

Package ‘googlePolylines’

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Type Package

Title Encoding Coordinates into 'Google' Polylines

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Description Encodes simple feature ('sf') objects and coordinates, and decodes polylines using the 'Google' polyline encoding algorithm (<<https://developers.google.com/maps/documentation/utilities/polylinealgorithm>>).

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Encoding UTF-8

Imports Rcpp (>= 1.0.10)

LinkingTo BH, Rcpp

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Suggests covr, knitr, rmarkdown, sf, sfheaders, testthat

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decode	<i>Decode Polyline</i>
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Description

Decodes encoded polylines into a list of data.frames.

Usage

```
decode(polylines)
```

Arguments

polylines vector of encoded polyline strings

Examples

```
polylines <- c(
  "ohlBdnbmhN~suq@am{tAw`qsAeyhGvkz`@fge}A",
  "ggmnDt}wmlgc`DesuQvvrLofdDorqGtzzV"
)

decode(polylines)
```

encode	<i>Encode</i>
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Description

Encodes coordinates into an encoded polyline.

Usage

```
encode(obj, ...)

## S3 method for class 'sf'
encode(obj, strip = FALSE, ...)

## S3 method for class 'data.frame'
encode(obj, lon = NULL, lat = NULL, byrow = FALSE, ...)
```

Arguments

<code>obj</code>	either an <code>sf</code> object or <code>data.frame</code>
<code>...</code>	other parameters passed to methods
<code>strip</code>	logical indicating if <code>sf</code> attributes should be stripped. Useful if you want to reduce the size even further, but you will lose the spatial attributes associated with the <code>sf</code> object
<code>lon</code>	vector of longitudes
<code>lat</code>	vector of latitudes
<code>byrow</code>	logical indicating if the encoding should be done for each row

Details

The function assumes Google Web Mercator projection (WGS 84 / EPSG:3857 / EPSG:900913) for inputs and outputs.

Will work with

- `sf` and `sfc` objects directly
- `data.frames` - It will attempt to find `lat` & `lon` coordinates, or you can explicitly define them using the `lat` and `lon` arguments

Value

`sf`encoded object

Note

When an `sf`encoded object is column-subset using ``[`` and the encoded column is retained, the attributes of the column will remain. This is different behaviour to standard subsetting of `data.frames`, where all attributes are dropped by default. See examples.

When encoding an `sf` object, only the `XY` dimensions will be used, the `Z` or `M` (3D and/or Measure) dimensions are dropped.

See Also

[encodeCoordinates](#)

Examples

```
## data.frame
df <- data.frame(polygonId = c(1,1,1,1),
  lineId = c(1,1,1,1),
  lon = c(-80.190, -66.118, -64.757, -80.190),
  lat = c(26.774, 18.466, 32.321, 26.774))

## on a data.frame, it will attempt to find the lon & lat columns
encode(df)
```

```
## use byrow = TRUE to convert each row individually
encode(df, byrow = TRUE)

## Not run:

## sf objects
library(sf)
nc <- sf::st_read(system.file("shape/nc.shp", package="sf"))

encoded <- encode(nc)

## view attributes
attributes(encoded)

## view attributes of subset object
attributes(encoded[, c("AREA", "PERIMETER", "geometry")])

## view attributes without encoded column
attributes(encoded[, c("AREA", "PERIMETER")])

## strip attributes
encodedLite <- encode(nc, strip = TRUE)

attributes(encodedLite)

## view attributes of subset lite object
attributes(encodedLite[, c("AREA", "PERIMETER", "geometry")])

## view attributes without encoded column
attributes(encodedLite[, c("AREA", "PERIMETER")])

## End(Not run)
```

encodeCoordinates *Encode coordinates*

Description

Encodes a vector of lon & lat coordinates

Usage

```
encodeCoordinates(lon, lat)
```

Arguments

lon	vector of longitudes
lat	vector of latitudes

See Also[encode](#)**Examples**

```
## Not run:

## Grouping by polygons and lines
df <- data.frame(polygonId = c(1,1,1,1,1,1,1,1,2,2,2,2),
  lineId = c(1,1,1,1,2,2,2,2,1,1,1,1),
  lon = c(-80.190, -66.118, -64.757, -80.190, -70.579, -67.514, -66.668, -70.579,
  -70, -49, -51, -70),
  lat = c(26.774, 18.466, 32.321, 26.774, 28.745, 29.570, 27.339, 28.745,
  22, 23, 22, 22))

## using dplyr groups

library(dplyr)
df %>%
  group_by(polygonId, lineId) %>%
  summarise(polyline = encodeCoordinates(lon, lat))

## using data.table
library(data.table)
setDT(df)
df[, encodeCoordinates(lon = lon, lat = lat), by = .(polygonId, lineId)]

## End(Not run)
```

