Multiple Correspondence Analysis (MCA) with Factoshiny*

Description

Performs Multiple Correspondence Analysis (MCA) with supplementary individuals, supplementary quantitative variables and supplementary categorical variables on a Shiny application.
Allows to change MCA parameters and graphical parmeters.
Graphics can be downloaded in png, jpg and pdf.

Usage

```
MCAshiny(X)
```

Arguments

X   a data frame with *n* rows (individuals) and *p* columns (numeric variables), or a MCAshiny result or a MCA result

Value

Returns several tabs:

Graphs   a tab containing the individuals factor map and the variables factor map.

Values   a tab containing the summary of the MCA performed, the eigenvalues, the results for the variables, the results for the individuals, the results for the supplementary variables and the results for the numerical variables.

Automatic description of axes

a tab containing the output of the dimdesc function. This function is designed to point out the variables and the categories that are the most characteristic according to each dimension obtained by a Factor Analysis.

Summary of dataset

a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.

Data   a tab containing the dataset with a nice display.

The left part of the application allows to change all the elements of the MCA and the graphs (axes,variables,colors...)

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

MCA,dimdesc,plot.MCA
shiny website,
Video showing how to perform MCA with Factoshiny

Examples

```
## Not run:
require(FactoMineR)
data(poison)
# Multiple Correspondance Analysis with Factoshiny:
res.shiny=MCAshiny(poison)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny2=MCAshiny(res.shiny)

#MCAshiny on a result of a MCA
data(hobbies)
res.mca <- MCA(hobbies,quali.sup=19:22,quanti.sup=23)
res.shiny=MCAshiny(res.mca)

## End(Not run)
```

MFAshiny *Multiple Factor Analysis (MFA) with Factoshiny*

Description

Performs Multiple Factor Analysis (MFA) with supplementary individuals and supplementary groups of variables on a Shiny application.

Groups of variables can be quantitative, categorical or contingency tables.

Allows to change MFA parameters and graphical parmeters. A maximum of 10 groups can be created

Graphics can be downloaded in png, jpg, pdf and emf.

Usage

```
MFAshiny(X)
```

Arguments

X   a data frame with *n* rows (individuals) and *p* columns or a result of the MFA
                function

Value

Returns several tabs:

Graphs   a tab containing the individuals factor map, the variables factor map, the groups
                factor map, the axes factor map and the frequencies factor map (if there is at
                least one frequency group)

Values   a tab containing the summary of the MFA performed, the eigenvalues, the results
                for the variables, the results for the individuals and the results of the groups

Summary of dataset

> a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.

Data   a tab containing the dataset with a nice display.

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

MFA, plot.MFA
shiny website,
Video showing how to perform MFA with Factoshiny

Examples

```
## Not run:
require(FactoMineR)
data(wine)
# Multiple Factor Analysis with Factoshiny:
res.shiny=MFAshiny(wine)

#If you want to create your groups first and customize your graphs
res.mfa= MFA(wine, group=c(2,5,3,10,9,2), type=c("n",rep("s",5)),
    ncp=5, name.group=c("orig","olf","vis","olfag","gust","ens"),
    num.group.sup=c(1,6))
res.shiny=MFAshiny(res.mfa)

## End(Not run)
```

PCAshiny   *Principal Component Analysis (PCA) with FactoShiny*

Description

Performs Principal Component Analysis (PCA) with supplementary individuals, supplementary quantitative variables and supplementary categorical variables on a Shiny application.
Allows to change PCA parameters and graphical parmeters.
Graphics can be downloaded in png, jpg, pdf and emf.

Usage

```
PCAshiny(X)
```

Arguments

X   a data frame with *n* rows (individuals) and *p* columns (numeric variables) or a PCAshiny result, or a PCA result

Value

Returns several tabs:

Graphs   a tab containing the individuals factor map and the variables factor map.

Values   a tab containing the summary of the PCA performed, the eigenvalues, the results for the variables, the results for the individuals, the results for the supplementary variables and the results for the categorical variables.

Automatic description of axes

     a tab containing the output of the dimdesc function. This function is designed to point out the variables and the categories that are the most characteristic according to each dimension obtained by a Factor Analysis.

Summary of dataset

     a tab containing the summary of the dataset and a boxplot and histogram for quantitative variables.

Data   a tab containing the dataset with a nice display.

The left part of the application allows to change all the elements of the PCA and the graphs (axes,variables,colors...). The "Get your code" button print the PCA and the plots code in your RStudio session.

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

PCA, plot.PCA
shiny website,
Video showing how to perform PCA with Factoshiny

Examples

```
## Not run:
require(FactoMineR)
data(decathlon)
# Principal Component Analysis with Factoshiny:
res.shiny=PCAshiny(decathlon)

# Find your app the way you left it (by clicking on the "Quit the app" button)
res.shiny2=PCAshiny(res.shiny)

#PCAshiny on a result of a PCA
res.pca <- PCA(decathlon, quanti.sup = 11:12, quali.sup=13)
res.shiny=PCAshiny(res.pca)

## End(Not run)
```

print.CAshiny

Print the CAshiny results

Description

Print the CAshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'CAshiny'
print(x,...)
```

Arguments

x	an object of class CAshiny
...	further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

[CAshiny](#)

Examples

```
## Not run:
data(children)
res.shiny = CAshiny(children)
#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

print.FAMDshiny

Print the FAMDshiny results

Description

Print the FAMDshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'FAMDshiny'
print(x,...)
```

Arguments

x	an object of class FAMDshiny
...	further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

[FAMDshiny](#)

Examples

```
## Not run:
data(geomorphology)
res.shiny = FAMDshiny(geomorphology)
#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

---

print.HCPCshiny	*Print the HCPCshiny results*

Description

Print the HCPCshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'HCPCshiny'
print(x,...)
```

Arguments

x	an object of class HCPCshiny
...	further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

[HCPCshiny](#)

Examples

```
## Not run:
data(decathlon)
res.shiny = HCPCshiny(decathlon)
#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

---

print.MCAshiny *Print the MCAshiny results*

Description

Print the MCAshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'MCAshiny'
print(x,...)
```

Arguments

x   an object of class MCAshiny

...   further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

MCAshiny

Examples

```
## Not run:
data(poison)
res.shiny = MCAshiny(poison)
#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

---

print.MFAshiny *Print the MFAshiny results*

Description

Print the MFAshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'MFAshiny'
print(x,...)
```

Arguments

x   an object of class MFAshiny

...   further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

MFAshiny

Examples

```
## Not run:
data(wine)
res<- MFA(wine, group=c(2,5,3,10,9,2), type=c("n",rep("s",5)),
    ncp=5, name.group=c("orig","olf","vis","olfag","gust","ens"),
    num.group.sup=c(1,6),graph=FALSE)
res.shiny=MFAshiny(res)

#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

print.PCAshiny   *Print the PCAshiny results*

Description

Print the PCAshiny results i.e the R corresponding script

Usage

```
## S3 method for class 'PCAshiny'
print(x,...)
```

Arguments

x   an object of class PCAshiny

...   further arguments passed to or from other methods

Author(s)

Pauline Vaissie, Astrid Monge, Francois Husson

See Also

PCAshiny

Examples

```
## Not run:
data(decathlon)
res.shiny = PCAshiny(decathlon)
#click on the "Quit the app" button
print(res.shiny)

## End(Not run)
```

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