Package 'aRtsy'

April 16, 2021

Title Generative Art

Version 0.1.0

Date 2021-04-15

Description Implements generative art.

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

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

Suggests knitr

Imports ggplot2, dplyr, reshape2, RcppArmadillo, Rcpp

LinkingTo Rcpp, RcppArmadillo

Language en-US

License GPL-3

Encoding UTF-8

LazyData true

RoxygenNote 7.1.1

VignetteBuilder knitr

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 = '#000000', background = '#fafafa', seed = 1,
          iterations = 1e7, width = 200, height = 200)
```

Arguments

colors	the colors for the ant.
background	the color of the background.
seed	the seed for the painting.
iterations	the number of iterations of the ant.
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

Examples

```
paint_ant(colors = '#000000', background = '#fafafa', seed = 1,
          iterations = 1e7, width = 200, height = 200)
```

---

paint_function *Paint Functions on a Canvas*

Description

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

Usage

```
paint_function(color = '#000000', background = '#fafafa', seed = 1)
```

Arguments

color	the color of the shape.
background	the color of 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

Examples

```
bg <- sample(c('#fafafa', '#cc7722', '#a9d2c3', '#fc7c7c'), size = 1)
paint_function(color = '#000000', background = bg)
```

---

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 = '#000000', neighbors = 1, p = 0.01, seed = 1,
                      iterations = 1, width = 500, height = 500, side = FALSE)
```

Arguments

colors	a vector of colors for the painting.
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.
seed	the seed for the painting.
iterations	the number of iterations on the painting. More iterations fade 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

Examples

```
paint_strokes(colors = c('#fafafa', '#000000'), neighbors = 1, p = 0.01,
              seed = 1, side = FALSE, iterations = 1,
              width = 1500, height = 1500)
```

---

paint_turmite *Paint a Turmite on a Canvas*

Description

This function paints turmites. 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 = '#fafafa', background = '#000000', p = 0.5, seed = 1,
                     iterations = 1e7, width = 1500, height = 1500)
```

Arguments

color	the color of the turmite.
background	the color of the background.
p	the probability of a state switch within the turmite.
seed	the seed for the painting.
iterations	the number of iterations of the turmite.
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

Examples

```
paint_turmite(color = "#fafafa", background = "#1E90FF", p = 0.5,
              seed = 1, iterations = 1e7, width = 1500, height = 1500)
```

Index