

Package ‘traviz’

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Type Package

Title Trajectory analytics toolbox

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Author John Murzaku

Maintainer John Murzaku <john.murzaku@gmail.com>

Description sfTrack class to support sf trajectories with methods for trajectory visualization and analysis. Support for point pattern analysis, rasterization of trajectory data, and hotspot analysis.

Imports lubridate,
moveVis,
raster

Depends sf,
trajectories,
tidyverse,
sp,
spacetime,
Rcpp,
R (>= 2.10)

License What license is it under?

URL <https://github.com/JamMurz/traviz>

Encoding UTF-8

LazyData true

RoxygenNote 7.1.0

Suggests knitr,
rmarkdown

VignetteBuilder knitr

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aggregate_day	<i>Aggregate dataframe by day (i.e. all trajectories on Monday)</i>
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Description

Aggregate dataframe by day (i.e. all trajectories on Monday)

Usage

aggregate_day(traj, day)

Arguments

traj	trajectory df
day	day to aggregate by (1 = Sunday, 2 = Monday, ... , 7 = Saturday)

Value

aggregated data frame

aggregate_raster_region	<i>Aggregate raster to region of interest</i>
-------------------------	---

Description

Aggregate raster to region of interest

Usage

```
aggregate_raster_region(  
  raster,  
  xmin = NULL,  
  xmax = NULL,  
  ymin = NULL,  
  ymax = NULL  
)
```

Arguments

xmin	min x value
xmax	max x calue
ymin	min y value
ymax	max y value
rasterized	rasterized object

Value

Cropped raster to ROI

aggregate_sft_time	<i>Aggregate sfTrack by time</i>
--------------------	----------------------------------

Description

Aggregate sfTrack by time

Usage

```
aggregate_sft_time(sftrack, from, to)
```

Arguments

sftrack	sfTrack
from	from in posixct format
to	to in posixct format

Value

Returns aggregated sfTrack

aggregate_sf_roi	<i>Aggregate sf data frame to region of interest</i>
------------------	--

Description

Aggregate sf data frame to region of interest

Usage

```
aggregate_sf_roi(df, xmin = NULL, xmax = NULL, ymin = NULL, ymax = NULL)
```

Arguments

df	sf data frame of trajectories with geometry column or sfTrack or sfTracks
xmin	min x
xmax	max x
ymin	min y
ymax	max y

Value

Aggregated data frame

animate_single_track	<i>Animate single trajectory using movevis (BEWARE OF MEMORY/RENDERING PROBLEMS)</i>
----------------------	--

Description

Animate single trajectory using movevis (BEWARE OF MEMORY/RENDERING PROBLEMS)

Usage

```
animate_single_track(
  trajectory,
  res,
  filename = "trajectory.gif",
  unit = "min"
)
```

Arguments

trajectory	singular trajectory data frame
res	temporal resolution (i.e. 5 = 5 mins)
filename	filename for output GIF
unit	units for temporal resolution (minutes at default)

Value

animation of trajectory in GIF

as.sf.Tracks	<i>Convert sf data to Track</i>
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Description

Convert sf data to Track

Usage

```
as.sf.Tracks(df)
```

Arguments

df	Trajectory data frame in sf and sftime format to be converted to Track
----	--

Value

Track

cluster_traj	<i>Cluster trajectories</i>
--------------	-----------------------------

Description

Cluster trajectories

Usage

```
cluster_traj(df, num_clusters)
```

Arguments

df	trajectories data frame in sf format or sfTrack or sfTracks
num_clusters	desired number of clusters

Value

Returns clustered trajectories data frame

density_heatmap	<i>Plot kernel density heat map of trajectory measurements</i>
-----------------	--

Description

Plot kernel density heat map of trajectory measurements

Usage

```
density_heatmap(df, value, resolution, date)
```

Arguments

df	trajectories data frame or sfTrack or sfTracks
value	value desired to make heat map off
resolution	desired resolution
date	optional parameter to create a day heatmap with 6 plots and 4 hour intervals

Value

plot of density heat map

df_to_sfTracks	<i>Coerce nested sf data frame to sfTracks</i>
----------------	--

Description

Coerce nested sf data frame to sfTracks

Usage

```
df_to_sfTracks(df)
```

Arguments

df	data frame to coerce
----	----------------------

Value

sfTracks object

`find_intersections_density`*Find density of intersections by returning raster layer of intersections*

Description

Find density of intersections by returning raster layer of intersections

Usage

```
find_intersections_density(df, resolution)
```

Arguments

<code>df</code>	sf data frame or sfTrack or sfTracks
<code>resolution</code>	desired resolution

Value

rasterized intersections

`geodata_to_sf`*Convert trajectory data frame in or lat long format to sf*

Description

Convert trajectory data frame in or lat long format to sf

Usage

```
geodata_to_sf(df, identifier, lon_col, lat_col)
```

Arguments

<code>df</code>	A trajectory data frame with a geometry column or in lat long format
<code>identifier</code>	Unique identifier to group data frame by
<code>lon_col</code>	optional parameter for name of longitude column
<code>lat_col</code>	optional parameter for name of latitude column

Value

A nested data frame in sf format

gi_hotspot	<i>Getis-ord hotspot analysis</i>
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Description

Getis-ord hotspot analysis

Usage

```
gi_hotspot(poly_points)
```

Arguments

poly_points polygon points from ppa_polygons function

Value

heatmap

idwi_raster	<i>Interpolate raster using inverse distance weighted interpolation</i>
-------------	---

