Package ‘frequentdirections’

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Type Package
Title Implementation of Frequent-Directions Algorithm for Efficient Matrix Sketching
Version 0.1.0

URL https://github.com/shinichi-takayanagi/frequentdirections

BugReports https://github.com/shinichi-takayanagi/frequentdirections/issues

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Encoding UTF-8

Imports ggplot2,
Suggests testthat, knitr, rmarkdown

LazyData true

RoxygenNote 6.1.1

NeedsCompilation no

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Repository CRAN

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plot_svd

Plot data using the first and second singular vector

Description
Plot data using the first and second singular vector

Usage
plot_svd(a, label = NULL, b = a)

Arguments

a
Original matrix to be sketched (n x m)

label
Group index for each a’s row. These values are used for group and color.

b
A sketched matrix (l x m)

Examples

# Dummy data
size_col <- 50
size_row <- 10^3
x <- matrix(
  c(rnorm(size_row * size_col), rnorm(size_row * size_col, mean=1)),
  ncol = size_col, byrow = TRUE
)
x <- scale(x)
y <- rep(1:2, each=size_row)
# Show 2D plot using SVD
frequentdirections::plot_svd(x, y)
# Matrix Sketching(l=6)
b <- frequentdirections::sketching(x, 6, 10^(-8))
# Show 2D plot using sketched matrix and show similar result with the above
# That means that 6 dim is enough to express the original data matrix (x)
frequentdirections::plot_svd(x, y, b)

sketching
Compute a sketch matrix of input matrix

Description
Compute a sketch matrix of input matrix

Usage
sketching(a, l, eps = 10^(-8))
**sketching**

**Arguments**

- **a**: Original matrix to be sketched (n x m)
- **l**: The number of rows in sketched matrix (l x m)
- **eps**: If a value is smaller than eps, that is considered as equal to zero. The default value is $10^{-8}$

**Examples**

```r
# Dummy data
size_col <- 50
size_row <- 10^3
x <- matrix(
  c(rnorm(size_row * size_col), rnorm(size_row * size_col, mean=1)),
  ncol = size_col, byrow = TRUE
)

x <- scale(x)
y <- rep(1:2, each=size_row)
# Show 2D plot using SVD
frequentdirections::plot_svd(x, y)
# Matrix Sketching(l=6)

b <- frequentdirections::sketching(x, 6, 10^(-8))
# Show 2D plot using sketched matrix and show similar result with the above
# That means that 6 dim is enough to express the original data matrix (x)
frequentdirections::plot_svd(x, y, b)
```
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