

# Package ‘GWLeLast’

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**Type** Package

**Title** Geographically Weighted Logistic Elastic Net Regression

**Version** 1.2.2

**Author** Daisuke Yoneoka, Eiko Saito

**Maintainer** Daisuke Yoneoka <blue.sky.sea.dy@gmail.com>

**Description** Fit a geographically weighted logistic elastic net regression. Detailed explanations can be found in Yoneoka et al. (2016): New algorithm for constructing area-based index with geographical heterogeneities and variable selection: An application to gastric cancer screening <[doi:10.1038/srep26582](https://doi.org/10.1038/srep26582)>.

**Depends** R (>= 3.0.1)

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**Encoding** UTF-8

**LazyData** true

**RoxygenNote** 6.0.1

**Imports** doParallel, geosphere, sp, spgwr, glmnet, foreach, methods, stats

**NeedsCompilation** no

**Repository** CRAN

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 GWLeLast

*GWLeLast Geographically weighted logistic elastic net regression*


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### Description

This package fits the geographically weighted logistic elastic net regression model for a variable selection and for the mitigation of the multicollinearity between coefficients due to geographical correlation. Detailed explanations can be found in Yoneoka et al. (2016): New algorithm for constructing area-based index with geographical heterogeneities and variable selection: An application to gastric cancer screening.

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 GWLeLast.cv.bw

*GWLeLast.cv.bw*


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### Description

Cross validation for geographically weighted logistic elastic net regression

### Usage

```
GWLeLast.cv.bw(x = x, y = y, D = D, coords = coords, alpha = 1,
  lambda = lambda, nlambdas = nlambdas, gweight = gweight,
  longlat = longlat, bw = bw)
```

### Arguments

x	Covariates.
y	Outcome binary variable.
D	Distance matrix.
coords	2 columns matrix including "longitude" and "latitude".
alpha	The elasticnet mixing parameter [0,1] in glmnet package.
lambda	Optional user-supplied lambda sequence in glmnet package.
nlambdas	The number of lambda values in glmnet package.
gweight	geographical kernel function in spgwr package.
longlat	Indicate if the coords parameter are spherically calculated.
bw	bandwidth of geographical kernel function.

### Value

error Cross validation error.

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 GWLelest.est

*GWLelest.est*


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**Description**

Fitting geographically weighted logistic elastic net regression

**Usage**

```
GWLelest.est(x, y, coords, D = NULL, alpha = 1, lambda = NULL,
  nlambda = NULL, gweight = c("gwr.Gauss", "gwr.bisquare"),
  longlat = TRUE, bw = bw)
```

**Arguments**

x	Covariates.
y	Outcome binary variable.
coords	2 columns matrix including "longitude" and "latitude".
D	Distance matrix.
alpha	The elasticnet mixing parameter [0,1] in glmnet package.
lambda	Optional user-supplied lambda sequence in glmnet package.
nlambda	The number of lambda values in glmnet package.
gweight	geographical kernel function in spgwr package.
longlat	Indicate if the coords parameter are spherically calculated.
bw	bandwidth of geographical kernel function.

**Value**

model: Fitted model at location i.  
 error: Cross validation error.

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 GWLelest.inner

*GWLelest.inner*


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**Description**

Inner part of fitting GWLelest without parallel cores

**Usage**

```
GWLelest.inner(x = x, y = y, coords = coords, W = W, lambda = lambda,
  alpha = 1, nlambda = nlambda)
```

**Arguments**

x	Covariates.
y	Outcome binary variable.
coords	2 columns matrix including "longitude" and "latitude".
W	Weight matrix.
lambda	Optional user-supplied lambda sequence in glmnet package.
alpha	The elasticnet mixing parameter [0,1] in glmnet package.
nlambda	The number of lambda values in glmnet package.

**Value**

model	Fitted model at location i.
error	Cross validation error.

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 GWLeleast.sel.bw

*GWLeleast.sel.bw*


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**Description**

Bandwidth selection for geographically weighted logistic elastic net regression

**Usage**

```
GWLeleast.sel.bw(x, y, coords, D = NULL, alpha = 1, lambda = NULL,
  nlambda = NULL, gweight = gweight, longlat = TRUE, lower.bw = NULL,
  upper.bw = NULL)
```

**Arguments**

x	Covariates.
y	Outcome binary variable.
coords	2 columns matrix including "longitude" and "latitude".
D	Distance matrix.
alpha	The elasticnet mixing parameter [0,1] in glmnet package.
lambda	Optional user-supplied lambda sequence in glmnet package.
nlambda	The number of lambda values in glmnet package.
gweight	geographical kernel function in spgwr package.
longlat	Indicate if the coords parameter are spherically calculated.
lower.bw	Lower limit of bandwidth in geographical kernel.
upper.bw	Upper limit of bandwidth in geographical kernel.

**Value**

optimal.bw Optimal bandwidth.

**Examples**

```
#####  
# Need to add
```

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