Package ‘baggingbwsel’

July 12, 2021

Type  Package
Title  Bagging Bandwidth Selection in Kernel Density and Regression Estimation
Version  1.0
Date  2021-07-08
License  GPL-3
Encoding  UTF-8
Depends  mclust, foreach
Imports  Rcpp (>= 1.0.3), parallel, doParallel, kedd, stats, sm, nor1mix, rgl, rpanel, tkrplot, misc3d
LinkingTo  Rcpp
RoxygenNote  7.1.1
NeedsCompilation  yes
Author  Daniel Barreiro-Ures [aut, cre], Jeffrey Hart [aut], Ricardo Cao [aut], Mario Francisco-Fernandez [aut]
Maintainer  Daniel Barreiro-Ures <daniel.barreiro.ures@udc.es>
Repository  CRAN
Date/Publication  2021-07-12 07:20:02 UTC

R topics documented:

  baggingbwsel-package ........................................ 2
  bagcv ............................................................ 3
Description
A more detailed description of what the package does. A length of about one to five lines is recommended.

Details
This section should provide a more detailed overview of how to use the package, including the most important functions.

Author(s)
Your Name, email optional.
Maintainer: Your Name <your@email.com>

References
This optional section can contain literature or other references for background information.

See Also
Optional links to other man pages

Examples
```r
## Not run:
## Optional simple examples of the most important functions
## These can be in \dontrun{} and \donttest{} blocks.

## End(Not run)
```
Description

Bagged CV bandwidth selector for Parzen-Rosenblatt estimator

Usage

```r
bagcv(x, r, s, h0, h1, nb = r, ncores = parallel::detectCores())
```

Arguments

- `x` Vector. Sample.
- `r` Positive integer. Size of the subsamples.
- `s` Positive integer. Number of subsamples.
- `h0` Positive real number. Range over which to minimize, left bound.
- `h1` Positive real number. Range over which to minimize, right bound.
- `nb` Positive integer. Number of bins.
- `ncores` Positive integer. Number of cores with which to parallelize the computations.

Details

Bagged cross-validation bandwidth selector for the Parzen-Rosenblatt estimator.

Value

Bagged CV bandwidth.

Examples

```r
set.seed(1)
x <- rnorm(10^6)
bagcv(x, 5000, 100, 0.01, 1, 1000, 2)
```
bagreg

**Bagged CV bandwidth selector for Nadaraya-Watson estimator**

**Description**

Bagged CV bandwidth selector for Nadaraya-Watson estimator

**Usage**

```r
bagreg(x, y, r, s, h0, h1, nb = r, ncores = parallel::detectCores())
```

**Arguments**

- `x`: Covariate vector.
- `y`: Response vector.
- `r`: Positive integer. Size of the subsamples.
- `s`: Positive integer. Number of subsamples.
- `h0`: Positive real number. Range over which to minimize, left bound.
- `h1`: Positive real number. Range over which to minimize, right bound.
- `nb`: Positive integer. Number of bins to use in cross-validation.
- `ncores`: Positive integer. Number of cores with which to parallelize the computations.

**Details**

Bagged cross-validation bandwidth selector for the Nadaraya-Watson estimator.

**Value**

Bagged CV bandwidth.

**Examples**

```r
set.seed(1)
x <- rnorm(10^5)
y <- 2*x+rnorm(1e5,0,0.5)
bagreg(x, y, 1000, 10, 0.01, 1, 1000, 2)
```
**Description**

Bagging bootstrap bandwidth selector for Parzen-Rosenblatt estimator

**Usage**

```r
hboot_bag(
  x,
  m = n,
  N = 1,
  nb = 1000L,
  g,
  lower,
  upper,
  ncores = parallel::detectCores(logical = FALSE)
)
```

**Arguments**

- `x` Vector. Sample.
- `m` Positive integer. Size of the subsamples.
- `N` Positive integer. Number of subsamples.
- `nb` Positive integer. Number of bins.
- `g` Positive real number. Pilot bandwidth.
- `lower` Positive real number. Range over which to minimize, left bound.
- `upper` Positive real number. Range over which to minimize, right bound.
- `ncores` Positive integer. Number of cores with which to parallelize the computations.

**Details**

Bagging bootstrap bandwidth selector for the Parzen-Rosenblatt estimator.

**Value**

Bagged CV bandwidth.

**Examples**

```r
data <- rnorm(10^5)
hboot_bag(data, 5000, 10, 1000, lower=0.001, upper=1, ncores=2)
```
| hsss_dens | *Generalized bagging CV bandwidth selector for Parzen-Rosenblatt estimator* |

**Description**

Generalized bagging CV bandwidth selector for Parzen-Rosenblatt estimator

**Usage**

```r
hsss_dens(x, r, s, nb = r, h0, h1, ncores = parallel::detectCores())
```

**Arguments**

- `x` Vector. Sample.
- `r` Positive integer. Size of the subsamples.
- `s` Positive integer. Number of subsamples.
- `nb` Positive integer. Number of bins.
- `h0` Positive real number. Range over which to minimize, left bound.
- `h1` Positive real number. Range over which to minimize, right bound.
- `ncores` Positive integer. Number of cores with which to parallelize the computations.

**Details**

Generalized bagging cross-validation bandwidth selector for the Parzen-Rosenblatt estimator.

**Value**

Bagged CV bandwidth.

**Examples**

```r
set.seed(1)
x <- rnorm(10^5)
hsss_dens(x, 5000, 100, 1000, 0.001, 1, 2)
```
Description

Estimation of the optimal subsample size for bagged CV bandwidth for Parzen-Rosenblatt estimator

Usage

mopt(x, N, r = 1000, s = 100, ncores = parallel::detectCores())

Arguments

- x: Vector. Sample.
- N: Positive integer. Number of subsamples for the bagged bandwidth.
- r: Positive integer. Size of the subsamples.
- s: Positive integer. Number of subsamples.
- ncores: Positive integer. Number of cores with which to parallelize the computations.

Details

Estimates the optimal size of the subsamples for the bagged CV bandwidth selector for the Parzen-Rosenblatt estimator.

Value

Estimate of the optimal subsample size.

Examples

```r
set.seed(1)
x <- rt(10^5, 5)
mopt(x, 500, 500, 10, 2)
```
tss_dens

Second order bagging CV bandwidth selector for Parzen-Rosenblatt estimator

Description
Second order bagging CV bandwidth selector for Parzen-Rosenblatt estimator

Usage
`tss_dens(x, r, s, h0, h1, nb = 1000, ncores = 1)`

Arguments
- `x` Vector. Sample.
- `r` Vector. The two subsample sizes.
- `s` Positive integer. Number of subsamples.
- `h0` Positive real number. Range over which to minimize, left bound.
- `h1` Positive real number. Range over which to minimize, right bound.
- `nb` Positive integer. Number of bins.
- `ncores` Positive integer. Number of cores with which to parallelize the computations.

Details
Second order bagging cross-validation bandwidth selector for the Parzen-Rosenblatt estimator.

Value
Second order bagging CV bandwidth.

Examples
```r
set.seed(1)
x <- rnorm(10^5)
tss_dens(x, 5000, 10, 0.01, 1, 1000, 2)
```
Index

* package
  baggingbwsel-package, 2

bagcv, 3
baggingbwsel (baggingbwsel-package), 2
baggingbwsel-package, 2
bagreg, 4

hboot_bag, 5
hsss_dens, 6

mopt, 7

tss_dens, 8