Package 'ops'

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Type Package

Title Optimal Power Space Transformation

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Description Comparison of data by Pearson product-moment correlation coefficients is prone to outliers. The problem can be alleviated by normalizing data with outliers before computing the Pearson correlation coefficient. The sample provides such normalization by optimal power space transformation.

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LazyLoad yes

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ops-package *Optimal Power Space Transformation*

Description

Comparison of data by Pearson product-moment correlation coefficients is prone to outliers. The problem can be alleviated by normalizing data with outliers before computing the Pearson correlation coefficient. The sample provides such normalization by optimal power space transformation.

Details

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License:	Apache License 2.0
LazyLoad:	yes

Use function findP() to compute the exponent for an optimal power space transformation. Optionally, pre-filter the dataset excluding values that are equal or less a certain threshold by calling function filter().

Author(s)

Micha Sammeth <micha@sammeth.net>

References

Ribeca P. and Sammeth M. (under review)

Examples

```
x=cbind(rexp(1000),rexp(1000))
p=findP(x)$maxIQR
y=x^p
```

distance *Relative Euclidean Distance from Source*

Description

Computes the relative Euclidean distance (i.e., normalized by the respective maxima) of a set of x- and y-coordinates.

Usage

```
distance(x, y)
```

Arguments

x	x-coordinates of the data
y	y-coordinates of the data

Value

Returns the set of relative distances obtained from 'x' and 'y'.

Author(s)

M. Sammeth <micha@sammeth.net>

References

Ribeca P. and Sammeth M. (under review)

See Also

findP, filter

Examples

```
distance(seq(1,10),seq(1,10))
```

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filter *Filter matrix*

Description

Filters two columns of a matrix to only contain values greater than a common threshold

Usage

```
filter(x, ia, ib, t = -1)
```

Arguments

x	the matrix to be filtered
ia	index of the first column
ib	index of the second column
t	the threshold up to which values are removed by the filtering

Author(s)

M. Sammeth <micha@sammeth.net>

References

Ribeca P. and Sammeth M. (under review)

See Also

findP, distance

Examples

```
x=cbind(rexp(1000),rexp(1000))
filter(x,1,2,0.1)
```

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findP *Find Power Exponent*

Description

findP finds the exponent for an optimal power transformation of data that is to be normalized.

Usage

```
findP(y, step = 0.01)
```

Arguments

y	a 2D matrix with x- and y-coordinates of raw data in columns 'y[,1]' and 'y[,2]'
step	an optional step size for iterating normalization exponents from the interval [0;1]. Default value is '0.01'.

Value

maxIQR	The optimal exponent obtained by maximizing the inter-quartile range
minMed	The optimal exponent obtained by minimizing the distance to the median
values	Data spaces for each exponent iterated during optimization

Author(s)

M. Sammeth <micha@sammeth.net>

References

Ribeca P. and Sammeth M. (under review)

See Also

filter, distance

Examples

```
x=cbind(rexp(1000),rexp(1000))
p=findP(x)$maxIQR
```

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