`geometryRow`*Geometry Row*

Description

Extracts specific geometry rows of an sfencoded object

Usage

```
geometryRow(x, geometry = c("POINT", "LINESTRING", "POLYGON"), multi = TRUE)
```

Arguments

<code>x</code>	sfencoded object
<code>geometry</code>	the specific geometry to extract
<code>multi</code>	logical indicating if MULTI geometry objects are included

Value

the row indices for the requested geometry

Examples

```
## Not run:

df <- data.frame(myId = c(1,1,1,1,1,1,1,1,2,2,2,2),
  lineId = c(1,1,1,1,2,2,2,2,1,1,1,2),
  lon = c(-80.190,-66.118,-64.757,-80.190,-70.579,-67.514,-66.668,-70.579,-70,-49,-51,-70),
  lat = c(26.774, 18.466, 32.321, 26.774, 28.745, 29.570, 27.339, 28.745, 22, 23, 22, 22))

p1 <- as.matrix(df[1:4, c("lon", "lat")])
p2 <- as.matrix(df[5:8, c("lon", "lat")])
p3 <- as.matrix(df[9:12, c("lon", "lat")])

point <- sf::st_sfc(sf::st_point(x = c(df[1,"lon"], df[1,"lat"])))
multipoint <- sf::st_sfc(sf::st_multipoint(x = as.matrix(df[1:2, c("lon", "lat")]))))
polygon <- sf::st_sfc(sf::st_polygon(x = list(p1, p2)))
linestring <- sf::st_sfc(sf::st_linestring(p3))
multilinestring <- sf::st_sfc(sf::st_multilinestring(list(p1, p2)))
multipolygon <- sf::st_sfc(sf::st_multipolygon(x = list(list(p1, p2), list(p3))))

sf <- rbind(
  st_sf(geo = polygon),
  st_sf(geo = multilinestring),
  st_sf(geo = linestring),
  st_sf(geo = point)
)

encode(sf)

enc <- encode(sf)
geometryRow(enc, "POINT")
geometryRow(enc, "LINESTRING")
geometryRow(enc, "POLYGON")

## End(Not run)
```

polyline_wkt

Polyline WKT

Description

Converts encoded polylines into well-known text.

Usage

```
polyline_wkt(obj)
```

Arguments

obj sfencoded object or encoded_column of encoded polylines

Details

'Polylines' refers to lat/lon coordinates encoded into strings using Google's polyline encoding algorithm.

The function assumes Google Web Mercator projection (WGS 84 / EPSG:3857 / EPSG:900913) for inputs and outputs.

Value

well-known text representation of the encoded polylines

Note

This will not work if you have specified `strip = TRUE` for `encode()`

Examples

```
## Not run:

library(sf)
nc <- sf::st_read(system.file("shape/nc.shp", package="sf"))

## encode to polylines
enc <- encode(nc)

## convert encoded lines to well-known text
wkt <- polyline_wkt(enc)

## End(Not run)
```

sfAttributes

sf Attributes

Description

Retrieves the sf attributes stored on the sfencoded object

Usage

```
sfAttributes(x)
```

Arguments

x sfencoded object

Value

list of sf attributes

wkt_polyline	<i>WKT Polyline</i>
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Description

Converts well-known text into encoded polylines.

Usage

```
wkt_polyline(obj)
```

Arguments

obj sfencoded object or wkt_column of well-known text

Details

'Polylines' refers to lat/lon coordinates encoded into strings using Google's polyline encoding algorithm.

Value

encoded polyline representation of geometries

Examples

```
## Not run:  
  
library(sf)  
nc <- sf::st_read(system.file("shape/nc.shp", package="sf"))  
  
## encode to polylines  
enc <- encode(nc)  
  
## convert encoded lines to well-known text  
wkt <- polyline_wkt(enc)  
  
## convert well-known text back to polylines  
enc2 <- wkt_polyline(wkt)  
  
## End(Not run)
```


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