Package 'CHFF'

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Type Package

Title Closest History Flow Field Forecasting for Bivariate Time Series

Version 0.1.0

Author Patrick Fleming

Maintainer Kyle A. Caudle <kyle.caudle@sdsmt.edu>

Description
    The software matches the current history to the closest history in a time series to build a forecast.

License GPL-3

LazyData TRUE

NeedsCompilation no

Repository CRAN

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R topics documented:

CHFF   *Closest History Flow Field Forecasting for Bivariate Time Series*

Description

Matches the current history with the "closest" history for a given time series. A forecast will be based on what happened after the "closest" history was observed.

1

Usage

```
CHFF(data,num,step)
```

Arguments

data	Time series data
num	Number of forecasts produced
step	Step size (or lag) in past slopes used in the history structure

Value

Prints the (x,y) forecast values and provides a plot

Author(s)

Patrick Fleming

References

Caudle, KA, Fleming, PS, Frey, MR and Brubaker, N. "Next Generation of Flow Field Forecasting", Proceedings of the Joint Statistical Meetings of the American Statistical Association, Seattle, WA., 8 August-13 August (2015).

Frey, Michael R., and Kyle A. Caudle. "Flow field forecasting for univariate time series." Statistical Analysis and Data Mining (2013).

Examples

```
data(tsdata) # Load time series data int R
CHFF(tsdata,10,3)
```

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historyslopes   *History of Slopes*

Description

Extracts the history space for a given time series

Usage

```
historyslopes(x,y,step,ave)
```

Arguments

x	x values for the time series
y	y values for the time series
step	The lags in past slopes used in the given history
ave	Then number of time step the slope are averaged over. We recomend 1 or step which is the lags in the slopes.

Value

Returns the history space in matrix form 16X(datalength-7*step), with the most recent history at the bottom.

Author(s)

Patrick Fleming

References

Caudle, KA, Fleming, PS, Frey, MR and Brubaker, N. "Next Generation of Flow Field Forecasting", Proceedings of the Joint Statistical Meetings of the American Statistical Association, Seattle, WA., 8 August-13 August (2015).

Frey, Michael R., and Kyle A. Caudle. "Flow field forecasting for univariate time series." Statistical Analysis and Data Mining (2013).

Examples

```
data(tsdata) # Load time series data int R
CHFF(tsdata,10,3)
```

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standarddistance	*Calculates Standard Distance Score*

Description

For each history we calculate the standard distance score between the current history and all histories

Usage

```
standarddistance(char,History,hlength)
```

Arguments

char	The number iof characteristics to consider when searching for the "closest" history. 16 is the complete set of possible characters, 14 leaves off the x and y posistions on uses 7 x slopes and 7 y slopes only.
History	The history space
hlength	The length of the history space.

Value

Returns the winning Score, the structures used in the winning score, and the winning history

Author(s)

Patrick Fleming

References

Caudle, KA, Fleming, PS, Frey, MR and Brubaker, N. "Next Generation of Flow Field Forecasting", Proceedings of the Joint Statistical Meetings of the American Statistical Association, Seattle, WA., 8 August-13 August (2015).

Frey, Michael R., and Kyle A. Caudle. "Flow field forecasting for univariate time series." Statistical Analysis and Data Mining (2013).

Examples

```
data(tsdata) # Load time series data int R
CHFF(tsdata,10,3)
```

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tsdata   *Time Series Data for Testing*

Description

A simulated time series data model generates trajectories in a two-dimensional space. Generated trajectories are composed of 20-observation cycles, each cycle with four quarter-ellipse segments of five observations.

Usage

```
data(tsdata)
```

Value

Provides user data to run as an example

Author(s)

Patrick Fleming

References

Caudle, KA, Fleming, PS, Frey, MR and Brubaker, N. "Next Generation of Flow Field Forecasting", Proceedings of the Joint Statistical Meetings of the American Statistical Association, Seattle, WA., 8 August-13 August (2015).

Frey, Michael R., and Kyle A. Caudle. "Flow field forecasting for univariate time series." Statistical Analysis and Data Mining (2013).

Examples

```
data(tsdata) # Load time series data int R
```

Index