

# Package: frequentdirections (via r-universe)

September 11, 2024

**Type** Package

**Title** Implementation of Frequent-Directions Algorithm for Efficient Matrix Sketching

**Version** 0.1.1

**Description** Implement frequent-directions algorithm for efficient matrix sketching. (Edo Liberty (2013) <[doi:10.1145/2487575.2487623](https://doi.org/10.1145/2487575.2487623)>).

**URL** <https://github.com/shinichi-takayanagi/frequentdirections>

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

**License** MIT + file LICENSE

**Encoding** UTF-8

**Remotes** github::stillmatic/MNIST

**Imports** ggplot2,

**Suggests** testthat, knitr, rmarkdown, MNIST

**LazyData** true

**Roxygen** list(markdown = TRUE)

**RoxygenNote** 6.1.1

**VignetteBuilder** knitr

**Repository** <https://shinichi-takayanagi.r-universe.dev>

**RemoteUrl** <https://github.com/shinichi-takayanagi/frequentdirections>

**RemoteRef** HEAD

**RemoteSha** b974c883e69b6e0ee9dbb0e8475adb60dd0b214d

## Contents

plot_svd . . . . .	2
sketching . . . . .	2

<b>Index</b>	<b>4</b>
--------------	----------

---

 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)
```

# Index

`plot_svd`, 2

`sketching`, 2