Package 'RcppLbfgsBlaze'

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Type Package

Title 'L-BFGS' Algorithm Based on 'Blaze' for 'R' and 'Rcpp'

Version 0.1.0

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URL https://github.com/ChingChuan-Chen/RcppLbfgsBlaze,
    https://github.com/ChingChuan-Chen/LBFGS-blaze,
    https://github.com/ZJU-FAST-Lab/LBFGS-Lite,
    https://bitbucket.org/blaze-lib/blaze/src/master/

BugReports https://github.com/Chingchuan-chen/RcppLbfgsBlaze/issues

Description The 'L-
    BFGS' algorithm is a popular optimization algorithm for unconstrained optimization problems.
    'Blaze' is a high-performance 'C++' math library for dense and sparse arithmetic.
    This package provides a simple interface to the 'L-BFGS' algorithm and allows users to optimize
    their objective functions with 'Blaze' vectors and matrices in 'R' and 'Rcpp'.

Depends R (>= 4.2.0)

Imports Rcpp (>= 1.0.0), RcppBlaze (>= 1.0.0)

LinkingTo Rcpp, RcppBlaze

Suggests tinytest, microbenchmark

LazyLoad yes

Encoding UTF-8

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RoxygenNote 7.3.1

NeedsCompilation yes

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Repository CRAN

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RcppLbfgsBlaze - Rcpp interface to the L-BFGS algorithm with Blaze

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Description

RcppLbfgsBlaze constructs a simple interface to the **L-BFGS** algorithm based on **Blaze** for R and **Rcpp**.

Details

This package provides an implementation of the **L-BFGS** algorithm based on **Blaze** for R and **Rcpp**. The **L-BFGS** algorithm is a popular optimization algorithm for unconstrained optimization problems. **Blaze** is a high-performance **C++** math library for dense and sparse arithmetic. The package provides a simple interface to the **L-BFGS** algorithm and allows users to optimize their objective functions with Blaze vectors and matrices in R and **Rcpp**.

Using RcppLbfgsBlaze

The simplest way to get started is to create a skeleton of a package using **RcppLbfgsBlaze**.

The important steps are

1. Include the 'RcppBlaze.h' and 'lbfgs.h' header files.

2. Import Rcpp. LinkingTo Rcpp, RcppBlaze and RcppLbfgsBlaze by adding these lines to the 'DESCRIPTION' file:

   ```
   Imports: Rcpp (>= 1.0.0)
   LinkingTo: Rcpp, RcppBlaze (>= 1.0.0), RcppLbfgsBlaze
   ```

3. Link against the BLAS and LAPACK libraries, by adding following two lines in the 'Makevars' and 'Makevars.win' files:

   ```
   PKG_CXXFLAGS=$(SHLIB_OPENMP_CXXFLAGS)
   PKG_LIBS = $(LAPACK_LIBS) $(BLAS_LIBS) $(FLIBS) $(SHLIB_OPENMP_CXXFLAGS)
   ```

Author(s)

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References

1. Blaze project: <https://bitbucket.org/blaze-lib/blaze>.

2. LBFGS-blaze: <https://github.com/ChingChuan-Chen/LBFGS-blaze>

3. LBFGS-Lite: <https://github.com/ZJU-FAST-Lab/LBFGS-Lite>

4. liblbfgs: <https://github.com/chokkan/liblbfgs>

See Also

Useful links:

- <https://github.com/ChingChuan-Chen/RcppLbfgsBlaze>

- <https://github.com/ChingChuan-Chen/LBFGS-blaze>

- <https://github.com/ZJU-FAST-Lab/LBFGS-Lite>

- <https://bitbucket.org/blaze-lib/blaze/src/master/>

- Report bugs at <https://github.com/Chingchuan-chen/RcppLbfgsBlaze/issues>

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fastLogisticModel	*Logistic Regression Fitting Using L-BFGS Algorithm*

Description

This function leverage `blaze` and `LBFGS-Blaze` to efficiently fit logistic regression.

Usage

```
fastLogisticModel(X, y)
```

Arguments

X	The model matrix.
y	The response vector.

Value

A list of L-BFGS optimization result.

Examples

```
X <- matrix(rnorm(5000), 1000)
coef <- runif(5, -3, 3)
y <- sapply(1 / (1 + exp(-X %*% coef)), function(p) rbinom(1, 1, p), USE.NAMES = FALSE)

fit <- fastLogisticModel(X, y)
```

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