# Package ‘mapdeck’

October 13, 2022

<table>
<thead>
<tr>
<th>Type</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Interactive Maps Using 'Mapbox GL JS' and 'Deck.gl'</td>
</tr>
<tr>
<td>Version</td>
<td>0.3.4</td>
</tr>
<tr>
<td>Date</td>
<td>2020-09-03</td>
</tr>
</tbody>
</table>

**Description**: Provides a mechanism to plot an interactive map using 'Mapbox GL' ([https://docs.mapbox.com/mapbox-gl-js/api/](https://docs.mapbox.com/mapbox-gl-js/api/)), a javascript library for interactive maps, and 'Deck.gl' ([https://deck.gl/](https://deck.gl/)), a javascript library which uses 'WebGL' for visualising large data sets.

<table>
<thead>
<tr>
<th>License</th>
<th>GPL-3</th>
</tr>
</thead>
</table>

**URL**: [https://symbolixau.github.io/mapdeck/articles/mapdeck.html](https://symbolixau.github.io/mapdeck/articles/mapdeck.html)

**BugReports**: [https://github.com/SymbolixAU/mapdeck/issues](https://github.com/SymbolixAU/mapdeck/issues)

**Encoding** UTF-8

**LazyData** true

**Depends** R (>= 3.5.0)

**Imports** colourvalues (>= 0.3.4), googlePolylines (>= 0.7.2), geojsonsf (>= 1.3.3), htmlwidgets, jsonify (>= 1.1.1), magrittr, Rcpp, shiny, sfheaders (>= 0.2.2)

**RoxygenNote** 7.1.0

**Suggests** covr, googleway, jsonlite, knitr, rmarkdown, spatialwidget, testthat

**VignetteBuilder** knitr

**LinkingTo** BH, colourvalues, geojsonsf (>= 1.3.3), geometries, jsonify (>= 1.1.1), rapidjsonr, Rcpp, sfheaders (>= 0.2.2), spatialwidget (>= 0.2.3)

**NeedsCompilation** yes

**Author** David Cooley [aut, cre]

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

**Repository** CRAN

**Date/Publication** 2020-09-04 05:22:10 UTC
R topics documented:

<table>
<thead>
<tr>
<th>Function</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>add_animated_arc</td>
<td>3</td>
</tr>
<tr>
<td>add_animated_line</td>
<td>7</td>
</tr>
<tr>
<td>add_arc</td>
<td>10</td>
</tr>
<tr>
<td>add_bitmap</td>
<td>15</td>
</tr>
<tr>
<td>add_cesium</td>
<td>16</td>
</tr>
<tr>
<td>add_column</td>
<td>17</td>
</tr>
<tr>
<td>add_dependencies</td>
<td>21</td>
</tr>
<tr>
<td>add_geojson</td>
<td>22</td>
</tr>
<tr>
<td>add_greatcircle</td>
<td>27</td>
</tr>
<tr>
<td>add_grid</td>
<td>31</td>
</tr>
<tr>
<td>add_heatmap</td>
<td>35</td>
</tr>
<tr>
<td>add_hexagon</td>
<td>37</td>
</tr>
<tr>
<td>add_i3s</td>
<td>41</td>
</tr>
<tr>
<td>add_line</td>
<td>42</td>
</tr>
<tr>
<td>add_mesh</td>
<td>45</td>
</tr>
<tr>
<td>add_path</td>
<td>48</td>
</tr>
<tr>
<td>add_pointcloud</td>
<td>51</td>
</tr>
<tr>
<td>add_polygon</td>
<td>55</td>
</tr>
<tr>
<td>add_scatterplot</td>
<td>59</td>
</tr>
<tr>
<td>add_screengrid</td>
<td>63</td>
</tr>
<tr>
<td>add_sf</td>
<td>65</td>
</tr>
<tr>
<td>addTerrain</td>
<td>66</td>
</tr>
<tr>
<td>add_text</td>
<td>68</td>
</tr>
<tr>
<td>add_title</td>
<td>71</td>
</tr>
<tr>
<td>add_trips</td>
<td>72</td>
</tr>
<tr>
<td>capitals</td>
<td>74</td>
</tr>
<tr>
<td>city_trail</td>
<td>75</td>
</tr>
<tr>
<td>clear_animated_arc</td>
<td>75</td>
</tr>
<tr>
<td>clear_legend</td>
<td>76</td>
</tr>
<tr>
<td>clear_tokens</td>
<td>77</td>
</tr>
<tr>
<td>geojson</td>
<td>77</td>
</tr>
<tr>
<td>legend_element</td>
<td>77</td>
</tr>
<tr>
<td>light_settings</td>
<td>78</td>
</tr>
<tr>
<td>mapdeck</td>
<td>79</td>
</tr>
<tr>
<td>mapdeck_shiny</td>
<td>80</td>
</tr>
<tr>
<td>mapdeck_dependencies</td>
<td>81</td>
</tr>
<tr>
<td>mapdeck_dispatch</td>
<td>81</td>
</tr>
<tr>
<td>mapdeck_legend</td>
<td>82</td>
</tr>
<tr>
<td>mapdeck_style</td>
<td>83</td>
</tr>
<tr>
<td>mapdeck_tokens</td>
<td>83</td>
</tr>
<tr>
<td>mapdeck_update</td>
<td>84</td>
</tr>
<tr>
<td>mapdeck_view</td>
<td>84</td>
</tr>
<tr>
<td>melbourne</td>
<td>85</td>
</tr>
<tr>
<td>melbourne_mesh</td>
<td>86</td>
</tr>
<tr>
<td>roads</td>
<td>86</td>
</tr>
<tr>
<td>set_token</td>
<td>87</td>
</tr>
</tbody>
</table>
add_animated_arc

Description

The Arc Layer renders raised arcs joining pairs of source and target coordinates

Usage

add_animated_arc(
    map,
    data = get_map_data(map),
    layer_id = NULL,
    origin,
    destination,
    id = NULL,
    stroke_from = NULL,
    stroke_from_opacity = NULL,
    stroke_to = NULL,
    stroke_to_opacity = NULL,
    stroke_width = NULL,
    frequency = 1,
    animation_speed = 3,
    trail_length = 5,
    tilt = NULL,
    height = NULL,
    tooltip = NULL,
    auto_highlight = FALSE,
    highlight_colour = "#AAFFFFFF",
    legend = FALSE,
    legend_options = NULL,
    legend_format = NULL,
    palette = "viridis",
    na_colour = "#808080FF",
    update_view = TRUE,
    focus_layer = FALSE,
    transitions = NULL,
    digits = 6,
    brush_radius = NULL
)

add_animated_arc  Add animated arc
Arguments

map  a mapdeck map object
data  data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
layer_id  single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
origin  vector of longitude and latitude columns, and optionally an elevation column, or an sfc column
destination  vector of longitude and latitude columns, and optionally an elevation column, or an sfc column
id  an id value in data to identify layers when interacting in Shiny apps.
stroke_from  column of data or hex colour to use as the starting stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data
stroke_from_opacity  Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
stroke_to  column of data or hex colour to use as the ending stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data
stroke_to_opacity  Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
stroke_width  width of the stroke in pixels
frequency  column of data, or a single value indicating the number of arcs generated in each animation
animation_speed  the speed of animation
trail_length  the length of trail of each arc
tilt  value to tilt the arcs to the side, in degrees [-90, 90]
height  value to multiply the height.
tooltip  variable of data containing text or HTML to render as a tooltip
auto_highlight  logical indicating if the shape under the mouse should auto-highlight
highlight_colour  hex string colour to use for highlighting. Must contain the alpha component.
legend  either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.
legend_options  A list of options for controlling the legend.
legend_format  A list containing functions to apply to legend values. See section legend
add_animated_arc

palette string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

na_colour hex string colour to use for NA values

update_view logical indicating if the map should update the bounds to include this layer

focus_layer logical indicating if the map should update the bounds to only include this layer

transitions list specifying the duration of transitions.

digits number of digits for rounding coordinates

brush_radius radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed

Details

add_arc supports POINT sf objects
MULTIPOINT objects will be treated as single points. That is, if an sf objet has one row with a MULTIPOINT object consisting of two points, this will be expanded to two rows of single POINTs. Therefore, if the origin is a MULTIPOINT of two points, and the destination is a single POINT, the code will error as there will be an uneven number of rows

data
If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you’ll need to set the active geometry using sf::st_geometry( x ) <- "your_column", where "your_column" is the name of the column you’re activating. See ?sf::st_geometry

legend
The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of

• css - a string of valid css for controlling the appearance of the legend
• title - a string to use for the title of the legend
• digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.
The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of

• fill_colour
• stroke_colour

depending on which type of colouring the layer supports.
The list elements must be functions to apply to the values in the legend.
id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

flights <- read.csv(url)
flights$id <- seq_len(nrow(flights))
flights$stroke <- sample(1:3, size = nrow(flights), replace = TRUE)
flights$info <- paste0('<b>', flights$airport1, ' - ', flights$airport2, '</b>

mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_animated_arc(
    data = flights,
    layer_id = "arc_layer",
    origin = c("start_lon", "start_lat"),
    destination = c("end_lon", "end_lat"),
    stroke_from = "airport1",
    stroke_to = "airport2",
    stroke_width = "stroke",
    trail_length = 10,
    tooltip = "info",
    auto_highlight = TRUE,
    legend = TRUE,
    legend_options = list(
      stroke_from = list(title = "Origin airport"),
      css = "max-height: 100px;"
    )
  )

## faster animation_speed
mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_animated_arc(
    data = flights,
    layer_id = "arc_layer",
    origin = c("start_lon", "start_lat"),
    destination = c("end_lon", "end_lat"),
    stroke_from = "airport1",
    stroke_to = "airport2",
    stroke_width = "stroke",
    trail_length = 10,
    animation_speed = 15
  )
```
add_animated_line

Description

The Line Layer renders raised lines joining pairs of source and target coordinates.

Usage

```r
add_animated_line(
    map,
    data = get_map_data(map),
    layer_id = NULL,
    origin,
    destination,
    id = NULL,
    stroke_colour = NULL,
    stroke_width = NULL,
    stroke_opacity = NULL,
    frequency = 1,
    animation_speed = 3,
    trail_length = 5,
    tooltip = NULL,
    auto_highlight = FALSE,
    highlight_colour = "#AAFFFFFF",
    palette = "viridis",
    na_colour = "#808080FF",
    legend = FALSE,
    legend_options = NULL,
    legend_format = NULL,
    update_view = TRUE,
    focus_layer = FALSE,
    digits = 6,
    transitions = NULL,
    brush_radius = NULL
)
```

Arguments

- **map**: a mapdeck map object
- **data**: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system.
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly.

origin vector of longitude and latitude columns, and optionally an elevation column, or an sfc column.

destination vector of longitude and latitude columns, and optionally an elevation column, or an sfc column.

id an id value in data to identify layers when interacting in Shiny apps.

stroke_colour variable or hex colour to use as the ending stroke colour.

stroke_width width of the line in metres.

stroke_opacity Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string.

frequency column of data, or a single value indicating the number of arcs generated in each animation.

animation_speed the speed of animation.

trail_length the length of trail of each arc.

tooltip variable of data containing text or HTML to render as a tooltip.

auto_highlight logical indicating if the shape under the mouse should auto-highlight.

highlight_colour hex string colour to use for highlighting. Must contain the alpha component.

palette string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

na_colour hex string colour to use for NA values.

legend either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

legend_options A list of options for controlling the legend.

legend_format A list containing functions to apply to legend values. See section legend.

update_view logical indicating if the map should update the bounds to include this layer.

focus_layer logical indicating if the map should update the bounds to only include this layer.

digits number of digits for rounding coordinates.

transitions list specifying the duration of transitions.

brush_radius radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed.
add_animated_line

Details

add_line supports POINT sf objects

MULTIPOINT objects will be treated as single points. That is, if an sf object has one row with a
MULTIPOINT object consisting of two points, this will be expanded to two rows of single POINTs.
Therefore, if the origin is a MULTIPOINT of two points, and the destination is a single POINT, the
code will error as there will be an uneven number of rows.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

flights <- read.csv(url1)
flights$id <- seq_len(nrow(flights))
flights$stroke <- sample(1:3, size = nrow(flights), replace = TRUE)

mapdeck(style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_animated_line(
    data = flights
    , layer_id = "line_layer"
    , origin = c("start_lon", "start_lat")
    , destination = c("end_lon", "end_lat")
    , stroke_colour = "airport1"
    , stroke_width = "stroke"
    , auto_highlight = TRUE
    , trail_length = 1
    , animation_speed = 1
  )

## Using a 2-sfc-column sf object
library(sfheaders)

sf_flights <- sfheaders::sf_point( flights, x = "start_lon", y = "start_lat", keep = TRUE )
destination <- sfheaders::sfc_point( flights, x = "end_lon", y = "end_lat" )

sf_flights$destination <- destination

mapdeck() %>%
  add_animated_line(
    data = sf_flights
    , origin = 'geometry'
    , destination = 'destination'
    , layer_id = 'arcs'
    , stroke_colour = "airport1"
    , trail_length = 1
    , animation_speed = 2
  )
```
Description

The Arc Layer renders raised arcs joining pairs of source and target coordinates.