Description

Interpolate raster using inverse distance weighted interpolation

Usage

```
idwi_raster(df, measurement, resolution)
```

Arguments

df data frame or sfTrack or sfTracks
measurement measurement to rasterize off
resolution desired resolution

Value

Interpolated raster layer

plot_day	<i>Plot values by weekday</i>
----------	-------------------------------

Description

Plot values by weekday

Usage

```
plot_day(df, value, xmin, xmax, ymin, ymax)
```

Arguments

df	trajectories data frame
value	optional parameter to show measurement value
xmin	min x
xmax	max x
ymin	min y
ymax	max y

Value

plot of aggregated values

plot_day_density	<i>Visualize density in region of interest by day of week</i>
------------------	---

Description

Visualize density in region of interest by day of week

Usage

```
plot_day_density(df, xmin, xmax, ymin, ymax)
```

Arguments

df	trajectories data frame
xmin	min x
xmax	max x
ymin	min y
ymax	max y

Value

plot of aggregated values

plot_hour	<i>Plot values by hour</i>
-----------	----------------------------

Description

Plot values by hour

Usage

plot_hour(df, value, xmin, xmax, ymin, ymax)

Arguments

df	trajectories data frame
value	optional parameter to show desired value
xmin	min x
xmax	max x
ymin	min y
ymax	max y

Value

plot of aggregated values

plot_hour_density	<i>Visualize density in region of interest by time of day</i>
-------------------	---

Description

Visualize density in region of interest by time of day

Usage

plot_hour_density(df, xmin, xmax, ymin, ymax)

Arguments

df	trajectories data frame
xmin	min x
xmax	max x
ymin	min y
ymax	max y

Value

plot of aggregated values

plot_traj	<i>Plot trajectories using ggplot2</i>
-----------	--

Description

Plot trajectories using ggplot2

Usage

plot_traj(df, value)

Arguments

value	value to base scale off
trajectories	trajectories data frame

Value

ggplot2 of trajectories

ppa_polygons	<i>Polygonal raster pattern analysis</i>
--------------	--

Description

Polygonal raster pattern analysis

Usage

ppa_polygons(df, value, res)

Arguments

df	trajectories data frame in sf format
value	value to make raster poly
res	resolution

Value

returns polygon dataframe

raster_track	<i>Rasterize track data</i>
--------------	-----------------------------

Description

Rasterize track data

Usage

```
raster_track(track, value, resolution)
```

Arguments

track	track
value	value wanted to raster with
resolution	desired resolution

Value

rasterized object

sfcube	<i>Plot space time cube of sf trajectory</i>
--------	--

Description

Plot space time cube of sf trajectory

Usage

```
sfcube(df)
```

Arguments

df	data frame sf trajectory
----	--------------------------

Value

space time cube

sfc_as_cols	<i>Get XY coordinates from sf object (taken from jmlondon at https://github.com/r-spatial/sf/issues/231)</i>
-------------	---

Description

Get XY coordinates from sf object (taken from jmlondon at <https://github.com/r-spatial/sf/issues/231>)

Usage

```
sfc_as_cols(x, names = c("x", "y"))
```

Arguments

x	data frame in sf format
names	names to name XY columns

Value

data frame with XY columns

sft.plot_ts	<i>Plot time series of track</i>
-------------	----------------------------------

Description

Plot time series of track

Usage

```
sft.plot_ts(sft, value)
```

Arguments

sft	sfTrack
value	y value

Value

ggplot time series

sfTrack-class	<i>A Track in sf format</i>
---------------	-----------------------------

Description

A Track in sf format

Slots

- id unique id value for track
- data dataframe of track data
- time POSIXct format timestamps
- geometry geometry of track in sfc format
- line LINESTRING trajectory of track

sfTracks-class	<i>Multiple sfTracks</i>
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Description

Multiple sfTracks

Slots

- list list of sfTracks

sfts.plot_violin	<i>Plot violin plot of sfTracks value</i>
------------------	---

Description

Plot violin plot of sfTracks value

Usage

```
sfts.plot_violin(sfts, value)
```

Arguments

- | | |
|-------|----------|
| sfts | sfTracks |
| value | y calue |

Value

violin plot

sf_to_rasterize	<i>sf trajectory data frame to raster with selected properties to rasterize</i>
-----------------	---

Description

sf trajectory data frame to raster with selected properties to rasterize

Usage

```
sf_to_rasterize(df, data, resolution, from, to)
```

Arguments

df	Trajectory data frame in sf format to rasterize or sfTrack or sfTracks
data	Data values wanted to rasterize
resolution	Level of resolution
from	Optional parameter from in as.POSIXct format to aggregate data from
to	Optional parameter to in as.POSIXct format to aggregate to

Value

rasterized object

sf_to_raster_stars	<i>sf to stars raster</i>
--------------------	---------------------------

Description

sf to stars raster

Usage

```
sf_to_raster_stars(df, value)
```

Arguments

df	Trajectory data frame in sf format
value	Data measurements to rasterize

Value

stars object

traj_heatmap	<i>Plot kernel density heat map of trajectories</i>
--------------	---

Description

Plot kernel density heat map of trajectories

Usage

```
traj_heatmap(df)
```

Arguments

df trajectories dataframe or sfTrack or sfTracks

Value

kernel density heatmap

traj_quadrat	<i>Plot quadrat intensity of points of a trajectory</i>
--------------	---

Description

Plot quadrat intensity of points of a trajectory

Usage

```
traj_quadrat(df)
```

Arguments

df sf trajectories data frame

Value

plot of density heat map

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