Package ‘flexiblas’

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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)

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References


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

```r
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),]
}
```
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**

### Description
Check whether FlexiBLAS is available.

### Usage
`flexiblas_avail()`

### Value
A boolean.

### See Also
`flexiblas_version, flexiblas-backends, flexiblas-threads`

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**flexiblas_version**

### Description
Get current version of FlexiBLAS.

### Usage
`flexiblas_version()`

### Value
A `package_version` object.

### See Also
`flexiblas_avail, flexiblas-backends, flexiblas-threads`
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