Usage

```r
add_arc(
  map,
  data = get_map_data(map),
  layer_id = NULL,
  origin,
  destination,
  id = NULL,
  stroke_from = NULL,
  stroke_from_opacity = NULL,
  stroke_to = NULL,
  stroke_to_opacity = NULL,
  stroke_width = NULL,
  tilt = NULL,
  height = NULL,
  tooltip = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  legend = F,
  legend_options = NULL,
  legend_format = NULL,
  palette = "viridis",
  na_colour = "#080808FF",
  update_view = TRUE,
  focus_layer = FALSE,
  transitions = NULL,
  digits = 6,
  brush_radius = NULL
)
```

Arguments

- `map` a mapdeck map object
- `data` data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
**add.arc**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>layer_id</td>
<td>single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly</td>
</tr>
<tr>
<td>origin</td>
<td>vector of longitude and latitude columns, and optionally an elevation column, or an sfc column</td>
</tr>
<tr>
<td>destination</td>
<td>vector of longitude and latitude columns, and optionally an elevation column, or an sfc column</td>
</tr>
<tr>
<td>id</td>
<td>an id value in data to identify layers when interacting in Shiny apps.</td>
</tr>
<tr>
<td>stroke_from</td>
<td>column of data or hex colour to use as the starting stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data</td>
</tr>
<tr>
<td>stroke_from_opacity</td>
<td>Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string</td>
</tr>
<tr>
<td>stroke_to</td>
<td>column of data or hex colour to use as the ending stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data</td>
</tr>
<tr>
<td>stroke_to_opacity</td>
<td>Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string</td>
</tr>
<tr>
<td>stroke_width</td>
<td>width of the stroke in pixels</td>
</tr>
<tr>
<td>tilt</td>
<td>value to tilt the arcs to the side, in degrees [-90, 90]</td>
</tr>
<tr>
<td>height</td>
<td>value to multiply the height.</td>
</tr>
<tr>
<td>tooltip</td>
<td>variable of data containing text or HTML to render as a tooltip</td>
</tr>
<tr>
<td>auto_highlight</td>
<td>logical indicating if the shape under the mouse should auto-highlight</td>
</tr>
<tr>
<td>highlight_colour</td>
<td>hex string colour to use for highlighting. Must contain the alpha component.</td>
</tr>
<tr>
<td>legend</td>
<td>either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.</td>
</tr>
<tr>
<td>legend_options</td>
<td>A list of options for controlling the legend.</td>
</tr>
<tr>
<td>legend_format</td>
<td>A list containing functions to apply to legend values. See section legend</td>
</tr>
<tr>
<td>palette</td>
<td>string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = &quot;viridis&quot;, stroke_colour = &quot;inferno&quot;)</td>
</tr>
<tr>
<td>na_colour</td>
<td>hex string colour to use for NA values</td>
</tr>
<tr>
<td>update_view</td>
<td>logical indicating if the map should update the bounds to include this layer</td>
</tr>
<tr>
<td>focus_layer</td>
<td>logical indicating if the map should update the bounds to only include this layer</td>
</tr>
<tr>
<td>transitions</td>
<td>list specifying the duration of transitions.</td>
</tr>
</tbody>
</table>
digits  number of digits for rounding coordinates
brush_radius  radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed

Details

add_arc supports POINT sf objects

MULTIPOINT objects will be treated as single points. That is, if an sf objet has one row with a MULTIPOINT object consisting of two points, this will be expanded to two rows of single POINTs. Therefore, if the origin is a MULTIPOINT of two points, and the destination is a single POINT, the code will error as there will be an uneven number of rows

data

If data is a simple feature object, you need to supply the origin and destination columns, they aren’t automatically detected.

id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use observeEvent(input$map_arc_click), where ‘map’ is the map_id supplied to mapdeckOutput(), and ‘arc’ is the layer you are clicking on

legend

The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.

The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- fill_colour
- stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.
transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for arc

list( origin = 0, destination = 0, stroke_from = 0, stroke_to = 0, stroke_width = 0 )

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

flights <- read.csv(url)
flights$id <- seq_len(nrow(flights))
flights$stroke <- sample(1:3, size = nrow(flights), replace = TRUE)
flights$info <- paste0("<b>",flights$airport1, " - ", flights$airport2,"</b>"

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_arc(
    data = flights,
    layer_id = "arc_layer",
    origin = c("start_lon", "start_lat"),
    destination = c("end_lon", "end_lat"),
    stroke_from = "airport1",
    stroke_to = "airport2",
    stroke_width = "stroke",
    tooltip = "info",
    auto_highlight = TRUE,
    legend = TRUE,
    legend_options = list(
      stroke_from = list( title = "Origin airport" ),
      css = "max-height: 100px;"
    )
  )

mapdeck( style = mapdeck_style("dark")) %>%
  add_arc(
    data = flights,
    layer_id = "arc_layer",
    origin = c("start_lon", "start_lat"),
    destination = c("end_lon", "end_lat"),
    stroke_from = "airport1",
    stroke_to = "airport2",
    stroke_width = "stroke"
  )

## Arcs can have an elevated start & destination
```
flights$start_elev <- sample(100000:1000000, size = nrow(flights), replace = TRUE)

mapdeck(style = mapdeck_style("dark")) %>%
  add_arc(
    data = flights,
    layer_id = "arc_layer",
    origin = c("start_lon", "start_lat", "start_elev"),
    destination = c("end_lon", "end_lat", "start_elev"),
    stroke_from = "airport1",
    stroke_to = "airport2",
    stroke_width = "stroke"
  )

## Using a 2-sfc-column sf object
library(sfheaders)

sf_flights <- sfheaders::sf_point(
  flights,
  x = "start_lon",
  y = "start_lat",
  z = "start_elev",
  keep = TRUE,
)

destination <- sfheaders::sfc_point(
  flights,
  x = "end_lon",
  y = "end_lat",
  z = "start_elev"
)

sf_flights$destination <- destination

mapdeck(
  ) %>%
  add_arc(
    data = sf_flights,
    origin = "geometry",
    destination = "destination",
    layer_id = "arcs",
    stroke_from = "airport1",
    stroke_to = "airport2"
  )

## using a brush

mapdeck(
  , style = mapdeck_style("light")
  ) %>%
  add_arc(
    data = sf_flights,
    origin = "geometry",
    destination = "destination",
    layer_id = "arcs"
add_bitmap

```
    , stroke_from = "airport1"
    , stroke_to = "airport2"
    , stroke_width = 4
    , brush_radius = 500000
```

---

add_bitmap

**Add bitmap**

---

**Description**

Adds an image to a map

**Usage**

```
add_bitmap(
    map, 
    image, 
    bounds, 
    desaturate = 0, 
    transparent_colour = "#000000", 
    tint_colour = "#FFFFFF", 
    layer_id = NULL, 
    update_view = TRUE, 
    focus_layer = FALSE
)
```

**Arguments**

- **map**
  - a mapdeck map object
- **image**
  - url to an image to use on the map
- **bounds**
  - coordinates of the bounding box of the image [left, bottom, right, top]
- **desaturate**
  - the desaturation of the bitmap, in range [0,1], 0 being the original colour and 1 being greyscale
- **transparent_colour**
  - the colour to use for transparent pixels as a hex string
- **tint_colour**
  - the colour to tint the bitmap by, as a hex string
- **layer_id**
  - single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
- **update_view**
  - logical indicating if the map should update the bounds to include this layer
- **focus_layer**
  - logical indicating if the map should update the bounds to only include this layer
Examples

```r
set_token("MAPBOX_TOKEN")

mapdeck(location = c(-122.3, 37.8), zoom = 10) %>%
  add_bitmap(
    image = paste0(
      'https://raw.githubusercontent.com/uber-common/deck.gl-data/master/
      website/sf-districts.png'),
    , bounds = c(-122.519, 37.7045, -122.355, 37.829))

deprecated(map(deck) %>
  add_bitmap(
    image = 'https://docs.mapbox.com/mapbox-gl-js/assets/radar.gif',
    , bounds = c(-80.425, 37.936, -71.516, 46.437))

deprecated(map(deck) %>
  add_bitmap(
    image = 'https://docs.mapbox.com/mapbox-gl-js/assets/radar.gif',
    , bounds = c(-80.425, 37.936, -71.516, 46.437),
    , tint_colour = "#FF0000")

deprecated(map(deck) %>
  add_bitmap(
    image = 'https://docs.mapbox.com/mapbox-gl-js/assets/radar.gif',
    , bounds = c(-80.425, 37.936, -71.516, 46.437),
    , desaturate = 1)
```

---

**add_cesium**

**Add Cesium**

**Description**

Renders 3D tiles data from Cesium ION assets. To use this layer you need a Cesium ION account [https://cesium.com/docs/tutorials/getting-started/#your-first-app](https://cesium.com/docs/tutorials/getting-started/#your-first-app). This layer is experimental.

**Usage**

```r
add_cesium(map, data, point_size = 2, layer_id = NULL, ion_token = NULL)
```
add_column

Arguments

map        a mapdeck map object
data       data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
point_size size of point in pixels
layer_id   single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
ion_token  ion asset token

Examples

```r
## Melbourne point cloud
ion_asset <- 43978
ion_token <- "ION_TOKEN"
tile_data <- paste0("https://assets.cesium.com/",ion_asset,"/tileset.json")

mapdeck(
  location = c(144.95, -37.82)
, zoom = 14
, pitch = 60
) %>%
  add_cesium(
    data = tile_data
    , ion_token = ion_token
  )
```

Description

The ColumnLayer can be used to render a heatmap of vertical cylinders. It renders a tesselated regular polygon centered at each given position (a "disk"), and extrude it in 3d.

Usage

```r
add_column(
  map,
  data = get_map_data(map),
  polyline = NULL,
  lon = NULL,
  lat = NULL
)```
lat = NULL,
fill_colour = NULL,
fill_opacity = NULL,
stroke_colour = NULL,
stroke_opacity = NULL,
stroke_width = NULL,
radius = 1000,
elevation = NULL,
elevation_scale = 1,
coverage = 1,
angle = 0,
disk_resolution = 20,
tooltip = NULL,
auto_highlight = FALSE,
highlight_colour = "#AAFFFFFF",
layer_id = NULL,
id = NULL,
palette = "viridis",
na_colour = "#808080FF",
legend = FALSE,
legend_options = NULL,
legend_format = NULL,
update_view = TRUE,
focus_layer = FALSE,
digits = 6,
transitions = NULL,
brush_radius = NULL
)

Arguments

- **map**: a mapdeck map object
- **data**: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- **polyline**: column of data containing the polylines
- **lon**: column containing longitude values
- **lat**: column containing latitude values
- **fill_colour**: column of data or hex colour for the fill colour. If using a hex colour, use either a single value, or a column of hex colours on data
- **fill_opacity**: Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
- **stroke_colour**: variable of data or hex colour for the stroke. If used, elevation is ignored. If using a hex colour, use either a single value, or a column of hex colours on data
- **stroke_opacity**: Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes.
Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string.

**stroke_width**  
width of the stroke in meters. If used, elevation is ignored. Default 1.

**radius**  
in metres. Default 1000

**elevation**  
the height the polygon extrudes from the map. Only available if neither stroke_colour or stroke_width are supplied. Default 0

**elevation_scale**  
value to scale the elevations of the columns Default 1

**coverage**  
radius multiplier, in range [0,1]. The radius of the disk is calculated by coverage * radius

**angle**  
disk rotation, counter-clockwise, in degrees

**disk_resolution**  
The number of sides to render the disk as. The disk is a regular polygon that fits inside the given radius. A higher resolution will yield a smoother look close-up, but also requires more resources to render.

