

# Package ‘googlePolylines’

April 2, 2023

**Type** Package

**Title** Encoding Coordinates into 'Google' Polylines

**Version** 0.8.3

**Date** 2023-04-02

**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>>).

**License** MIT + file LICENSE

**Encoding** UTF-8

**SystemRequirements** C++17

**Imports** Rcpp (>= 1.0.10)

**LinkingTo** BH, Rcpp

**RoxygenNote** 7.1.1

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

**VignetteBuilder** knitr

**NeedsCompilation** yes

**Author** David Cooley [aut, cre],  
Paulo Barcelos [ctb] (Author of c++ decode\_polyline),  
Chris Muir [ctb]

**Maintainer** David Cooley <dcooley@symbolix.com.au>

**Repository** CRAN

**Date/Publication** 2023-04-02 20:10:02 UTC

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sfencode-package      *A short title line describing what the package does*

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## 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

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

## End(Not run)
```

---

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(
  "ohlDnbnhN~suq@am{tAw`qsAeyhGvkz`@fge}A",
  "ggmDt}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

`sfencoded` object

## Note

When an `sfencoded` 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(1,1,1,1,1,1,1,1,1,2,2,2),
  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

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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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