Package 'aRtsy'

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Title Generative Art

Description Implements generative art using ggplot2.

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BugReports https://github.com/koenderks/aRtsy/issues

URL https://github.com/koenderks/aRtsy

Imports ggplot2, dplyr, reshape2, Rcpp

LinkingTo Rcpp, RcppArmadillo

Language en-US

License GPL-3

Encoding UTF-8

RoxygenNote 7.1.1

R topics documented:

`paint_ant` *Paint Langton's Ant on a Canvas*

Description

This function paints Langton's Ant. Langton's ant is a two-dimensional universal Turing machine with a very simple set of rules but complex emergent behavior.

Usage

```
paint_ant(colors, background = '#fafafa', iterations = 1e7,
          seed = 1, width = 200, height = 200)
```

Arguments

colors	a character (vector) specifying the colors for the ant.
background	a character specifying the color of the background.
iterations	the number of iterations of the ant.
seed	the seed for the painting.
width	the width of the painting in pixels.
height	the height of the painting in pixels.

Value

A ggplot object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

References

https://en.wikipedia.org/wiki/Langton%27s_ant

See Also

paint_strokes paint_function paint_turmite paint_mondriaan

Examples

```
paint_ant(colors = '#000000', background = '#fafafa')
```

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paint_function *Paint Functions on a Canvas*

Description

This function paints functions and mimics the functionality of the generativeart package.

Usage

```
paint_function(color, background = '#fafafa', seed = 1)
```

Arguments

color	a character specifying the color used for the function shape.
background	a character specifying the color used for the background.
seed	the seed for the painting.

Value

A ggplot object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

References

https://github.com/cutterkom/generativeart

See Also

paint_strokes paint_turmite paint_ant paint_mondriaan

Examples

```
paint_function(color = '#000000', background = '#fafafa')
```

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paint_mondriaan *Paint a Mondriaan on a Canvas*

Description

This function paints a Mondriaan.

Usage

```
paint_mondriaan(colors, background = '#000000', cuts = 50, ratio = 1.618,
                seed = 1, width = 100, height = 100)
```

Arguments

colors	a character vector specifying the colors used in the squares.
background	a character specifying the color used for the background (borders).
cuts	the number of cuts to make.
ratio	the 1:1 ratio for each cut.
seed	the seed for the painting.
width	the width of the painting in pixels.
height	the height of the painting in pixels.

Value

A ggplot object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

See Also

paint_strokes paint_turmite paint_ant paint_function

Examples

```
paint_mondriaan(colors = c('white', 'red', 'yellow', 'blue'), seed = 5)
```

`paint_planet` *Paint a Planet on a Canvas*

Description

This function paints one or multiple planets.

Usage

```
paint_planet <- function(colors, threshold = 3, iterations = 10, starprob = 0.00001,
                         radius = NULL, center.x = NULL, center.y = NULL,
                         seed = 1, width = 500, height = 500)
```

Arguments

`colors`	a character specifying the colors used for the planets
`threshold`	a character specifying the threshold for a color take.
`iterations`	the number of iterations of the planets
`starprob`	the probability of drawing a star in outer space.
`radius`	a numeric (vector) specifying the radius of the planet(s).
`center.x`	the x-axis coordinate(s) for the center(s) of the planet(s).
`center.y`	the y-axis coordinate(s) for the center(s) of the planet(s).
`seed`	the seed for the painting.
`width`	the width of the painting in pixels.
`height`	the height of the painting in pixels.

Value

A `ggplot` object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

See Also

`paint_strokes` `paint_function` `paint_ant` `paint_mondriaan`

Examples

```
paint_planet(colors = c("dodgerblue", "forestgreen"))
```

paint_strokes *Paint Strokes on a Canvas*

Description

This function creates a painting that resembles paints strokes. The algorithm is based on the simple idea that each next point on the grid has a chance to take over the color of an adjacent colored point but also has a change of generating a new color.

Usage

```
paint_strokes(colors, neighbors = 1, p = 0.01, iterations = 1,
                      seed = 1, width = 500, height = 500, side = FALSE)
```

Arguments

colors	a character (vector) specifying the colors used for the strokes.
neighbors	the number of neighbors a block considers when taking over a color. More neighbors fades the painting.
p	the probability of selecting a new color at each block. A higher probability adds more noise to the painting.
iterations	the number of iterations on the painting. More iterations fade the painting.
seed	the seed for the painting.
width	the width of the painting in pixels.
height	the height of the painting in pixels.
side	whether to turn the painting on its side.

Value

A ggplot object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

See Also

paint_turmite paint_function paint_ant paint_mondriaan

Examples

```
paint_strokes(colors = c('#fafafa', '#000000'))
```

paint_turmite *Paint a Turmite on a Canvas*

Description

This function paints a turmite. A turmite is a Turing machine which has an orientation in addition to a current state and a "tape" that consists of a two-dimensional grid of cells. The algorithm is simple: 1) turn on the spot (left, right, up, down) 2) change the color of the square 3) move forward one square.

Usage

```
paint_turmite(color, background = '#fafafa', p = 0.5, iterations = 1e7,
                     seed = 1, width = 1500, height = 1500)
```

Arguments

color	a character specifying the color used for the turmite.
background	a character specifying the color used for the background.
p	the probability of a state switch within the turmite.
iterations	the number of iterations of the turmite.
seed	the seed for the painting.
width	the width of the painting in pixels.
height	the height of the painting in pixels.

Value

A ggplot object containing the painting.

Author(s)

Koen Derks, <koen-derks@hotmail.com>

References

https://en.wikipedia.org/wiki/Turmite

See Also

paint_strokes paint_function paint_ant paint_mondriaan

Examples

```
paint_turmite(color = "#000000", background = "#fafafa")
```

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