**tooltip**  
variable of data containing text or HTML to render as a tooltip

**auto_highlight**  
logical indicating if the shape under the mouse should auto-highlight

**highlight_colour**  
hex string colour to use for highlighting. Must contain the alpha component.

**layer_id**  
single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

**id**  
an id value in data to identify layers when interacting in Shiny apps.

**palette**  
string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

**na_colour**  
hex string colour to use for NA values

**legend**  
either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

**legend_options**  
a list of options for controlling the legend.

**legend_format**  
a list containing functions to apply to legend values. See section legend

**update_view**  
logical indicating if the map should update the bounds to include this layer

**focus_layer**  
logical indicating if the map should update the bounds to only include this layer

**digits**  
number of digits for rounding coordinates

**transitions**  
list specifying the duration of transitions.

**brush_radius**  
radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed
add_column supports POINT and MULTIPOINT sf objects

data

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you'll need to set the active geometry using `sf::st_geometry(x) <- "your_column"`, where "your_column" is the name of the column you're activating. See ?sf::st_geometry

legend

The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.

The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- fill_colour
- stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on

Examples

```r
## Not run:

## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

df <- capitals
df$elev <- sample(50000:500000, size = nrow(df), replace = TRUE)
```
add_dependencies

```r
mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_column(
    data = df,
    lat = "lat",
    lon = "lon",
    elevation = "elev",
    fill_colour = "lon",
    disk_resolution = 20,
    radius = 100000,
    tooltip = "capital"
  )

library(sfheaders)
sf <- sfheaders::sf_point(df, x = "lon", y = "lat")
sf$elev <- df$elev

mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_column(
    data = sf,
    layer_id = "col_layer",
    elevation = "elev",
    radius = 100000,
    fill_colour = "country"
  )
```

## End(Not run)

---

**add_dependencies**

*Add Dependencies*

**Description**

Adds the required mapdeck javascript dependencies to a map when not using a mapdeck map.

**Usage**

```r
add_dependencies(map)
```

**Arguments**

- `map` the map object to which dependencies will be added
Examples

```r
## use with a google map from googleway
library(googleway)

set_key("GOOGLE_MAP_KEY")

googlemap() %>%
  add_dependencies() %>%
  add_scatterplot(
    data = capitals,
    lon = "lon",
    lat = "lat",
    fill_colour = "country",
    radius = 10000
  )
```

Description

The GeoJson Layer takes in GeoJson formatted data and renders it as interactive polygons, lines and points.

Usage

```r
add_geojson(
  map,
  data = get_map_data(map),
  layer_id = NULL,
  stroke_colour = NULL,
  stroke_opacity = NULL,
  stroke_width = NULL,
  dash_size = NULL,
  dash_gap = NULL,
  fill_colour = NULL,
  fill_opacity = NULL,
  radius = NULL,
  elevation = NULL,
  extruded = FALSE,
  light_settings = list(),
)```
add_geojson

```r
legend = F,
legend_options = NULL,
legend_format = NULL,
auto_highlight = FALSE,
tooltip = NULL,
highlight_colour = "#AAFFFFFF",
palette = "viridis",
na_colour = "#808080FF",
line_width_units = c("metres", "pixels"),
line_width_scale = 1,
line_width_min_pixels = 0,
elevation_scale = 1,
point_radius_scale = 1,
point_radius_min_pixels = 1,
update_view = TRUE,
focus_layer = FALSE,
digits = 6,
transitions = NULL
)
```

### Arguments

- **map**
  - a mapdeck map object

- **data**
  - data to be used in the layer. Can be a url to GeoJSON

- **layer_id**
  - single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

- **stroke_colour**
  - column of an sf object, or field inside a GeoJSON property to use for colour

- **stroke_opacity**
  - column of an sf object, or field inside a GeoJSON property to use for opacity

- **stroke_width**
  - column of an sf object, or field inside a GeoJSON property to use for width (in meters)

- **dash_size**
  - size of each dash, relative to the width of the stroke

- **dash_gap**
  - size of the gap between dashes, relative to the width of the stroke

- **fill_colour**
  - column of an sf object, or field inside a GeoJSON property to use for colour

- **fill_opacity**
  - column of an sf object, or field inside a GeoJSON property to use for opacity

- **radius**
  - radius of points in meters. Default 1. See details

- **elevation**
  - elevation of polygons. Default 0. See details

- **extruded**
  - logical indicating if polygons should extrude from the map. If TRUE, stroke_colour for polygons is ignored

- **light_settings**
  - list of light setting parameters. See `light_settings`

- **legend**
  - either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend. A legend is only shown if you supply one of the colour arguments (fill or stroke)

- **legend_options**
  - A list of options for controlling the legend.
legend_format  A list containing functions to apply to legend values. See section legend
auto_highlight  logical indicating if the shape under the mouse should auto-highlight
tooltip  variable of data containing text or HTML to render as a tooltip. Only works on sf objects.
highlight_colour  hex string colour to use for highlighting. Must contain the alpha component.
palette  string or matrix. String will be one of colourvalues::colour_palettes().
           A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255],
           where the 4th column represents the alpha. You can use a named list to specify a
           different palette for different colour options (where available), e.g.
           list(fill_colour = "viridis", stroke_colour = "inferno")
na_colour  hex string colour to use for NA values
line_width_units  The units of the line width, one of 'meters', 'pixels'. When zooming in and out,
                  meter sizes scale with the base map, and pixel sizes remain the same on screen.
line_width_scale  The line width multiplier that multiplied to all lines, including the LineString
                  and MultiLineString features and also the outline for Polygon and MultiPolygon
                  features if the stroked attribute is true
line_width_min_pixels  The minimum line width in pixels.
elevation_scale  Elevation multiplier. The final elevation is calculated by elevationScale *
                  getElevation(d). elevationScale is a handy property to scale all polygon elevation
                  without updating the data
point_radius_scale  A global radius multiplier for all points.
point_radius_min_pixels  The minimum radius in pixels.
update_view  logical indicating if the map should update the bounds to include this layer
focus_layer  logical indicating if the map should update the bounds to only include this layer
digits  number of digits for rounding coordinates
transitions  list specifying the duration of transitions.

transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one
state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported
browsers and hardware.

The time is in milliseconds

Available transitions for geojson

list( fill_colour = 0, stroke_colour = 0, stroke_width = 0, elevation = 0, radius = 0 )
Raw Geojson

If using a GeoJSON string, and you do not supply one of the colouring arguments, the function will look for these fields inside the properties field of the Geojson

**fill_colour**

- fill_colour
- fillColour
- fill_color
- fillColor
- fill

**stroke_colour**

- stroke_colour
- strokeColour
- stroke_color
- strokeColor
- stroke
- line_colour
- lineColour
- line_color
- lineColor
- line

**stroke_width**

- stroke_width
- strokeWidth
- line_width
- lineWidth
- width
- elevation
- radius

These colour values should be valid hex-colour strings.

If you do provide values for the colouring arguments, the function will assume you want to use specific fields in the geojson for colouring. However, if you only supply a fill_colour value, the function will not automatically detect the stroke_colour (and vice versa)

**data**

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you'll need to set the active geometry using `sf::st_geometry(x) <- "your_column"`, where "your_column" is the name of the column you're activating. See `?sf::st_geometry`
legend

The `legend_options` can be used to control the appearance of the legend. This should be a named list, where the names are one of

- **css** - a string of valid CSS for controlling the appearance of the legend
- **title** - a string to use for the title of the legend
- **digits** - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The `legend_format` can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- **fill_colour**
- **stroke_colour**

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

## Not supplying colouring arguments, the function will try and find them in the GeoJSON
mapdeck(
  , location = c(145, -37.9)
  , zoom = 8
  , style = mapdeck_style("dark")
  , pitch = 35
 ) %>%
  add_geojson(
    data = geojson
    , auto_highlight = TRUE
  )

## only supplying values to use for fill, the stroke will be default
mapdeck(
  , location = c(145, -37.9)
  , zoom = 8
  , style = mapdeck_style("dark")
  , pitch = 35
 ) %>%
  add_geojson(
    data = geojson
    , fill_colour = "random"
  )
```
mapdeck(
  , location = c(145, -37.9)
  , zoom = 8
  , style = mapdeck_style("dark")
  , pitch = 35
) %>%
add_geojson(
  data = geojson
  , fill_colour = "random"
  , stroke_colour = "random"
)

mapdeck(
  , location = c(145, -37.9)
  , zoom = 8
  , style = mapdeck_style("dark")
  , pitch = 35
) %>%
add_geojson(
  data = geojson
  , fill_colour = "random"
  , stroke_colour = "random"
  , elevation = 300
)

## putting elevation and width values onto raw GeoJSON
library(geojsonsf)
sf <- geojsonsf::geojson_sf(geojson)
sf$width <- sample(1:100, size = nrow(sf), replace = TRUE)
sf$elevation <- sample(100:1000, size = nrow(sf), replace = TRUE)
geo <- geojsonsf::sf_geojson( sf )

mapdeck(
  , location = c(145, -37.9)
  , zoom = 8
  , style = mapdeck_style("dark")
  , pitch = 35
) %>%
add_geojson(
  data = geo
)
Description

Renders flat arcs along the great circle joining pairs of source and target points, specified as longitude/latitude coordinates.

Usage

```r
add_greatcircle(
  map,
  data = get_map_data(map),
  layer_id = NULL,
  origin,
  destination,
  id = NULL,
  stroke_from = NULL,
  stroke_from_opacity = NULL,
  stroke_to = NULL,
  stroke_to_opacity = NULL,
  stroke_width = NULL,
  wrap_longitude = FALSE,
  tooltip = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AFFFFFF",
  legend = F,
  legend_options = NULL,
  legend_format = NULL,
  palette = "viridis",
  na_colour = "#808080FF",
  update_view = TRUE,
  focus_layer = FALSE,
  transitions = NULL,
  digits = 6
)
```

Arguments

- **map**: a mapdeck map object
- **data**: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- **layer_id**: single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
- **origin**: vector of longitude and latitude columns, and optionally an elevation column, or an sfc column
- **destination**: vector of longitude and latitude columns, and optionally an elevation column, or an sfc column
- **id**: an id value in data to identify layers when interacting in Shiny apps.
**add_greatcircle**

stroke_from column of data or hex colour to use as the starting stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data.

stroke_from_opacity
Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string.

stroke_to column of data or hex colour to use as the ending stroke colour. If using a hex colour, use either a single value, or a column of hex colours on data.

stroke_to_opacity
Either a string specifying the column of data containing the stroke opacity of each shape, or a value between 1 and 255 to be applied to all the shapes. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string.

stroke_width width of the stroke in pixels

wrap_longitude logical, whether to automatically wrap longitudes over the 180th antimeridian.

tooltip variable of data containing text or HTML to render as a tooltip

auto_highlight logical indicating if the shape under the mouse should auto-highlight

highlight_colour hex string colour to use for highlighting. Must contain the alpha component.

legend either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

legend_options A list of options for controlling the legend.

legend_format A list containing functions to apply to legend values. See section legend

palette string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

na_colour hex string colour to use for NA values

update_view logical indicating if the map should update the bounds to include this layer

focus_layer logical indicating if the map should update the bounds to only include this layer

transitions list specifying the duration of transitions.

digits number of digits for rounding coordinates

**Details**

add_greatcircle supports POINT sf objects

MULTIPOINT objects will be treated as single points. That is, if an sf objet has one row with a MULTIPOINT object consisting of two points, this will be expanded to two rows of single POINTs. Therefore, if the origin is a MULTIPOINT of two points, and the destination is a single POINT, the code will error as there will be an uneven number of rows.
legend

The `legend_options` can be used to control the appearance of the legend. This should be a named list, where the names are one of

- `css` - a string of valid CSS for controlling the appearance of the legend
- `title` - a string to use for the title of the legend
- `digits` - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The `legend_format` can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- `fill_colour`
- `stroke_colour`

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

id

The `id` is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where `map` is the `map_id` supplied to `mapdeckOutput()`, and `arc` is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
set_token("MAPBOX_TOKEN")

flights <- read.csv(url)
flights$id <- seq_len(nrow(flights))
flights$stroke <- sample(1:3, size = nrow(flights), replace = TRUE)
flights$info <- paste0("<b">flights$airport1, " - ", flights$airport2, "</b>"

