

Package ‘flexiblas’

July 22, 2025

Type Package

Title 'FlexiBLAS' API Interface

Version 3.4.0

Description Provides functions to switch the 'BLAS'/'LAPACK' optimized backend and change the number of threads without leaving the R session, which needs to be linked against the 'FlexiBLAS' wrapper library
<<https://www.mpi-magdeburg.mpg.de/projects/flexiblas>>.

License LGPL (>= 3)

Encoding UTF-8

OS_type unix

URL <https://github.com/Enchufa2/r-flexiblas>

BugReports <https://github.com/Enchufa2/r-flexiblas/issues>

Suggests tinytest

RoxygenNote 7.1.1

NeedsCompilation yes

Author Iñaki Ucar [aut, cph, cre] (ORCID:
<<https://orcid.org/0000-0001-6403-5550>>),
Martin Koehler [aut, cph] (ORCID:
<<https://orcid.org/0000-0003-2338-9904>>)

Maintainer Iñaki Ucar <iucar@fedoraproject.org>

Repository CRAN

Date/Publication 2024-01-11 10:00:09 UTC

Contents

flexiblas-package	2
flexiblas-backends	2
flexiblas-threads	4
flexiblas_avail	5
flexiblas_version	5

Index	6
--------------	----------

flexiblas-package

flexiblas: *FlexiBLAS API Interface for R*

Description

Provides functions to switch the BLAS/LAPACK optimized backend and change the number of threads without leaving the R session, which needs to be linked against the FlexiBLAS wrapper library.

Author(s)

Martin Koehler, Iñaki Ucar

References

Koehler M., Saak J. (2020). "FlexiBLAS - A BLAS and LAPACK wrapper library with runtime exchangeable backends." [doi:10.5281/zenodo.3909214](https://doi.org/10.5281/zenodo.3909214).

flexiblas-backends*Handle Backends*

Description

Get current backend, list available ones, load and switch between backends.

Usage

```
flexiblas_current_backend()
```

```
flexiblas_list()
```

```
flexiblas_list_loaded()
```

```
flexiblas_load_backend(name)
```

```
flexiblas_switch(n)
```

Arguments

name character vector of backend names or paths (case insensitive).

n loaded backend index.

Value

`flexiblas_current_backend` and `flexiblas_list*` return a character vector of backend names or paths.

`flexiblas_load_backend` and `flexiblas_switch` return the indices of the loaded backends if the operation was successful, or fail otherwise.

See Also

[flexiblas_avail](#), [flexiblas_version](#), [flexiblas-threads](#)

Examples

```
n <- 2000
runs <- 10
ignore <- "__FALLBACK__"

A <- matrix(runif(n*n), nrow=n)
B <- matrix(runif(n*n), nrow=n)

# load backends
backends <- setdiff(flexiblas_list(), ignore)
idx <- flexiblas_load_backend(backends)

# benchmark
timings <- sapply(idx, function(i) {
  flexiblas_switch(i)

  # warm-up
  C <- A[1:100, 1:100] %%% B[1:100, 1:100]

  unname(system.time({
    for (j in seq_len(runs))
      C <- A %%% B
  })[3])
})

if (length(timings)) {
  results <- data.frame(
    backend = backends,
    `timing [s]` = timings,
    `performance [GFlops]` = (2 * (n / 1000)^3) / timings,
    check.names = FALSE)

  results[order(results$performance),]
}
```

flexiblas-threads	<i>Get/Set Number of Threads</i>
-------------------	----------------------------------

Description

Get or set the number of threads for the BLAS backend.

Usage

```
flexiblas_get_num_threads()
```

```
flexiblas_set_num_threads(n)
```

Arguments

n number of threads.

Value

flexiblas_get_num_threads returns the number of threads.

flexiblas_set_num_threads returns nothing.

See Also

[flexiblas_avail](#), [flexiblas_version](#), [flexiblas-backends](#)

Examples

```
max_threads <- 4
n <- 2000
runs <- 10

A <- matrix(runif(n*n), nrow=n)
B <- matrix(runif(n*n), nrow=n)

for (i in seq_len(max_threads)) {
  message("Set number of threads to: ", i)
  flexiblas_set_num_threads(i)

  print(system.time({
    for (j in seq_len(runs))
      C <- A %*% B
  })))
}
```

flexiblas_avail	<i>Check Availability</i>
-----------------	---------------------------

Description

Check whether FlexiBLAS is available.

Usage

```
flexiblas_avail()
```

Value

A boolean.

See Also

[flexiblas_version](#), [flexiblas-backends](#), [flexiblas-threads](#)

flexiblas_version	<i>Get Version</i>
-------------------	--------------------

Description

Get current version of FlexiBLAS.

Usage

```
flexiblas_version()
```

Value

A [package_version](#) object.

See Also

[flexiblas_avail](#), [flexiblas-backends](#), [flexiblas-threads](#)

Index

flexiblas-backends, [2](#), [4](#), [5](#)
flexiblas-package, [2](#)
flexiblas-threads, [3](#), [4](#), [5](#)
flexiblas_avail, [3–5](#), [5](#)
flexiblas_current_backend
 (flexiblas-backends), [2](#)
flexiblas_get_num_threads
 (flexiblas-threads), [4](#)
flexiblas_list (flexiblas-backends), [2](#)
flexiblas_list_loaded
 (flexiblas-backends), [2](#)
flexiblas_load_backend
 (flexiblas-backends), [2](#)
flexiblas_set_num_threads
 (flexiblas-threads), [4](#)
flexiblas_switch (flexiblas-backends), [2](#)
flexiblas_version, [3–5](#), [5](#)

package_version, [5](#)