

Package: EntropicStatistics (via r-universe)

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Type Package

Title Functions Based on Entropic Statistics

Version 0.1.0

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Description Contains methods for data analysis in entropic perspective. These entropic perspective methods are nonparametric, and perform better on non-ordinal data. Currently, the package has a function HeatMap() for visualizing distributional characteristics among multiple populations (groups).

License GPL-3

Encoding UTF-8

Imports ggplot2, ggrepel, hrbrthemes, tidyverse, dplyr, tidyr, tibble

NeedsCompilation no

RoxygenNote 7.2.3

Suggests testthat (>= 3.0.0)

Config/testthat/edition 3

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HeatMap

*HeatMap for Distribution Visualization***Description**

Returns a heatmap to display characteristic information from selected groups.

Usage

```
HeatMap(
  data_frequency_list,
  orders = seq(0.50, 3, by = 0.01),
  selection = 1:length(data_frequency_list),
  plot_order = selection,
  RowNames = names(data_frequency_list)[plot_order],
  title = "HeatMap",
  x_ticks = round(stats::quantile(orders, c(0,0.25, 0.5, 0.75, 1)), 2),
  plot_margin = margin(0.5,0.2,0.2,1, "cm"),
  text_face = 1,
  fill_colors = c("blue4", "white", "red3"),
  title_text_size = 25,
  label_text_size = 25
)
```

Arguments

| | |
|----------------------------------|---|
| <code>data_frequency_list</code> | A list contains the frequency of data. Each sublist herein is a frequency counts of a group. |
| <code>orders</code> | Orders of Generalized Shannon's Entropy used in the heatmap. |
| <code>selection</code> | Indexes of sublist in <code>data_frequency_list</code> that one wishes to include in the heatmap. |
| <code>plot_order</code> | The order of selected groups in the heatmap, from bottom to top. |
| <code>RowNames</code> | The display names of the selected groups in the heatmap. |
| <code>title</code> | The title of the heatmap. |
| <code>x_ticks</code> | The location of x-axis ticks on the heatmap. |
| <code>plot_margin</code> | The plot margins of the final heatmap. |
| <code>text_face</code> | The text style in the heatmap. 1 = "plain", 2 = "italic", 3 = "bold", and 4 = "bold. italic". |
| <code>fill_colors</code> | Three colors in the heatmap that represent lower, medium, and upper values. |
| <code>title_text_size</code> | Title text size in the heatmap. |
| <code>label_text_size</code> | Labels text size in the heatmap. |

Details

This is a preliminary tool to identify distributional information from multiple groups simultaneously without any parametric assumptions.

Value

A heatmap plot made with `ggplot2`.

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Examples

```
## Creating data
binom_n <- 10
sample_size <- 1000
sample_1 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.1))
sample_2 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.2))
sample_3 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.3))
sample_4 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.4))
sample_5 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.5))
sample_6 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.6))
sample_7 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.7))
sample_8 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.8))
sample_9 <- table(stats::rbinom(size=binom_n, n=sample_size, 0.9))
sample_poisson_1 <- stats::rpois(sample_size, 1)
sample_poisson_2 <- stats::rpois(sample_size, 2)
sample_poisson_3 <- stats::rpois(sample_size, 3)
sample_poisson_4 <- stats::rpois(sample_size, 4)
sample_poisson_5 <- stats::rpois(sample_size, 5)
sample_poisson_6 <- stats::rpois(sample_size, 6)
sample_poisson_7 <- stats::rpois(sample_size, 7)
sample_poisson_8 <- stats::rpois(sample_size, 8)
sample_poisson_9 <- stats::rpois(sample_size, 9)
data_samples <- list(binom_0.1 = sample_1, binom_0.2 = sample_2, binom_0.3 = sample_3,
  binom_0.4 = sample_4, binom_0.5 = sample_5, binom_0.6 = sample_6, binom_0.7 = sample_7,
  binom_0.8 = sample_8, binom_0.9 = sample_9, Poisson_1 = sample_poisson_1,
  Poisson_2 = sample_poisson_2, Poisson_3 = sample_poisson_3, Poisson_4 = sample_poisson_4,
  Poisson_5 = sample_poisson_5, Poisson_6 = sample_poisson_6, Poisson_7 = sample_poisson_7,
  Poisson_8 = sample_poisson_8, Poisson_9 = sample_poisson_9)

## Obtain the heatmap for all sublists in the data.
HeatMap(data_samples)

## Obtain the heatmap for six random sublists in the data.
HeatMap(data_samples, selection = c(sample(1:length(data_samples), 6)))

## Obtain the heatmap for the binomial sublists in the data.
HeatMap(data_samples, selection = 1:9)

## Obtain the heatmap for the first 4 poisson sublists in the data.
```

```
HeatMap(data_samples, selection = 10:13)  
  
## Obtain the heatmap for the last 5 poisson sublists in the data.  
HeatMap(data_samples, selection = 14:18)
```

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