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_greatcircle(
    data = flights
    , layer_id = "greatcircle_layer"
    , origin = c("start_lon", "start_lat")
    , destination = c("end_lon", "end_lat")
    , stroke_from = "airport1"
    , stroke_to = "airport2"
    , stroke_width = "stroke"
    , tooltip = "info"
    , auto_highlight = TRUE
```
add_grid

Description

The Grid Layer renders a grid heatmap based on an array of points. It takes the constant size all each cell, projects points into cells. The color and height of the cell is scaled by number of points it contains.

Usage

```r
add_grid(
  map,
```
data = get_map_data(map),
lon = NULL,
lat = NULL,
polyline = NULL,
cell_size = 1000,
extruded = TRUE,
elevation = NULL,
elevation_function = c("sum", "mean", "min", "max"),
colour = NULL,
colour_function = c("sum", "mean", "min", "max"),
elevation_scale = 1,
colour_range = NULL,
legend = FALSE,
legend_options = NULL,
auto_highlight = FALSE,
highlight_colour = "#AAFFFFFF",
layer_id = NULL,
update_view = TRUE,
focus_layer = FALSE,
digits = 6,
transitions = NULL,
brush_radius = NULL
)

Arguments

map  a mapdeck map object
data  data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
lon  column containing longitude values
lat  column containing latitude values
polyline  optional column of data containing the polylines, if using encoded polylines
cell_size  size of each cell in meters. Default 1000
extruded  logical indicating if cells are elevated or not. Default TRUE
elevation  the height the polygon extrudes from the map. Only available if neither stroke_colour or stroke_width are supplied. Default 0
elevation_function  one of 'min', 'mean', 'max', 'sum'. IF supplied it specifies how the elevation values are calculated. Defaults to sum.
colour  column containing numeric values to colour by.
colour_function  one of 'min', 'mean', 'max', 'sum'. If supplied it specifies how the colour values are calculated. Defaults to sum.
elevation_scale  elevation multiplier.
colour_range  vector of 6 hex colours
**legend**
either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

**legend_options**
A list of options for controlling the legend.

**auto_highlight**
logical indicating if the shape under the mouse should auto-highlight

**highlight_colour**
hex string colour to use for highlighting. Must contain the alpha component.

**layer_id**
single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

**update_view**
logical indicating if the map should update the bounds to include this layer

**focus_layer**
logical indicating if the map should update the bounds to only include this layer

**digits**
number of digits for rounding coordinates

**transitions**
list specifying the duration of transitions.

**brush_radius**
radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed

**Details**

add_grid supports POINT and MULTIPOINT sf objects

**data**
If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you’ll need to set the active geometry using sf::st_geometry(x) <- "your_column", where "your_column" is the name of the column you’re activating. See ?sf::st_geometry

**See Also**

add_hexagon

**Examples**

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

df <- read.csv(paste0('https://raw.githubusercontent.com/uber-common/deck.gl-data/master/',
'examples/3d-heatmap/heatmap-data.csv'))

df <- df[ !is.na(df$lng ) , ]

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_grid(
```
data = df
  , lat = "lat"
  , lon = "lng"
  , cell_size = 5000
  , elevation_scale = 50
  , layer_id = "grid_layer"
  , auto_highlight = TRUE
)

## using sf object
library(sfheaders)
sf <- sfheaders::sf_point( df, x = "lng", y = "lat")

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_grid(
    data = sf
    , cell_size = 5000
    , elevation_scale = 50
    , layer_id = "grid_layer"
    , auto_highlight = TRUE
  )

## using colour and elevation functions, and legends
df$val <- sample(1:10, size = nrow(df), replace = TRUE)

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_grid(
    data = df
    , lat = "lat"
    , lon = "lng"
    , layer_id = "hex_layer"
    , elevation_scale = 100
    , legend = TRUE
    , colour_function = "max"
    , colour = "val"
  )

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_grid(
    data = df
    , lat = "lat"
    , lon = "lng"
    , layer_id = "hex_layer"
    , elevation_scale = 10
    , legend = TRUE
    , elevation_function = "mean"
    , elevation = "val"
  )
Description

The Heatmap Layer can be used to visualise spatial distribution of data. It implements Gaussian Kernel Density Estimation to render the heatmaps.

Usage

```r
add_heatmap(
  map,
  data = get_map_data(map),
  lon = NULL,
  lat = NULL,
  polyline = NULL,
  weight = NULL,
  colour_range = NULL,
  radius_pixels = 30,
  intensity = 1,
  threshold = 0.05,
  layer_id = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL
)
```

Arguments

- `map` - a mapdeck map object
- `data` - data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- `lon` - column containing longitude values
- `lat` - column containing latitude values
- `polyline` - optional column of data containing the polylines, if using encoded polylines
- `weight` - the weight of each value. Default 1
- `colour_range` - vector of 6 hex colours
- `radius_pixels` - Radius of the circle in pixels, to which the weight of an object is distributed
- `intensity` - Value that is multiplied with the total weight at a pixel to obtain the final weight. A value larger than 1 biases the output color towards the higher end of the spectrum, and a value less than 1 biases the output color towards the lower end of the spectrum
threshold

The HeatmapLayer reduces the opacity of the pixels with relatively low weight to create a fading effect at the edge. A larger threshold smoothens the boundaries of color blobs, while making pixels with low relative weight harder to spot (due to low alpha value). Threshold is defined as the ratio of the fading weight to the max weight, between 0 and 1. For example, 0.1 affects all pixels with weight under 10% of the max.

layer_id

single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

update_view

logical indicating if the map should update the bounds to include this layer

focus_layer

logical indicating if the map should update the bounds to only include this layer

digits

number of digits for rounding coordinates

transitions

list specifying the duration of transitions.

details

add_heatmap supports POINT and MULTIPOINT sf objects

note

The current version of this layer is supported only for WebGL2 enabled browsers So you may find it doesn’t render in the RStudio viewer.

transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for heatmap
list( intensity = 0, threshold = 0, radius_pixels = 0 )

data

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you’ll need to set the active geometry using sf::st_geometry( x ) <- "your_column", where "your_column" is the name of the column you’re activating. See ?sf::st_geometry

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

df <- read.csv(paste0(
**add_hexagon**

The Hexagon Layer renders a hexagon heatmap based on an array of points. It takes the radius of hexagon bin, projects points into hexagon bins. The color and height of the hexagon is scaled by number of points it contains.

**Usage**

```r
add_hexagon(
  map,
  data = get_map_data(map),
  polyline = NULL,
  lon = NULL,
  lat = NULL,
  layer_id = NULL,
  radius = 1000,
)```

---

### Description

The Hexagon Layer renders a hexagon heatmap based on an array of points. It takes the radius of hexagon bin, projects points into hexagon bins. The color and height of the hexagon is scaled by number of points it contains.
elevation = NULL,
  elevation_function = c("sum", "mean", "min", "max"),
  colour = NULL,
  colour_function = c("sum", "mean", "min", "max"),
  legend = FALSE,
  legend_options = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  colour_range = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL,
  brush_radius = NULL
)

Arguments

map a mapdeck map object

data data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system

polyline column of data containing the polylines
lon column containing longitude values
lat column containing latitude values
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
radius in metres. Default 1000
elevation column containing the elevation of the value.
elevation_function one of 'min', 'mean', 'max', 'sum'. If supplied it specifies how the elevation values are calculated. Defaults to sum.
colour column containing numeric values to colour by.
colour_function one of 'min', 'mean', 'max', 'sum'. If supplied it specifies how the colour values are calculated. Defaults to sum.
legend logical indicating if a legend should be displayed
legend_options A list of options for controlling the legend.
elevation_scale value to scale the elevations of the hexagons. Default 1
auto_highlight logical indicating if the shape under the mouse should auto-highlight
highlight_colour hex string colour to use for highlighting. Must contain the alpha component.
add_hexagon

colour_range  vector of 6 hex colours
update_view  logical indicating if the map should update the bounds to include this layer
focus_layer  logical indicating if the map should update the bounds to only include this layer
digits  number of digits for rounding coordinates
transitions  list specifying the duration of transitions.
brush_radius  radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed

Details

add_hexagon supports POINT and MULTIPOINT sf objects

transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for hexagon

list( elevation = 0 colour = 0 )

data

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you'll need to set the active geometry using sf::st_geometry(x) <- "your_column", where "your_column" is the name of the column you're activating. See ?sf::st_geometry

Examples

```r
## Not run:
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

df <- read.csv(paste0(
  'https://raw.githubusercontent.com/uber-common/deck.gl-data/master/examples/'
  , '3d-heatmap/heatmap-data.csv'
))

df <- df[!is.na(df$lng), ]

mapdeck( style = mapdeck_style("dark"), pitch = 45 )

add_hexagon(
  data = df
  , lat = "lat"
)```
```

library(sfheaders)
sf <- sfheaders::sf_point( df, x = "lng", y = "lat" )

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_hexagon(
    data = sf
    , layer_id = "hex_layer"
    , elevation_scale = 100
  )

## Using elevation and colour
df$colour <- rnorm(nrow(df))
df$elevation <- rnorm(nrow(df))

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_hexagon(
    data = df
    , lat = "lat"
    , lon = "lng"
    , layer_id = "hex_layer"
    , elevation_scale = 100
    , elevation = "weight"
    , colour = "colour"
  )

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_hexagon(
    data = df
    , lat = "lat"
    , lon = "lng"
    , layer_id = "hex_layer"
    , elevation_scale = 100
    , elevation = "weight"
    , elevation_function = "mean"
    , colour = "colour"
    , colour_function = "mean"
  )

## with a legend
df$val <- sample(1:10, size = nrow(df), replace = TRUE)

mapdeck( style = mapdeck_style("dark"), pitch = 45 ) %>%
  add_hexagon(
    data = df
    , lat = "lat"
    , lon = "lng"
    , layer_id = "hex_layer"
    , elevation_scale = 100
  )
```
add_i3s

Description

Adds OGC Indexed 3D Scene (I3S) tiles to the map. This layer is experimental.

Usage

add_i3s(map, data, layer_id = NULL)

Arguments

map  
a mapdeck map object

data  
data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system

layer_id  
single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

Examples

## San Francisco buildings
i3s <- paste0(
  'https://tiles.arcgis.com/tiles/z2tn1krLQ2BRz6P/arcgis/rest/services/
  , 'SanFrancisco_Bldgs/SceneServer/layers/0'
  )

mapdeck(
  location = c(-122.41, 37.77)
  , zoom = 16
  , pitch = 60
  )

%>%
  add_i3s(
    data = i3s
  )
add_line

---

### Description

The Line Layer renders raised lines joining pairs of source and target coordinates.

### Usage

```r
add_line(
  map,
  data = get_map_data(map),
  layer_id = NULL,
  origin,
  destination,
  id = NULL,
  stroke_colour = NULL,
  stroke_width = NULL,
  stroke_opacity = NULL,
  tooltip = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  palette = "viridis",
  na_colour = "#808080FF",
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL,
  brush_radius = NULL
)
```

### Arguments

- **map**: a mapdeck map object
- **data**: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system.
- **layer_id**: single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly.
- **origin**: vector of longitude and latitude columns, and optionally an elevation column, or an `sfc` column.
- **destination**: vector of longitude and latitude columns, and optionally an elevation column, or an `sfc` column.
**add_line**

- **id**
  - an id value in data to identify layers when interacting in Shiny apps.
- **stroke_colour**
  - variable or hex colour to use as the ending stroke colour.
- **stroke_width**
  - width of the line in metres
- **stroke_opacity**
  - Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes.
  - Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string.
- **tooltip**
  - variable of data containing text or HTML to render as a tooltip.
- **auto_highlight**
  - logical indicating if the shape under the mouse should auto-highlight
- **highlight_colour**
  - hex string colour to use for highlighting. Must contain the alpha component.
- **palette**
  - string or matrix. String will be one of `colourvalues::colour_palettes()`. A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. `list(fill_colour = "viridis", stroke_colour = "inferno")`
- **na_colour**
  - hex string colour to use for NA values
- **legend**
  - either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.
- **legend_options**
  - A list of options for controlling the legend.
- **legend_format**
  - A list containing functions to apply to legend values. See section legend
- **update_view**
  - logical indicating if the map should update the bounds to include this layer.
- **focus_layer**
  - logical indicating if the map should update the bounds to only include this layer.
- **digits**
  - number of digits for rounding coordinates
- **transitions**
  - list specifying the duration of transitions.
- **brush_radius**
  - radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed.

