Package 'Homework1'

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Type Package

Title Advanced Statistics Computing HW1 Fast Algorithm

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Description

Homework 1 in Advanced Statistics Computing Class which includes two functions.One function is to fit a fast linear model and the other function is to calculate multivariate normal densities.

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R topics documented:

`Homework1-package` *Homework 1*

Description

Advanced Statistics Computing Homework 1 which includes fastlm() and dmvnorm() two functions.

Details

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run fastlm() to fit a linear model and dmvnorm() to evaluate mvn density.

Author(s)

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References

Advanced Statistics Computing Class. Dr. Peng.

`dmvnorm` *Fast Multivariate Normal Density*

Description

Evaluates the k-dimensional multivariate Normal density with mean mu and covariance matrix S.

Usage

```
dmvnorm(x, mu, S, log = TRUE)
```

Arguments

`x`	x is a n-by-k matrix with each row is a sample from a k-dimensional multivariate normal distribution
`mu`	mu is the mean vector of length k for the given multivariate normal distribution.
`S`	S is the p-by-p variance covariance matrix for the given multivariate normal distribution.
`log`	if log=TRUE which is the default value, the logged density values will be returned otherwise the original density value will be returned.

Details

This function evaluates the k-dimensional multivariate Normal density with mean mu and covariance matrix S.

Value

A vector of length n of density values will be returned. n is the number of rows of input matrix x.

Author(s)

Yu Du

References

Advanced Statistics Computing Class, Dr. Peng.

`fastlm` *Fast Linear Model Fitting*

Description

fit a linear regression model to outcome data y and predictor data in a matrix X.

Usage

```
fastlm(X, y, na.rm = FALSE)
```

Arguments

`X`	X is a design matrix including predictor data and intercept.
`y`	y is a vector of outcome data.
`na.rm`	na.rm=TRUE to remove NA values otherwise the default value is FALSE.

Details

This function fits a linear regression model to outcome data y and predictor data in a matrix X. Matrix X also includes the intercept,i.e. the design matrix. This is faster than lm.fit().

Value

`coefficients`	The coefficients returned are the fitted regression coefficient to the input dataset.
`vcov`	The vcov returned is the variance-covariance matrix of the estimated coefficients.

Author(s)

Yu Du

References

Advanced Statistics Computing Class, Dr. Peng.

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