Package ‘frequentdirections’

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Type Package

Title Implementation of Frequent-Directions Algorithm for Efficient Matrix Sketching

Version 0.1.0

Description Implement frequent-directions algorithm for efficient matrix sketching.

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))
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

# Dummy data
dim_col <- 50
dim_row <- 10^3
x <- matrix(c(rnorm(dim_row * dim_col), rnorm(dim_row * dim_col, mean=1)),
    ncol = dim_col, byrow = TRUE)
x <- scale(x)
y <- rep(1:2, each=dim_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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