**Details**

`add_line` supports POINT sf objects

MULTIPOINT objects will be treated as single points. That is, if an sf object has one row with a MULTIPOINT object consisting of two points, this will be expanded to two rows of single POINTs. Therefore, if the origin is a MULTIPOINT of two points, and the destination is a single POINT, the code will error as there will be an uneven number of rows.

**transitions**

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for line

```r
list( origin = 0, destination = 0, stroke_colour = 0, stroke_width = 0 )
```
legend

The `legend_options` can be used to control the appearance of the legend. This should be a named list, where the names are one of

- `css` - a string of valid CSS for controlling the appearance of the legend
- `title` - a string to use for the title of the legend
- `digits` - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The `legend_format` can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- `fill_colour`
- `stroke_colour`

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

id

The `id` is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where `map` is the `map_id` supplied to `mapdeckOutput()`, and `arc` is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

flights <- read.csv(url)
flights$id <- seq_len(nrow(flights))
flights$stroke <- sample(1:3, size = nrow(flights), replace = TRUE)

mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_line(
    data = flights,
    layer_id = "line_layer",
    origin = c("start_lon", "start_lat"),
    destination = c("end_lon", "end_lat"),
    stroke_colour = "airport1",
    stroke_width = "stroke",
    auto_highlight = TRUE
  )
```
## Using a 2-sfc-column sf object

```r
library(sfheaders)

sf_flights <- sfheaders::sf_point( flights, x = "start_lon", y = "start_lat", keep = TRUE )
destination <- sfheaders::sfc_point( flights, x = "end_lon", y = "end_lat" )

sf_flights$destination <- destination

mapdeck() %>%
  add_line(
    data = sf_flights
    , origin = 'geometry'
    , destination = 'destination'
    , layer_id = 'arcs'
    , stroke_colour = "airport1"
  )
```

---

### add_mesh

**Add Mesh**

**Description**

Adds polygons to the map from a mesh3d object

**Usage**

```r
add_mesh(
  map,
  data = get_map_data(map),
  fill_opacity = NULL,
  elevation = NULL,
  tooltip = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  light_settings = list(),
  layer_id = NULL,
  id = NULL,
  palette = "viridis",
  na_colour = "#808080FF",
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL,
  brush_radius = NULL
)
```
Arguments

map  a mapdeck map object

data  data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system

fill_opacity  Either a string specifying the column of data containing the opacity of each shape, or a single value in \([0,255]\), or \([0, 1)\), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string

elevation  the height the polygon extrudes from the map. Only available if neither stroke_colour or stroke_width are supplied. Default 0

tooltip  variable of data containing text or HTML to render as a tooltip

auto_highlight  logical indicating if the shape under the mouse should auto-highlight

highlight_colour  hex string colour to use for highlighting. Must contain the alpha component.

light_settings  list of light setting parameters. See light_settings

layer_id  single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

id  an id value in data to identify layers when interacting in Shiny apps.

palette  string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between \([0, 255]\), where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

na_colour  hex string colour to use for NA values

legend  either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

legend_options  A list of options for controlling the legend.

legend_format  A list containing functions to apply to legend values. See section legend

update_view  logical indicating if the map should update the bounds to include this layer

focus_layer  logical indicating if the map should update the bounds to only include this layer

digits  number of digits for rounding coordinates

transitions  list specifying the duration of transitions.

brush_radius  radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed

Details

add_mesh supports mesh3d objects
**legend**

The `legend_options` can be used to control the appearance of the legend. This should be a named list, where the names are one of

- `css` - a string of valid CSS for controlling the appearance of the legend
- `title` - a string to use for the title of the legend
- `digits` - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The `legend_format` can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- `fill_colour`
- `stroke_colour`

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

**id**

The `id` is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

**Examples**

```r
## exaggerate the elevation slightly
m <- melbourne_mesh
m$v3[3, ] <- m$v3[3, ] * 50

mapdeck() %>%
  add_mesh(data = m)
```
add_path  Add Path

Description

The Path Layer takes in lists of coordinate points and renders them as extruded lines with mitering.

Usage

```r
add_path(
  map,
  data = get_map_data(map),
  polyline = NULL,
  stroke_colour = NULL,
  stroke_width = NULL,
  stroke_opacity = NULL,
  dash_size = NULL,
  dash_gap = NULL,
  offset = NULL,
  width_units = c("meters", "pixels"),
  width_min_pixels = NULL,
  width_max_pixels = NULL,
  width_scale = 1,
  tooltip = NULL,
  billboard = FALSE,
  layer_id = NULL,
  id = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  palette = "viridis",
  na_colour = "#000000FF",
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL,
  brush_radius = NULL
)
```

Arguments

- `map` a mapdeck map object
- `data` data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
polyline optional column of data containing the polylines, if using encoded polylines
stroke_colour variable of data or hex colour for the stroke. If used, elevation is ignored. If using a hex colour, use either a single value, or a column of hex colours on data
stroke_width width of the stroke in meters. Default 1.
stroke_opacity Either a string specifying the column of data containing the opacity of each shape, or a single value in \([0,255]\), or \([0, 1)\), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
dash_size size of each dash, relative to the width of the stroke
dash_gap size of the gap between dashes, relative to the width of the stroke
offset The offset to draw each path with, relative to the width of the path. Negative offset is to the left hand side, and positive offset is to the right hand side. 0 extrudes the path so that it is centered at the specified coordinates.
width_units The units of the line width, one of 'meters', 'pixels'. When zooming in and out, meter sizes scale with the base map, and pixel sizes remain the same on screen.
width_min_pixels The minimum path width in pixels. This can be used to prevent the path from getting too thin when zoomed out.
width_max_pixels The maximum path width in pixels. his prop can be used to prevent the path from getting too thick when zoomed in.
width_scale The path width multiplier that multiplied to all paths.
tooltip variable of data containing text or HTML to render as a tooltip
billboard logical indicating if the path always faces the camera (TRUE) or if it always faces up (FALSE)
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
id an id value in data to identify layers when interacting in Shiny apps.
auto_highlight logical indicating if the shape under the mouse should auto-highlight
highlight_colour hex string colour to use for highlighting. Must contain the alpha component.
palette string or matrix. String will be one of \(\text{colourvalues::colour_palettes()}\). A matrix must have at least 5 rows, and 3 or 4 columns of values between \([0, 255]\), where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")
na_colour hex string colour to use for NA values
legend either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.
legend_options A list of options for controlling the legend.
legend_format A list containing functions to apply to legend values. See section legend
add_path supports LINestring and MULTILINESTRING sf objects

**transitions**

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for path

```r
list( path = 0, stroke_colour = 0, stroke_width = 0 )
```

**data**

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you'll need to set the active geometry using `sf::st_geometry(x) <- "your_column"`, where "your_column" is the name of the column you're activating. See ?sf::st_geometry

**legend**

The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.

The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- fill_colour
- stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.
id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent({input$map_arc_click})`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

mapdeck(
  style = mapdeck_style("dark"),
  location = c(145, -37.8),
  zoom = 10)
add_path(
  data = roads,
  stroke_colour = "RIGHT_LOC",
  layer_id = "path_layer",
  tooltip = "ROAD_NAME",
  auto_highlight = TRUE,
  legend = TRUE)
```

---

### Description

The Pointcloud Layer takes in coordinate points and renders them as circles with a certain radius.

#### Usage

```r
add_pointcloud(
  map,
  data = get_map_data(map),
  lon = NULL,
  lat = NULL,
  elevation = NULL,
  polyline = NULL,
  radius = 10,
  fill_colour = NULL,
  fill_opacity = NULL,
)```
add_pointcloud

```r
tooltip = NULL,
auto_highlight = FALSE,
highlight_colour = "#AAFFFFFF",
light_settings = list(),
layer_id = NULL,
id = NULL,
palette = "viridis",
na_colour =="#808080FF",
legend = FALSE,
legend_options = NULL,
legend_format = NULL,
update_view = TRUE,
focus_layer = FALSE,
digits = 6,
transitions = NULL,
brush_radius = NULL
```

Arguments

- **map**: a mapdeck map object
- **data**: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- **lon**: column containing longitude values
- **lat**: column containing latitude values
- **elevation**: column containing the elevation values. Default 0
- **polyline**: optional column of data containing the polylines, if using encoded polylines
- **radius**: value in pixels of each point. Default 10.
- **fill_colour**: column of data or hex colour for the fill colour. If using a hex colour, use either a single value, or a column of hex colours on data
- **fill_opacity**: Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1], to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
- **tooltip**: variable of data containing text or HTML to render as a tooltip
- **auto_highlight**: logical indicating if the shape under the mouse should auto-highlight
- **highlight_colour**: hex string colour to use for highlighting. Must contain the alpha component.
- **light_settings**: list of light setting parameters. See `light_settings`
- **layer_id**: single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
- **id**: an id value in data to identify layers when interacting in Shiny apps.
add_pointcloud

---

palette  
string or matrix. String will be one of colourvalues::colour_palettes().  
A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255],  
where the 4th column represents the alpha. You can use a named list  
to specify a different palette for different colour options (where available), e.g.  
list(fill_colour = "viridis", stroke_colour = "inferno")

na_colour  
hex string colour to use for NA values

legend  
either a logical indicating if the legend(s) should be displayed, or a named list  
indicating which colour attributes should be included in the legend.

legend_options  
A list of options for controlling the legend.

legend_format  
A list containing functions to apply to legend values. See section legend

update_view  
logical indicating if the map should update the bounds to include this layer

focus_layer  
logical indicating if the map should update the bounds to only include this layer

digits  
number of digits for rounding coordinates

transitions  
list specifying the duration of transitions.

brush_radius  
radius of the brush in metres. Default NULL. If supplied, the arcs will only  
show if the origin or destination are within the radius of the mouse. If NULL,  
all arcs are displayed

---

Details

add_pointcloud supports POINT and MULTIPOINT sf objects

transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one  
state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported  
browsers and hardware.  
The time is in milliseconds  
Available transitions for pointcloud  
list( position = 0, fill_colour = 0 )

data

If the data is a simple feature object, the geometry column is automatically detected. If the sf  
object contains more than one geometry column and you want to use a specific one, you’ll need to  
set the active geometry using sf::st_geometry( x ) <- "your_column" , where "your_column"  
is the name of the column you’re activating. See ?sf::st_geometry

legend

The legend_options can be used to control the appearance of the legend. This should be a named  
list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
• digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The `legend_format` can be used to control the format of the values in the legend. This should be a named list, where the names are one of:

• fill_colour
• stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent({input$map_arc_click})`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

df <- capitals
df$z <- sample(10000:10000000, size = nrow(df))

mapdeck(style = mapdeck_style("dark")) %>%
  add_pointcloud(
    data = df,
    lon = 'lon',
    lat = 'lat',
    elevation = 'z',
    layer_id = 'point',
    fill_colour = "country",
    tooltip = "country"
  )

## as an sf object with a Z attribute
library(sfheaders)
sf <- sfheaders::sf_point(df, x = "lon", y = "lat", z = "z")

mapdeck(style = mapdeck_style("dark")) %>%
  add_pointcloud(
    data = sf,
    layer_id = 'point',
    fill_colour = "country",
    tooltip = "country"
  )
```
add_polygon

, update_view = FALSE
)

Arguments

map       a mapdeck map object
data  data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
polyline optional column of data containing the polylines, if using encoded polylines
stroke_colour variable of data or hex colour for the stroke. If used, elevation is ignored. If using a hex colour, use either a single value, or a column of hex colours on data
stroke_width width of the stroke in meters. If used, elevation is ignored. Default 1.
stroke_opacity Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
fill_colour column of data or hex colour for the fill colour. If using a hex colour, use either a single value, or a column of hex colours on data
fill_opacity Either a string specifying the column of data containing the opacity of each shape, or a single value in [0,255], or [0, 1), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string
elevation the height the polygon extrudes from the map. Only available if neither stroke_colour or stroke_width are supplied. Default 0
tooltip variable of data containing text or HTML to render as a tooltip
auto_highlight logical indicating if the shape under the mouse should auto-highlight
elevation_scale elevation multiplier.
highlight_colour hex string colour to use for highlighting. Must contain the alpha component.
light_settings list of light setting parameters. See light_settings
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
id an id value in data to identify layers when interacting in Shiny apps.
palette string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between [0, 255], where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")
na_colour hex string colour to use for NA values
legend either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.
legend_options A list of options for controlling the legend.
legend_format A list containing functions to apply to legend values. See section legend
update_view logical indicating if the map should update the bounds to include this layer
focus_layer logical indicating if the map should update the bounds to only include this layer
digits number of digits for rounding coordinates
**add_polygon**

- **transitions**  list specifying the duration of transitions.
- **brush_radius**  radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed.

