Package ‘scgwr’

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scgwr Scalable Geographically Weighted Regression

Description

This function estimates a scalable geographically weighted regression (GWR) model.

Usage

scgwr( coords, y, x, knn = 100, kernel = "gau", p = 4 )

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Arguments

coords Matrix of spatial point coordinates (N x 2)
y Vector of explained variables (N x 1)
x Matrix of explanatory variables (N x K). Default is NULL
knn Number of nearest-neighbors being geographically weighted. Default is 100. Larger knn is better for larger samples (see Murakami et al., 2019)
kernel Kernel to model spatial heterogeneity. Gaussian kernel ("gau") and exponential kernel ("exp") are available
p Degree of the polynomial to approximate the kernel function. Default is 4

Value

b Matrix of estimated coefficients (N x K)
bse Matrix of the standard errors for the coefficients (N x k)
t Matrix of the t-values for the coefficients (N x K)
p Matrix of the p-values for the coefficients (N x K)
pa Matrix of the p-values adjusted to address the multiple testing problem using the approach of de Silva and Fotheringham (2016) (N x K)
par Estimated model parameters including a scale parameter and a shrinkage parameter if penalty = TRUE (see Murakami et al., 2018)
e Error statistics. It includes sum of squared errors (SSE), residual standard error (resid_SE), R-squared (R2), adjusted R2 (adjR2), log-likelihood (logLik), corrected Akaike information criterion (AICc), and the cross-validation (CV) score measured by root mean squared error (RMSE) (CV_score(RMSE))
pred Vector of predicted values (N x 1)
resid Vector of residuals (N x 1)

References


Examples

```r
require(spData)
data(boston)
coords <- boston.c[, c("LON", "LAT") ]
y <- log(boston.c[,"MEDV"])
x <- boston.c[, c("CRIM", "ZN", "INDUS", "CHAS", "AGE")]
res <- scgwr( coords = coords, y = y, x = x )
res$b
res$bse
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