Package ‘SK’

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Type Package
Title Segment-Based Ordinary Kriging and Segment-Based Regression Kriging for Spatial Prediction
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Description Segment-based Kriging methods, including segment-based ordinary Kriging (SOK) and segment-based regression Kriging (SRK) for spatial prediction of line segment spatial data as described in Yongze Song (2018) <doi:10.1109/TITS.2018.2805817>. Includes the spatial prediction and spatial visualisation. The descriptions of the methods and case datasets refer to the citation information below.
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bxcox  

Boxcox transform for a response variable

Description

Boxcox transform for a response variable

Usage

bxcox(y, x)

Arguments

y  
A vector of response variable

x  
A vector of explanatory variable

Examples

vehicles_obs <- vehicles[vehicles@data$obs1pred0 == 1,]
vehicles_obs$transheavy <- bxcox(vehicles_obs$heavy, vehicles_obs$width)[[1]]
qqnorm(vehicles_obs$heavy)
qqnorm(vehicles_obs$transheavy)
lambda <- bxcox(vehicles_obs$heavy, vehicles_obs$width)[[2]]

skriging  

Function for Segment-based Kriging models

Description

Segment-based Kriging models, including Segment-based Ordinary Kriging (SOK) and Segment-based Regression Kriging (SRK), for spatial prediction of line segment spatial data (polyline). The methods are described in Yongze Song (2018) <doi:10.1109/TITS.2018.2805817>.

Usage

skriging(formula, polyline = polyline, method = "srk",
  lwd = "width", obspred = "obs1pred0", boxcox = TRUE)
## S3 method for class 'skriging'
print(x, ...)
## S3 method for class 'skriging'
plot(x, studyarea = NULL, ...)
**Arguments**

- **formula**: A skriging formula.
- **polyline**: A shapefile of spatial polyline.
- **method**: A character of segment-based Kriging model. The default is "srk", segment-based regression Kriging. Another method is "sok", segment-based ordinary Kriging.
- **lwd**: A fixed number or a variable name of polyline of the line width.
- **obspred**: A variable name of polyline to define the observation and prediction lines. Observation is 1 and prediction is 0.
- **boxcox**: A logical parameter to set whether the dependent variable should be transformed with boxcox function. The default is TRUE.
- **x**: A list of skriging result.
- **studyarea**: A shapefile of spatial polygon of study area.

**Examples**

```r
## srk: segment-based regression kriging
## dataset '/quotesingleNvar vtest /quotesingleNvar' is a sample of dataset 'vehicles'

srk1 <- skriging(heavy ~ wpai + width, polyline = vtest, method = "srk",
    lwd = "width", obspred = "obspred0", boxcox = TRUE)

ts <- skriging(heavy ~ wpai + width, polyline = vtest, method = "sok",
    lwd = "width", obspred = "obspred0", boxcox = TRUE)
```

**Description**

The "vehicles" dataset is the spatial data of traffic volumes in Wheatbelt region, Western Australia (WA), Australia, in 2015. The format is polyline. The attributes include road properties (width and length) and traffic volumes of heavy, light and total vehicles. The variable "obspred0" defines the road segments that have observations or to be predicted. More details and data sources can be referred in the Citation Info of the package.
Format

vehicles: A Spatial Lines Data Frame with 280 rows and 10 variables.

segmentID  Number of road segment
obs1pred0  Observation is 1 and prediction is 0
length  Length of road segment
width  Width of road segment
heavy  Traffic volumes of heavy vehicles
light  Traffic volumes of light vehicles
total  Total traffic volumes
wpai  Weighted population accessibility index
longitude  Longitude of the center of road segment
latitude  Longitude of the center of road segment

Author(s)

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wheatbelt  Spatial dataset of study area

Description

The "wheatbelt" dataset is spatial polygon of the study area Wheatbelt region, Western Australia (WA), Australia. More details and data sources can be referred in the Citation Info of the package.

Usage

wheatbelt

Format

wheatbelt: A Spatial Polygon Data Frame.

Author(s)

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