**Details**

add_polygon supports POLYGON and MULTIPOLYGON sf objects.

**data**

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you’ll need to set the active geometry using sf::st_geometry(x) <- "your_column", where "your_column" is the name of the column you’re activating. See ?sf::st_geometry.

**transitions**

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds.

Available transitions for polygon:
list( polygon = 0, fill_colour = 0, stroke_colour = 0, stroke_width = 0, elevation = 0 )

**legend**

The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of:

- **css** - a string of valid css for controlling the appearance of the legend
- **title** - a string to use for the title of the legend
- **digits** - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.

The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of:

- **fill_colour**
- **stroke_colour**

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.
id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent({input$map_arc_click})`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

library(geojsonsf)

sf <- geojsonsf::geojson_sf("https://symbolixau.github.io/data/geojson/SA2_2016_VIC.json")

mapdeck(
  style = mapdeck_style('dark')
) %>%
  add_polygon(
    data = sf
    , layer = "polygon_layer"
    , fill_colour = "SA2_NAME16"
  )

df <- melbourne  ## data.frame with encoded polylnies
df$elevation <- sample(100:5000, size = nrow(df))
df$info <- paste0("<b>SA2 - </b><br>", df$SA2_NAME)

mapdeck(
  style = mapdeck_style('dark')
  , location = c(145, -38)
  , zoom = 8
) %>%
  add_polygon(
    data = df
    , polyline = "geometry"
    , layer = "polygon_layer"
    , fill_colour = "SA2_NAME"
    , elevation = "elevation"
    , tooltip = 'info'
    , legend = TRUE
  )
```
add_scatterplot

Description

The Scatterplot Layer takes in coordinate points and renders them as circles with a certain radius.

Usage

```r
add_scatterplot(
  map,
  data = get_map_data(map),
  lon = NULL,
  lat = NULL,
  polyline = NULL,
  radius = NULL,
  radius_min_pixels = 1,
  radius_max_pixels = NULL,
  fill_colour = NULL,
  fill_opacity = NULL,
  stroke_colour = NULL,
  stroke_width = NULL,
  stroke_opacity = NULL,
  tooltip = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AAFFFFFF",
  layer_id = NULL,
  id = NULL,
  palette = "viridis",
  na_colour = "#808080FF",
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  digits = 6,
  update_view = TRUE,
  focus_layer = FALSE,
  transitions = NULL,
  brush_radius = NULL
)
```

Arguments

- `map` - a mapdeck map object
- `data` - data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- `lon` - column containing longitude values
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>lat</code></td>
<td>column containing latitude values</td>
</tr>
<tr>
<td><code>polyline</code></td>
<td>optional column of data containing the polylines, if using encoded polylines</td>
</tr>
<tr>
<td><code>radius</code></td>
<td>radius in metres. Default 1</td>
</tr>
<tr>
<td><code>radius_min_pixels</code></td>
<td>the minimum radius in pixels. Can prevent circle from getting too small when</td>
</tr>
<tr>
<td></td>
<td>zoomed out small for the given zoom level</td>
</tr>
<tr>
<td><code>radius_max_pixels</code></td>
<td>the maximum radius in pixels. Can prevent the circle from getting too big when</td>
</tr>
<tr>
<td></td>
<td>zoomed in</td>
</tr>
<tr>
<td><code>fill_colour</code></td>
<td>column of data or hex colour for the fill colour. If using a hex colour, use</td>
</tr>
<tr>
<td></td>
<td>either a single value, or a column of hex colours on data</td>
</tr>
<tr>
<td><code>fill_opacity</code></td>
<td>Either a string specifying the column of data containing the opacity of each</td>
</tr>
<tr>
<td></td>
<td>shape, or a single value in [0,255], or [0, 1), to be applied to all the</td>
</tr>
<tr>
<td></td>
<td>shapes. Default 255. If a hex-string is used as the colour, this argument is</td>
</tr>
<tr>
<td></td>
<td>ignored and you should include the alpha on the hex string</td>
</tr>
<tr>
<td><code>stroke_colour</code></td>
<td>variable of data or hex colour for the stroke. If used, elevation is ignored.</td>
</tr>
<tr>
<td></td>
<td>If using a hex colour, use either a single value, or a column of hex colours</td>
</tr>
<tr>
<td><code>stroke_width</code></td>
<td>width of the stroke in meters. If used, elevation is ignored. Default 1.</td>
</tr>
<tr>
<td><code>stroke_opacity</code></td>
<td>Either a string specifying the column of data containing the opacity of each</td>
</tr>
<tr>
<td></td>
<td>shape, or a single value in [0,255], or [0, 1), to be applied to all the</td>
</tr>
<tr>
<td></td>
<td>shapes. Default 255. If a hex-string is used as the colour, this argument is</td>
</tr>
<tr>
<td></td>
<td>ignored and you should include the alpha on the hex string</td>
</tr>
<tr>
<td><code>tooltip</code></td>
<td>variable of data containing text or HTML to render as a tooltip</td>
</tr>
<tr>
<td><code>auto_highlight</code></td>
<td>logical indicating if the shape under the mouse should auto-highlight</td>
</tr>
<tr>
<td><code>highlight_colour</code></td>
<td>hex string colour to use for highlighting. Must contain the alpha component.</td>
</tr>
<tr>
<td><code>layer_id</code></td>
<td>single value specifying an id for the layer. Use this value to distinguish</td>
</tr>
<tr>
<td></td>
<td>between shape layers of the same type. Layers with the same id are likely to</td>
</tr>
<tr>
<td></td>
<td>conflict and not plot correctly</td>
</tr>
<tr>
<td><code>id</code></td>
<td>an id value in data to identify layers when interacting in Shiny apps.</td>
</tr>
<tr>
<td><code>palette</code></td>
<td>string or matrix. String will be one of colourvalues::colour_palettes(). A</td>
</tr>
<tr>
<td></td>
<td>matrix must have at least 5 rows, and 3 or 4 columns of values between [0,</td>
</tr>
<tr>
<td></td>
<td>255], where the 4th column represents the alpha. You can use a named list</td>
</tr>
<tr>
<td></td>
<td>to specify a different palette for different colour options (where available),</td>
</tr>
<tr>
<td></td>
<td>e.g. list(fill_colour = &quot;viridis&quot;, stroke_colour = &quot;inferno&quot;)</td>
</tr>
<tr>
<td><code>na_colour</code></td>
<td>hex string colour to use for NA values</td>
</tr>
<tr>
<td><code>legend</code></td>
<td>either a logical indicating if the legend(s) should be displayed, or a named</td>
</tr>
<tr>
<td></td>
<td>list indicating which colour attributes should be included in the legend.</td>
</tr>
<tr>
<td><code>legend_options</code></td>
<td>A list of options for controlling the legend.</td>
</tr>
<tr>
<td><code>legend_format</code></td>
<td>A list containing functions to apply to legend values. See section legend</td>
</tr>
<tr>
<td><code>digits</code></td>
<td>number of digits for rounding coordinates</td>
</tr>
<tr>
<td><code>update_view</code></td>
<td>logical indicating if the map should update the bounds to include this layer</td>
</tr>
</tbody>
</table>
**add_scatterplot**

- **focus_layer** logical indicating if the map should update the bounds to only include this layer
- **transitions** list specifying the duration of transitions.
- **brush_radius** radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed.

**Details**

**add_scatterplot** supports POINT and MULTIPOINT sf objects.

**transitions**

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds

Available transitions for scatterplot

list( position = 0, fill_colour = 0, radius = 0 )

**data**

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you’ll need to set the active geometry using `sf::st_geometry(x) <- "your_column"`, where "your_column" is the name of the column you’re activating. See `?sf::st_geometry`

**legend**

The **legend_options** can be used to control the appearance of the legend. This should be a named list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in `add_arc`.

The **legend_format** can be used to control the format of the values in the legend. This should be a named list, where the names are one of

- fill_colour
- stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.
id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent({input$map_arc_click})`, where 'map' is the map_id supplied to `mapdeckOutput()`, and 'arc' is the layer you are clicking on.

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)
mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_scatterplot(
    data = capitals,
    lat = "lat",
    lon = "lon",
    radius = 100000,
    fill_colour = "country",
    layer_id = "scatter_layer",
    tooltip = "capital"
  )

## using legend options
mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_scatterplot(
    data = capitals,
    lat = "lat",
    lon = "lon",
    radius = 100000,
    fill_colour = "lon",
    stroke_colour = "lat",
    layer_id = "scatter_layer",
    tooltip = "capital",
    legend = TRUE,
    legend_options = list(digits = 5)
  )

df <- read.csv(paste0("https://raw.githubusercontent.com/uber-common/deck.gl-data/master/",
  "examples/3d-heatmap/heatmap-data.csv"))
df <- df[!is.na(df$lng),]
mapdeck(style = mapdeck_style("dark"), pitch = 45) %>%
  add_scatterplot(
    data = df
  )
```
add_screengrid

Description

The Screen Grid Layer takes in an array of latitude and longitude coordinated points, aggregates them into histogram bins and renders as a grid.

Usage

add_screengrid(
  map,
  data = get_map_data(map),
  lon = NULL,
  lat = NULL,
  polyline = NULL,
  weight = NULL,
  aggregation = c("sum", "mean", "min", "max"),
  colour_range = NULL,
  opacity = 0.8,
  cell_size = 50,
  layer_id = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6
)
Arguments

map a mapdeck map object
data data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
lon column containing longitude values
lat column containing latitude values
polyline optional column of data containing the polylines, if using encoded polylines
weight the weight of each value. Default 1
aggregation one of 'min', 'mean', 'max', 'sum'. If supplied it specifies how the weights used.
colour_range vector of 6 hex colours
opacity opacity of cells. Value between 0 and 1. Default 0.8
cell_size size of grid squares in pixels. Default 50
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
update_view logical indicating if the map should update the bounds to include this layer
focus_layer logical indicating if the map should update the bounds to only include this layer
digits number of digits for rounding coordinates

Details

add_screengrid supports POINT and MULTIPOINT sf objects
data

If the data is a simple feature object, the geometry column is automatically detected. If the sf object contains more than one geometry column and you want to use a specific one, you'll need to set the active geometry using sf::st_geometry( x ) <- "your_column", where "your_column" is the name of the column you're activating. See ?sf::st_geometry

Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token( key )

df <- read.csv(paste0(
  'https://raw.githubusercontent.com/uber-common/deck.gl-data/master/',
  'examples/3d-heatmap/heatmap-data.csv'
))

df <- df[ !is.na(df$lng), ]
df$weight <- sample(1:10, size = nrow(df), replace = TRUE)
```
add_sf

```r
mapdeck( style = mapdeck_style('dark'), pitch = 45 ) %>%
add_screengrid(
  data = df
  , lat = "lat"
  , lon = "lng"
  , weight = "weight"
  , layer_id = "screengrid_layer"
  , cell_size = 10
  , opacity = 0.3
)

## as an sf object
library(sfheaders)
sf <- sfheaders::sf_point( df, x = "lng", y = "lat")

mapdeck( style = mapdeck_style('dark'), pitch = 45 ) %>%
add_screengrid(
  data = sf
  , weight = "weight"
  , layer_id = "screengrid_layer"
  , cell_size = 10
  , opacity = 0.3
)
```

---

### Description

Adds an sf object to the map.

### Usage

```r
add_sf(map, data = get_map_data(map), ...)
```

### Arguments

- **map**
  - a mapdeck map object
- **data**
  - data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- **...**
  - other arguments passed to one of the plotting layers. See details
Details

The plotting layer is determined by the type of sf geometries.

- POINT and MULTIPOLYGON objects will call `add_scatterplot`
- LINestring and MULTILINESTRING objects will call `add_path`
- POLYGON and MULTIPOLYGON objects will call `add_polygon`
- GEOMETRY objects will call `add_geojson`

```r
add_terrain
```

## Description

Adds mesh surfaces from height map images

## Usage

