Package 'Rlibkdv'

May 7, 2026

Type Package

Title A Versatile Kernel Density Visualization Library for Geospatial Analytics (Heatmap)

Version 1.1

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Description Unlock the power of large-scale geospatial analysis, quickly generate high-resolution kernel density visualizations, supporting advanced analysis tasks such as bandwidth-tuning and spatiotemporal analysis. Regardless of the size of your dataset, our library delivers efficient and accurate results.
Tsz Nam Chan, Leong Hou U, Byron Choi, Jianliang Xu, Reynold Cheng (2023) <doi:10.1145/3555041.3589401>.
Tsz Nam Chan, Rui Zang, Pak Lon Ip, Leong Hou U, Jianliang Xu (2023) <doi:10.1145/3555041.3589711>.
Tsz Nam Chan, Leong Hou U, Byron Choi, Jianliang Xu (2022) <doi:10.1145/3514221.3517823>.
Tsz Nam Chan, Pak Lon Ip, Kaiyan Zhao, Leong Hou U, Byron Choi, Jianliang Xu (2022) <doi:10.14778/3554821.3554855>.
Tsz Nam Chan, Pak Lon Ip, Leong Hou U, Byron Choi, Jianliang Xu (2022) <doi:10.14778/3503585.3503591>.
Tsz Nam Chan, Pak Lon Ip, Leong Hou U, Byron Choi, Jianliang Xu (2022) <doi:10.14778/3494124.3494135>.
Tsz Nam Chan, Pak Lon Ip, Leong Hou U, Weng Hou Tong, Shivansh Mittal, Ye Li, Reynold Cheng (2021) <doi:10.14778/3476311.3476312>.
Tsz Nam Chan, Zhe Li, Leong Hou U, Jianliang Xu, Reynold Cheng (2021) <doi:10.14778/3461535.3461540>.
Tsz Nam Chan, Reynold Cheng, Man Lung Yiu (2020) <doi:10.1145/3318464.3380561>.
Tsz Nam Chan, Leong Hou U, Reynold Cheng, Man Lung Yiu, Shivansh Mittal (2020) <doi:10.1109/TKDE.2020.3018376>.
Tsz Nam Chan, Man Lung Yiu, Leong Hou U (2019) <doi:10.1109/ICDE.2019.00055>.

URL https://github.com/bojianzhu/Rlibkdv

BugReports https://github.com/bojianzhu/Rlibkdv/issues

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Encoding UTF-8

LazyData true

RoxygenNote 7.2.3

Imports leaflet, raster, magrittr, Rcpp, sf

Depends R (>= 2.10)

Suggests knitr, rmarkdown

VignetteBuilder knitr

LinkingTo Rcpp

NeedsCompilation yes

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Repository CRAN

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Contents

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hk *Hong Kong COVID-19 Cases Dataset*

Description

This dataset contains the COVID-19 cases data in Hong Kong.

Usage

```
hk
```

Format

A data frame with 3 variables:

lon Longitude of the location

lat Latitude of the location

t Number of COVID-19 cases

kdv *Use KDV*

Description

Efficient and accurate kernel density visualization.

Usage

```
kdv(
  longitude,
  latitude,
  bandwidth_s = 1000,
  row_pixels = 800,
  col_pixels = 640
)
```

Arguments

longitude	features' longitude
latitude	features' latitude
bandwidth_s	spatial bandwidth
row_pixels	row pixels
col_pixels	col pixels

Value

kdv result

Examples

```
data(hk)
resKDV <- kdv(hk$lon, hk$lat, 1000, 800 ,640)
```

plotKDV *Plot KDV*

Description

Plot KDV

Usage

```
plotKDV(data)
```

Arguments

data	result of kdv

Value

No return value, called to plot KDV heatmap

Examples

```
data(hk)
resKDV <- kdv(hk$lon, hk$lat, 1000, 800 ,640)
plotKDV(resKDV)
```

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plotSTKDV *Plot STKDV*

Description

Plot STKDV

Usage

```
plotSTKDV(data)
```

Arguments

data	result of stkdv

Value

No return value, called to plot STKDV heatmap

Examples

```
data(hk)
resSTKDV <- stkdv(hk$lon, hk$lat, hk$t, 1000, 6, 800, 640, 32)
plotSTKDV(resSTKDV)
```

stkdv *Use STKDV*

Description

Efficient and accurate spatiotemporal kernel density visualization.

Usage

```
stkdv(
  longitude,
  latitude,
  time,
  bandwidth_s = 1000,
  bandwidth_t = 6,
  row_pixels = 800,
  col_pixels = 640,
  t_pixels = 32
)
```

Arguments

longitude	features' longitude
latitude	features' latitude
time	features' time
bandwidth_s	spatial bandwidth
bandwidth_t	temporal bandwidth
row_pixels	row pixels
col_pixels	col pixels
t_pixels	time pixels

Value

stkdv result

Examples

```
data(hk)
resSTKDV <- stkdv(hk$lon, hk$lat, hk$t, 1000, 6, 800, 640, 32)
```

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