Package 'spind'

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Type Package

Title Spatial Indices

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Description Functions for spatially corrected accuracy measures.

Depends lattice, splancs

License GPL-2

R topics documented:

`spind-package` *Accuracy measures*

Description

Functions for spatially corrected accuracy measures.

Details

Package:	spind
Type:	Package
Version:	1.0
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License:	GPL-2

th.indep(data,coord,spatial=TRUE,plot.ROC=TRUE)

Author(s)

Gudrun Carl

Maintainer: Gudrun Carl <gudrun.carl@ufz.de>

`acfft` *Spatial autocorrelation*

Description

Function calculates spatial autocorrelation (i.e. Moran's I value) at lag 1.

Usage

```
acfft(coord,f)
```

Arguments

`coord`	a matrix containing 2 columns, x,y-coordinates (integer, consecutively numbered cells).
`f`	a vector of same length.

Value

A value of spatial autocorrelation at lag 1.

Author(s)

Gudrun Carl

Examples

```
data(hook)
data<- hook[,1:2]
coord<- hook[,3:4]
# spatial autocorrelation of predictions at lag 1
ac<-acfft(coord,data[,2])
ac
```

adjusted.actuals *Adjusted actual values*

Description

Function provides adjusted actual values reflecting spatial autocorrelation balanced to predictions.

Usage

```
adjusted.actuals(data,coord,plot.maps=FALSE)
```

Arguments

data	a data frame or matrix containing 2 columns, actuals (zero-one values) in 1st column, predictions (numeric, between 0 and 1) in 2nd column.
coord	a matrix containing 2 columns of same length, x,y-coordinates (integer, consecutively numbered cells).
plot.maps	a logical value indicating whether maps should be plotted.

Value

A vector of adjusted actuals.

Author(s)

Gudrun Carl

Examples

```
data(hook)
data<- hook[,1:2]
coord<- hook[,3:4]
# plot maps
aa<-adjusted.actuals(data,coord,plot.maps=TRUE)
```

hook *Actuals and predictions in spatial context.*

Description

This data set gives actual values and predictions on a 10x10 grid.

Usage

```
hook
```

Format

A data frame containing 4 columns: actuals (zero-one values) in 1st column, predictions (numeric, between 0 and 1) in 2nd column, x-coordinates (integer, consecutively numbered cells)in 3rd column, y-coordinates (integer, consecutively numbered cells)in 4th column.

Source

Gudrun Carl

`th.dep` *Kappa and confusion matrix*

Description

Function calculates threshold-dependent metrics: kappa and confusion matrix. It is based on a 2D analysis taking the grid structure of datasets into account (for a regular gridded dataset, grid cells are assumed to be square).

Usage

```
th.dep(data,coord,thresh=0.5,spatial=TRUE)
```

Arguments

`data`	a data frame or matrix containing 2 columns, actuals (zero-one values) in 1st column, predictions (numeric, between 0 and 1) in 2nd column.
`coord`	a matrix containing 2 columns of same length, x,y-coordinates (integer, consecutively numbered cells).
`thresh`	a cutoff value (between 0 and 1) used for splitting predictions, defaults to 0.5.
`spatial`	a logical value. Should spatially corrected indices (instead of classical indices) be computed?

Value

A list including elements

`kappa`	kappa
`cm`	confusion matrix
`sensitivity`	sensitivity
`specificity`	specificity
`actuals`	actuals or adjusted actuals
`splitlevel.pred`	level splitting of predicted values
`splitlevel.act`	level splitting of actuals / adjusted actuals
`splitposition.pred`	position splitting of predicted values
`splitposition.act`	position splitting of actuals / adjusted actuals

Author(s)

Gudrun Carl

Examples

```
data(hook)
data<- hook[,1:2]
coord<- hook[,3:4]
# spatial index (kappa and confusion matrix)
si1<-th.dep(data,coord,spatial=TRUE)
si1$kappa
si1$cm
```

`th.indep` *ROC, AUC, and TSS*

Description

Function calculates threshold-independent metrics: ROC, AUC, and (max)TSS. It is based on a 2D analysis taking the grid structure of datasets into account (for a regular gridded dataset, grid cells are assumed to be square).

Usage

```
th.indep(data,coord,spatial=TRUE,plot.ROC=TRUE)
```

Arguments

`data`	a data frame or matrix containing 2 columns, actuals (zero-one values) in 1st column, predictions (numeric, between 0 and 1) in 2nd column.
`coord`	a matrix containing 2 columns of same length, x,y-coordinates (integer, consecutively numbered cells).
`spatial`	a logical value. Should spatially corrected indices (instead of classical indices) be computed?
`plot.ROC`	a logical value indicating whether ROC should be plotted.

Value

A list including elements

`AUC`	AUC
`TSS`	maximum TSS
`sensitivity`	sensitivity
`specificity`	specificity

Author(s)

Gudrun Carl

Examples

```
data(hook)
data<- hook[,1:2]
coord<- hook[,3:4]
# spatial index (ROC, AUC, and TSS)
si2<-th.indep(data,coord,spatial=TRUE)
si2$AUC
si2$TSS
```

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