```r
add_terrain(
  map,
  layer_id = NULL,
  elevation_data,
  texture = NULL,
  elevation_decoder = c(1, 0, 0, 0),
  bounds = NULL,
  max_error = 4,
  update_view = TRUE,
  focus_layer = FALSE
)
```

## Arguments

- **map**
  a mapdeck map object
- **layer_id**
  single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
- **elevation_data**
  Image URL that encodes height data. When `elevation_data` is a URL template, i.e. a string containing 'x' and 'y', it loads terrain tiles on demand and renders a mesh for each tile. If `elevation_data` is an absolute URL, a single mesh is used, and the `bounds` argument is required to position it into the world space.
- **texture**
  Image URL to use as the texture
- **elevation_decoder**
  Four value used to convert a pixel to elevation in metres. The values correspond to rScale, gScale, bScale, offset. See details
bounds: Four values \((c(left, bottom, right, top))\) bounds of the image to fit in x,y coordinates into. \texttt{left} and \texttt{right} referes to the world longitude/x at the corresponding side of the image. \texttt{top} and \texttt{bottom} refers to the world latitude/y at the corresponding side of the image. Must be supplied when using non-tiled \texttt{elevation_data}.

max_error: Martini error tolerance in metres, smaller number results in more detailed mesh.

update_view: logical indicating if the map should update the bounds to include this layer.

focus_layer: logical indicating if the map should update the bounds to only include this layer.

Details:

The \texttt{elevation_decoder} contains four values representing:

- \texttt{rScale} - Multiplier of the red channel
- \texttt{gScale} - Multiplier of the green channel
- \texttt{bScale} - Multiplier of the blue channel
- \texttt{offset} - translation of the sum

Each colour channel is a number between \([0, 255]\).

Examples:

```r
set_token( "MAPBOX_TOKEN" )
## Digital elevation model from https://www.usgs.gov/
elevation <- 'https://raw.githubusercontent.com/visgl/deck.gl-data/master/website/terrain.png'
bounds <- c(-122.5233, 37.6493, -122.3566, 37.8159)
mapdeck() %>%
  add_terrain(
    , elevation_data = elevation
    , elevation_decoder = c(1,0,0,0)
    , texture = texture
    , bounds = bounds
    , max_error = 1
  )
```
Description

The Text Layer renders text labels on the map

Usage

```r
add_text(
  map,
  data = get_map_data(map),
  text,
  lon = NULL,
  lat = NULL,
  polyline = NULL,
  fill_colour = NULL,
  fill_opacity = NULL,
  size = NULL,
  angle = NULL,
  anchor = NULL,
  alignment_baseline = NULL,
  billboard = TRUE,
  font_family = "Monaco, monospace",
  font_weight = "normal",
  tooltip = NULL,
  layer_id = NULL,
  id = NULL,
  auto_highlight = FALSE,
  highlight_colour = "#AFFFF000",
  palette = "viridis",
  na_colour = "#800080FF",
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  update_view = TRUE,
  focus_layer = FALSE,
  digits = 6,
  transitions = NULL,
  brush_radius = NULL
)
```

Arguments

- `map`: a mapdeck map object
- `data`: data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
**text**  
column of data containing the text. The data must be a character.

**lon**  
column containing longitude values

**lat**  
column containing latitude values

**polyline**  
optional column of data containing the polylines, if using encoded polylines

**fill_colour**  
column of data or hex colour for the fill colour. If using a hex colour, use either a single value, or a column of hex colours on data

**fill_opacity**  
Either a string specifying the column of data containing the opacity of each shape, or a single value in \([0,255]\), or \([0,1)\), to be applied to all the shapes. Default 255. If a hex-string is used as the colour, this argument is ignored and you should include the alpha on the hex string

**size**  
column of data containing the size of the text. Default 32

**angle**  
column of data containing the angle of the text. Default 0

**anchor**  
column of data containing the anchor of the text. One of 'start', 'middle' or 'end'

**alignment_baseline**  
column of data containing the alignment. One of 'top', 'center' or 'bottom'

**billboard**  
logical indicating if the text always faces the camera (TRUE) or if it always faces up (FALSE)

**font_family**  
specifies a prioritised list of one or more font family names and/or generic family names. Follow the specifics for CSS font-family [https://developer.mozilla.org/en-US/docs/Web/CSS/font-family](https://developer.mozilla.org/en-US/docs/Web/CSS/font-family)

**font_weight**  
specifies the font weight. Follow the specifics for CSS font-weight [https://htmldog.com/references/css/properties/font-weight/](https://htmldog.com/references/css/properties/font-weight/)

**tooltip**  
variable of data containing text or HTML to render as a tooltip

**layer_id**  
single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

**id**  
an id value in data to identify layers when interacting in Shiny apps.

**auto_highlight**  
logical indicating if the shape under the mouse should auto-highlight

**highlight_colour**  
hex string colour to use for highlighting. Must contain the alpha component.

**palette**  
string or matrix. String will be one of colourvalues::colour_palettes(). A matrix must have at least 5 rows, and 3 or 4 columns of values between \([0,255]\), where the 4th column represents the alpha. You can use a named list to specify a different palette for different colour options (where available), e.g. list(fill_colour = "viridis", stroke_colour = "inferno")

**na_colour**  
hex string colour to use for NA values

**legend**  
either a logical indicating if the legend(s) should be displayed, or a named list indicating which colour attributes should be included in the legend.

**legend_options**  
a list of options for controlling the legend.

**legend_format**  
a list containing functions to apply to legend values. See section legend

**update_view**  
logical indicating if the map should update the bounds to include this layer
focus_layer: logical indicating if the map should update the bounds to only include this layer.
digits: number of digits for rounding coordinates.
transitions: list specifying the duration of transitions.
brush_radius: radius of the brush in metres. Default NULL. If supplied, the arcs will only show if the origin or destination are within the radius of the mouse. If NULL, all arcs are displayed.

Details

add_text supports POINT and MULTIPOINT sf objects.

transitions

The transitions argument lets you specify the time it will take for the shapes to transition from one state to the next. Only works in an interactive environment (Shiny) and on WebGL-2 supported browsers and hardware.

The time is in milliseconds.

Available transitions for text:
list( position = 0, fill_colour = 0, angle = 0, size = 0 )

legend

The legend_options can be used to control the appearance of the legend. This should be a named list, where the names are one of:

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to

If the layer allows different fill and stroke colours, you can use different options for each. See examples in add_arc.

The legend_format can be used to control the format of the values in the legend. This should be a named list, where the names are one of:

- fill_colour
- stroke_colour

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.

id

The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use observeEvent({input$map_arc_click}), where 'map' is the map_id supplied to mapdeckOutput(), and 'arc' is the layer you are clicking on.
**add_title**

### Examples

```r
## You need a valid access token from Mapbox
key <- 'abc'
set_token(key)

mapdeck(
  style = mapdeck_style('dark'),
) %>%
  add_text(
    data = capitals,
    lon = 'lon',
    lat = 'lat',
    fill_colour = 'country',
    text = 'capital',
    layer_id = 'text'
  )
```

---

**Description**

Adds a title to a map

**Usage**

```r
add_title(map, title, layer_id = NULL)
```

**Arguments**

- `map` a mapdeck map object
- `title` Either a single string for the title, or a list with a `title` element, and an optional `css` element. See examples
- `layer_id` single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly

**Examples**

```r
mapdeck() %>%
  add_title(title = "first title", layer_id = "first") %>%
```
add_trips

Add Trips

Description
The Trips Layer takes an sf object with Z (elevation) and M (time) attributes and renders it as animated trips.

Usage

```r
add_trips(
  map,
  data = get_map_data(map),
  stroke_colour = NULL,
  stroke_width = NULL,
  opacity = 0.3,
  palette = "viridis",
  trail_length = 180,
  start_time = get_m_range_start(data),
  end_time = get_m_range_end(data),
  animation_speed = 30,
  layer_id = NULL,
  legend = FALSE,
  legend_options = NULL,
  legend_format = NULL,
  digits = 6
)
```

Arguments

- `map`: a mapdeck map object
- `data`: sf object with XYZM dimensions.
- `stroke_colour`: variable of data or hex colour for the stroke.
- `stroke_width`: width of the stroke in meters. Default 1.
- `opacity`: single value in [0,1]
add_trips

```
palette
string or matrix. String will be one of colourvalues::colour_palettes().
A matrix must have at least 5 rows, and 3 or 4 columns of values between [0,
255], where the 4th column represents the alpha. You can use a named list
to specify a different palette for different colour options (where available), e.g.
list(fill_colour = "viridis", stroke_colour = "inferno")
```

```
trail_length
how long it takes for the trail to completely fade out (in same units as timestamps)
```

```
start_time
the minimum timestamp
```

```
end_time
the maximum timestamp
```

```
animation_speed
speed of animation
```

```
layer_id
single value specifying an id for the layer. Use this value to distinguish between
shape layers of the same type. Layers with the same id are likely to conflict and
not plot correctly
```

```
legend
either a logical indicating if the legend(s) should be displayed, or a named list
indicating which colour attributes should be included in the legend.
```

```
legend_options
A list of options for controlling the legend.
```

```
legend_format
A list containing functions to apply to legend values. See section legend
digits
number of digits for rounding coordinates
```

Details

```
add_trips supports LINESTRING and MULTILINESTRING sf objects
```

```
legend
The legend_options can be used to control the appearance of the legend. This should be a named
list, where the names are one of

- css - a string of valid css for controlling the appearance of the legend
- title - a string to use for the title of the legend
- digits - number to round the legend values to
```

If the layer allows different fill and stroke colours, you can use different options for each. See
examples in add_arc.

```
The legend_format can be used to control the format of the values in the legend. This should be a
named list, where the names are one of

- fill_colour
- stroke_colour
```

depending on which type of colouring the layer supports.

The list elements must be functions to apply to the values in the legend.
id
The id is returned to your R session from an interactive shiny environment by observing layer clicks. This is useful for returning the data.frame row relating to the clicked shape.

From within a shiny server you would typically use `observeEvent(input$map_arc_click)`, where `map` is the `map_id` supplied to `mapdeckOutput()`, and `arc` is the layer you are clicking on.

Examples

```r
set_token("MAPBOX_TOKEN")
sf <- city_trail

mapdeck(
  location = c(145, -37.8)
  , zoom = 10
  , style = mapdeck_style("dark")
) %>%
  add_trips(
    data = sf
    , animation_speed = 2000
    , trail_length = 1000
    , stroke_colour = "#FFFFFF"
  )
```

capitals

*Capital cities for each country*

**Description**

A data set containing the coordinates of 200 capital cities in the world

**Usage**

`capitals`

**Format**

A data frame with 200 observations and 4 variables

- `country` country name
- `capital` capital name
- `lat` latitude of capital
- `lon` longitude of capital
**city_trail**

**Description**
An sf object of a cyclist cycling around Melbourne’s Capital City Trail

**Usage**
city_trail

**Format**
An object of class `sf` (inherits from `data.frame`) with 1 rows and 3 columns.

**clear_animated_arc**  
*Clear Animated Arc*

**Description**
Clears elements from a map
Clears elements from a map

**Usage**
clear_animated_arc(map, layer_id = NULL)
clear_line(map, layer_id = NULL)
clear_arc(map, layer_id = NULL)
clear_bitmap(map, layer_id = NULL)
clear_column(map, layer_id = NULL)
clear_geojson(map, layer_id = NULL)
clear_greatcircle(map, layer_id = NULL)
clear_grid(map, layer_id = NULL)
clear_heatmap(map, layer_id = NULL)
clear_hexagon(map, layer_id = NULL)
clear_line(map, layer_id = NULL)
clear_mesh(map, layer_id = NULL)
clear_path(map, layer_id = NULL)
clear_pointcloud(map, layer_id = NULL)
clear_polygon(map, layer_id = NULL)
clear_scatterplot(map, layer_id = NULL)
clear_screengrid(map, layer_id = NULL)
clear_terrain(map, layer_id = NULL)
clear_text(map, layer_id = NULL)
clear_title(map, layer_id = NULL)
clear_trips(map, layer_id = NULL)

Arguments
map a mapdeck map object
layer_id the layer_id of the layer you want to clear

Description
Clears the legend for a given layer_id

Usage
clear_legend(map_id, layer_id)

Arguments
map_id the id of the map you want to clear the legend from.
layer_id single value specifying an id for the layer. Use this value to distinguish between shape layers of the same type. Layers with the same id are likely to conflict and not plot correctly
clear_tokens

**Description**

Clears the access tokens

**Usage**

