

Package ‘adplots’

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Type Package

Title Ad-Plot and Ud-Plot for Visualizing Distributional Properties and Normality

Version 0.1.0

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Description

The empirical cumulative average deviation function introduced by the author is utilized to develop both Ad- and Ud-plots. The Ad-plot can identify symmetry, skewness, and outliers of the data distribution, including anomalies. The Ud-plot created by slightly modifying Ad-plot is exceptional in assessing normality, outperforming normal QQ-plot, normal PP-plot, and their derivations. The d-value that quantifies the degree of proximity between the Ud-plot and the graph of the estimated normal density function helps guide to make decisions on confirmation of normality. Full description of this methodology can be found in the article by Wijesuriya (2025) <[doi:10.1080/03610926.2024.2440583](https://doi.org/10.1080/03610926.2024.2440583)>.

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Encoding UTF-8

Imports ggplot2

RoxygenNote 7.3.2

Suggests knitr, rmarkdown, testthat (>= 3.0.0)

VignetteBuilder knitr

Config/testthat/edition 3

NeedsCompilation no

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|--------|---|
| adplot | <i>Creates Ad-plot for the provided data.</i> |
|--------|---|

Description

Ad-plot identifies the characteristics of the distribution such as symmetry, skewness, and outliers of the data set.

Usage

```
adplot(X, title = "Ad-plot", xlab = "x", lcol = "black", rcol = "grey60", ...)
```

Arguments

| | |
|--------------------|---|
| <code>X</code> | an n by 1 matrix, equivalently, a column vector of length n , where n is the number of observations. |
| <code>title</code> | title of the plot, <i>Ad-plot</i> by default. |
| <code>xlab</code> | x -axis label, x by default. |
| <code>lcol</code> | color of the points corresponding to the data that are less than or equal to the sample average, <i>black</i> by default. |
| <code>rcol</code> | color of the points corresponding to the data that are greater than the sample average, <i>grey60</i> by default. |
| <code>...</code> | other graphical parameters. |

Value

Ad-plot

References

Wijesuriya, U. A. (2025). Ad-plot and Ud-plot for Determining Distributional Characteristics and Normality. *Communications in Statistics-Theory and Methods*, [doi:10.1080/03610926.2024.2440583](https://doi.org/10.1080/03610926.2024.2440583).

Examples

```
set.seed(0)
X1 <- matrix(rnorm(50, mean = 2, sd = 5))
adplot(X1)

X2 <- matrix(rf(50, df1 = 10, df2 = 5))
adplot(X2)

X3 <- matrix(rbeta(50, shape1 = 10, shape2 = 2))
adplot(X3, title="", lcol = "blue", rcol = "red")
```

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| udplot | <i>Creates Ud-plot for the provided data excluding and including the estimated normal density curve.</i> |
|--------|--|

Description

Ud-plot developed by a slight modification of Ad-plot can be utilized to assess normality.

Usage

```
udplot(X, npdf = FALSE, title = ifelse(npdf == FALSE, "Ud-plot",  
  "Ud-plot & Normal Density Curve"), xlab = "x", lcol = "black",  
  rcol = "grey60", pdfcol = "red", ...)
```

Arguments

| | |
|---------------------|---|
| <code>X</code> | an n by 1 matrix, equivalently, a column vector of length n , where n is the number of observations. |
| <code>npdf</code> | display of the estimated normal density curve in the Ud-plot, <i>FALSE</i> by default. |
| <code>title</code> | title of the plot, <i>Ud-plot</i> by default and <i>Ud-plot & Normal Density Curve</i> otherwise. |
| <code>xlab</code> | x -axis label, x by default. |
| <code>lcol</code> | color of the points corresponding to the data that are less than or equal to the sample average, <i>black</i> by default. |
| <code>rcol</code> | color of the points corresponding to the data that are greater than the sample average, <i>grey60</i> by default. |
| <code>pdfcol</code> | color of the estimated normal density curve, <i>red</i> by default. |
| <code>...</code> | other graphical parameters. |

Value

Ad-plot

References

Wijesuriya, U. A. (2025). Ad-plot and Ud-plot for Determining Distributional Characteristics and Normality. *Communications in Statistics-Theory and Methods*, doi:10.1080/03610926.2024.2440583.

Examples

```
set.seed(0)  
X1 <- matrix(rnorm(50, mean = 2, sd = 5))  
udplot(X1)  
  
X2 <- matrix(rnorm(50, mean = 2, sd = 5))  
udplot(X2, npdf = TRUE)
```

```
X3 <- matrix(rnorm(500, mean = 2, sd = 5))  
udplot(X3, npdf = TRUE, title = "", lcol = "blue", rcol = "red", pdfcol = "black")
```

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