Package 'frequentdirections'

October 13, 2022

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. (Edo Liberty (2013) <doi:10.1145/2487575.2487623>).

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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R topics documented:

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 Skethinc(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
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 Skethinc(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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