```r
clear_tokens()
```

---

geojson

**Description**

A GeoJSON object of polygons, lines and points in Melbourne

**Usage**

```r
geojson
```

**Format**

A 'json' object

---

legend_element

**Description**

Creates a mapdeck legend element for when you want to manually specify a legend (using `mapdeck_legend`)

**Usage**

```r
legend_element(
    variables, 
    colours, 
    colour_type = c("fill", "stroke"), 
    variable_type = c("category", "gradient"), 
    title = "", 
    css = ""
)
```
Arguments

- **variables**: variables assigned to colours
- **colours**: vector of hex colours assigned to variables
- **colour_type**: one of "fill" or "stroke"
- **variable_type**: one of category (discrete) or gradient (continuous)
- **title**: string used as the legend title
- **css**: string of css to control appearance.

See Also

mapdeck_legend

Examples

```r
l1 <- legend_element(
  variables = c("a","b"),
  colours = c("#00FF00","FF0000"),
  colour_type = "fill",
  variable_type = "category",
  title = "my title"
)
```

light_settings

**Light Settings**

Description

List object containing light settings.

Details

Available in `add_geojson`, `add_pointcloud` and `add_polygon`

- **numberOfLights**: the number of lights. Maximum of 5
- **lightsPosition**: vector of x, y, z coordinates. Must be 3x the number of lights
- **ambientRatio**: the ambient ratio of the lights

Examples

```r
light <- list(
  lightsPosition = c(-150, 75, 0),
  numberOfLights = 1,
  ambientRatio = 0.2
)
```
Description

mapdeck

Usage

mapdeck(
  data = NULL,
  token = get_access_token(api = "mapbox"),
  width = NULL,
  height = NULL,
  padding = 0,
  style = "mapbox://styles/mapbox/streets-v9",
  pitch = 0,
  zoom = 0,
  bearing = 0,
  max_zoom = 20,
  min_zoom = 0,
  max_pitch = 60,
  min_pitch = 0,
  location = c(0, 0),
  show_view_state = FALSE,
  repeat_view = FALSE
)

Arguments

data  data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system

token Mapbox Access token. Use set_token() or Sys.setenv() to set a global token. See Access Tokens section for further details. If left empty layers will still be plotted, but without a Mapbox map.

width the width of the map

height the height of the map

padding the padding of the map

style the style of the map (see mapdeck_style)

pitch the pitch angle of the map

zoom zoom level of the map

bearing bearing of the map between 0 and 360

max_zoom sets the maximum zoom level

min_zoom sets the minimum zoom level
max_pitch sets the maximum pitch
min_pitch sets the minimum pitch
location unnamed vector of lon and lat coordinates (in that order)
show_view_state logical, indicating whether to add the current View State to the map. When TRUE, the following is added as an overlay to the map
• width
• height
• latitude & longitude
• zoom
• bearing
• pitch
• altitude
• viewBounds
• interactionState
repeat_view Logical indicating if the layers should repeat at low zoom levels

Access Tokens
If the token argument is not used, the map will search for the token, firstly by checking if set_token() was used, then it will search environment variables using Sys.getenv() and the following values, in this order
c("MAPBOX_TOKEN","MAPBOX_KEY","MAPBOX_API_TOKEN", "MAPBOX_API_KEY", "MAPBOX", "MAPDECK")
If multiple tokens are found, the first one is used

mapdeck-shiny Shiny bindings for mapdeck

Description
Output and render functions for using mapdeck within Shiny applications and interactive Rmd documents.

Usage
mapdeckOutput(outputId, width = "100%", height = "400px")
renderMapdeck(expr, env = parent.frame(), quoted = FALSE)
Arguments

<table>
<thead>
<tr>
<th>Argument</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>outputId</td>
<td>output variable to read from</td>
</tr>
<tr>
<td>width, height</td>
<td>Must be a valid CSS unit (like '100%', '400px', 'auto') or a number, which will be coerced to</td>
</tr>
<tr>
<td></td>
<td>a string and have 'px' appended.</td>
</tr>
<tr>
<td>expr</td>
<td>An expression that generates a mapdeck</td>
</tr>
<tr>
<td>env</td>
<td>The environment in which to evaluate expr.</td>
</tr>
<tr>
<td>quoted</td>
<td>Is expr a quoted expression (with quote())? This is useful if you want to save an expression</td>
</tr>
<tr>
<td></td>
<td>in a variable.</td>
</tr>
</tbody>
</table>

Description

Add the required mapdeck javascript dependencies to a Shiny UI when you want to use mapdeck layers, but not with a mapdeck map.

Usage

```r
mapdeck_dependencies()
```

Description

Extension points for plugins

Usage

```r
mapdeck_dispatch(
  map,            
  funcName,       
  mapdeck = stop(paste(funcName, "requires a map update object")),  
  mapdeck_update = stop(paste(funcName, "does not support map update objects"))
)

invoke_method(map, method, ...)
```
Arguments

- **map**: a map object, as returned from `mapdeck`
- **funcName**: the name of the function that the user called that caused this `mapdeck_dispatch` call; for error message purposes
- **mapdeck**: an action to be performed if the map is from `mapdeck`
- **mapdeck_update**: an action to be performed if the map is from `mapdeck_update`
- **method**: the name of the JavaScript method to invoke
- **...**: unnamed arguments to be passed to the JavaScript method

Value

`mapdeck_dispatch` returns the value of `mapdeck` or an error. `invokeMethod` returns the map object that was passed in, possibly modified.

---

**mapdeck_legend**  
*Mapdeck Legend*

---

Description

Constructs legend elements into the correct JSON format for plotting on the map

Usage

`mapdeck_legend(legend_elements)`

Arguments

- **legend_elements**: vector of legend elements (made from `legend_element`)

See Also

`legend_element`

Examples

```r
l1 <- legend_element(
  variables = c("a","b"),
  colours = c("#00FF00","#FF0000"),
  colour_type = "fill",
  variable_type = "category",
  title = "my title"
)

mapdeck_legend(l1)
```
mapdeck_style  Mapdeck Style

Description

Various styles available to all Mapbox accounts using a valid access token. Available styles are listed at https://docs.mapbox.com/api/maps/#styles.

Usage

mapdeck_style(
  style = c("dark", "light", "outdoors", "streets", "satellite", "satellite-streets")
)

Arguments

style  one of streets, outdoors, light, dark, satellite, satellite-streets

Examples

## You need a valid access token from Mapbox
key <- 'abc'

## set a map style
mapdeck(token = key, style = mapdeck_style("dark"))

mapdeck_tokens  Mapdeck_tokens

Description

Retrieves the mapdeck token that has been set.

Usage

mapdeck_tokens()
mapdeck_update

**Description**

Update a Mapdeck map in a shiny app. Use this function whenever the map needs to respond to reactive content.

**Usage**

```r
data = NULL,
map_id,
session = shiny::getDefaultReactiveDomain(),
deferUntilFlush = TRUE,
map_type = c("mapdeck_update", "google_map_update")
```

**Arguments**

- `data` : data to be used in the layer. All coordinates are expected to be EPSG:4326 (WGS 84) coordinate system
- `map_id` : string containing the output ID of the map in a shiny application.
- `session` : the Shiny session object to which the map belongs; usually the default value will suffice.
- `deferUntilFlush` : indicates whether actions performed against this instance should be carried out right away, or whether they should be held until after the next time all of the outputs are updated; defaults to TRUE.
- `map_type` : either mapdeck_update or google_map_update

mapdeck_view

**Description**

Changes the view of the of the map
Usage

mapdeck_view(
  map,
  location = NULL,
  zoom = NULL,
  pitch = NULL,
  bearing = NULL,
  duration = NULL,
  transition = c("linear", "fly")
)

Arguments

map a mapdeck map object
location unnamed vector of lon and lat coordinates (in that order)
zoom zoom level of the map
pitch the pitch angle of the map
bearing bearing of the map between 0 and 360
duration time in milliseconds of the transition
transition type of transition

Description

A data set containing statistical area 2 regions of central (and surrounds) Melbourne.

Usage

melbourne

Format

An sfencoded and data frame object with 41 observations and 8 variables. See library googlePoly-
lines for information on sfencoded objects
melbourne_mesh  
*Melbourne Mesh*

**Description**

A mesh3d object of Melbourne

**Usage**

melbourne_mesh

**Format**

An object of class mesh3d (inherits from shape3d) of length 6.

---

roads  
*Roads in central Melbourne*

**Description**

A simple feature sf object of roads in central Melbourne

**Usage**

roads

**Format**

An sf and data frame object with 18286 observations and 16 variables

**Details**

Obtained from [https://www.data.gov.au](https://www.data.gov.au) and distributed under the Creative Commons 4 License  
[https://creativecommons.org/licenses/by/4.0/](https://creativecommons.org/licenses/by/4.0/)
**set_token**

**Set Token**

**Description**

Sets an access token so it’s available for all mapdeck calls. See details.

**Usage**

```
set_token(token)
```

**Arguments**

- `token`: Mapbox access token

**Details**

Use `set_token` to make access tokens available for all the `mapdeck()` calls in a session so you don’t have to keep specifying the token argument each time.

---

**update_style**

**update style**

**Description**

update style

**Usage**

```
update_style(map, style)
```

**Arguments**

- `map`: a mapdeck map object
- `style`: the style of the map (see `mapdeck_style`
%>% Pipe

Description
Uses the pipe operator (\%\%\%) to chain statements. Useful for adding layers to a mapdeck map

Arguments
lhs, rhs A mapdeck map and a layer to add to it

Examples

```r
token <- "your_api_token"
mapdeck(token = token) %>%
  add_scatterplot(
    data = capitals,
    lat = "lat",
    lon = "lon",
    radius = 100000,
    fill_colour = "country",
    layer_id = "scatter_layer"
  )
```

Index

* datasets
  - capitals, 74
  - city_trail, 75
  - geojson, 77
  - melbourne, 85
  - melbourne_mesh, 86
  - roads, 86
%>%, 88

add_animated_arc, 3
add_animated_line, 7
add_arc, 5, 10, 12, 20, 26, 30, 44, 47, 50, 54, 57, 61, 70, 73
add_bitmap, 15
add_cesium, 16
add_column, 17
add_dependencies, 21
add_geojson, 22, 66, 78
add_grid, 31
add_heatmap, 35
add_hexagon, 37
add_i3s, 41
add_line, 42
add_mesh, 45
add_path, 48, 66
add_pointcloud, 51, 78
add_polygon, 55, 66, 78
add_scatterplot, 59, 66
add_screengrid, 63
add_sf, 65
addTerrain, 66
add_text, 68
add_title, 71
add_trips, 72

capitals, 74
city_trail, 75
clear_animated_arc, 75
clear_arc (clear_animated_arc), 75
clear_bitmap (clear_animated_arc), 75
clear_column (clear_animated_arc), 75
clear_geojson (clear_animated_arc), 75
clear_greatcircle (clear_animated_arc), 75
clear_grid (clear_animated_arc), 75
clear_heatmap (clear_animated_arc), 75
clear_hexagon (clear_animated_arc), 75
clear_legend, 76
clear_line (clear_animated_arc), 75
clear_mesh (clear_animated_arc), 75
clear_path (clear_animated_arc), 75
clear_pointcloud (clear_animated_arc), 75
clear_polygon (clear_animated_arc), 75
clear_scatterplot (clear_animated_arc), 75
clear_screengrid (clear_animated_arc), 75
clear_terrain (clear_animated_arc), 75
clear_text (clear_animated_arc), 75
clear_title (clear_animated_arc), 75
clear_tokens, 77
clear_trips (clear_animated_arc), 75

geojson, 77

invoke_method (mapdeck_dispatch), 81

legend_element, 77, 82
light_settings, 23, 46, 52, 56, 78

mapdeck, 79, 82
mapdeck-shiny, 80
mapdeck_dependencies, 81
mapdeck_dispatch, 81
mapdeck_legend, 77, 78, 82
mapdeck_style, 79, 83, 87
mapdeck_tokens, 83
mapdeck_update, 82, 84
mapdeck_view, 84
mapdeckOutput (mapdeck-shiny), 80
melbourne, 85
melbourne_mesh, 86
renderMapdeck (mapdeck-shiny), 80
roads, 86
set_token, 87
update_style, 87