Package: KDEmcmc (via r-universe)

October 18, 2026

Type Package

Title Kernel Density Estimation with a Markov Chain Monte Carlo Sample

Version 0.0.2

Date 2025-08-19

Maintainer Juhee Lee <ljh988488@gmail.com>

Description Provides methods for selecting the optimal bandwidth in kernel density estimation for dependent samples, such as those generated by Markov chain Monte Carlo (MCMC). Implements a modified biased cross-validation (mBCV) approach that accounts for sample dependence, improving the accuracy of estimated density functions.

License GPL (>= 3)

Depends R (>= 3.5.0)

Imports Rcpp, methods

LinkingTo Rcpp, RcppArmadillo

LazyData true

RcppModules cKDEmodule

NeedsCompilation yes

RoxygenNote 7.3.2

Author Juhee Lee [aut, cre], Hang J. Kim [aut], Young-Min Kim [aut]

Repository https://jhlee-projects.r-universe.dev

Date/Publication 2025-08-19 04:50:02 UTC

RemoteUrl https://github.com/cran/KDEmcmc

RemoteRef HEAD

RemoteSha fe4aab57d1b54243e006fed8b863dcf44bc433de

Contents

cKDE 2
mBCV 2
plot.mBCV_obj 3
simMCMC 3

Index **4**

---

cKDE *RCPP Implementation of the Library*

Description

Rcpp_cKDE-class

Value

No return value

---

mBCV *Calculate Optimal Bandwidth in Kernel Density Estimation*

Description

Calculate the optimal bandwidth estimate for the kernel density estimator with a Markov chain Monte Carlo sample using modified biased cross-validation method.

Usage

```
mBCV(Y_in)

## S3 method for class 'mBCV_obj'
print(x, ...)
```

Arguments

Y_in	data from which the estimate is to be computed.
x	object of class mBCV_obj; result of a call to mBCV().
...	further arguments passed to or from other methods.

Value

mBCV returns a list of the following conmponents:

bw	optimal bandwidth.
IACT	intergrated autocorrelation time.
Y_in	input data.

Examples

```
res = mBCV(simMCMC)
den = density(res$Y_in, bw=res$bw)
hist(res$Y_in, xlim=range(den$x), freq=FALSE,
      main="Histogram and Density Estimates", xlab="")
lines(den$x, den$y, col='blue', lwd=2)
```

---

plot.mBCV_obj *Plot Kernel Density Result from* mBCV_obj

Description

draw a histogram and density curve of the results.

Usage

```
## S3 method for class 'mBCV_obj'
plot(x, main=NULL, xlab="", ...)
```

Arguments

x	mBCV_obj object.
main	title of plot.
xlab	title for the x axis.
...	arguments to be paseed to methods.

Value

No return value. Called for its side effects (generates a plot).

---

simMCMC *Simulated Markov Chain Monte Carlo Sample*

Description

a simulated data from the Gibbs sampler.

Usage

```
data("simMCMC")
```

Format

a numeric vector of length 1000.

Examples

```
data(simMCMC)
```

Index

∗ **datasets**
simMCMC, 3

cKDE, 2

mBCV, 2

plot.mBCV_obj, 3
print.mBCV_obj *(*mBCV*)*, 2

simMCMC, 3