

Package ‘beachmat.hdf5’

March 25, 2024

Version 1.0.0

Date 2023-08-07

Title beachmat bindings for HDF5-backed matrices

Description Extends beachmat to support initialization of tatami matrices from HDF5-backed arrays. This allows C++ code in downstream packages to directly call the HDF5 C/C++ library to access array data, without the need for block processing via DelayedArray. Some utilities are also provided for direct creation of an in-memory tatami matrix from a HDF5 file.

Encoding UTF-8

Imports methods, beachmat, HDF5Array, DelayedArray, Rcpp

Suggests testthat, BiocStyle, knitr, rmarkdown, rhdf5, Matrix

LinkingTo Rcpp, beachmat, Rhdf5lib

biocViews DataRepresentation, DataImport, Infrastructure

License GPL-3

NeedsCompilation yes

VignetteBuilder knitr

SystemRequirements C++17, GNU make

RoxygenNote 7.2.3

git_url <https://git.bioconductor.org/packages/beachmat.hdf5>

git_branch RELEASE_3_18

git_last_commit be7f6c9

git_last_commit_date 2023-10-24

Repository Bioconductor 3.18

Date/Publication 2024-03-25

Author Aaron Lun [aut, cre]

Maintainer Aaron Lun <infinite.monkeys.with.keyboards@gmail.com>

R topics documented:

initializeCpp	2
loadIntoMemory	3
Index	4

initializeCpp	<i>Initialize HDF5-backed matrices.</i>
---------------	---

Description

Initialize C++ representations of HDF5-backed matrices based on their **HDF5Array** representations.

Usage

```
## S4 method for signature 'H5SparseMatrixSeed'
initializeCpp(x, ..., memorize = FALSE)

## S4 method for signature 'HDF5ArraySeed'
initializeCpp(x, ..., memorize = FALSE)
```

Arguments

x	A HDF5Array seed object.
...	Further arguments, ignored.
memorize	Logical scalar specifying whether to load the matrix data in x into memory, if it has not already been loaded. See checkMemoryCache for details.

Value

An external pointer that can be used in any **tatami**-compatible function.

Author(s)

Aaron Lun

Examples

```
library(HDF5Array)
y <- matrix(runif(1000), ncol=20, nrow=50)
z <- as(y, "HDF5Array")
ptr <- initializeCpp(z)
```

loadIntoMemory	<i>Load a HDF5 matrix into memory</i>
----------------	---------------------------------------

Description

Load a HDF5-backed matrix into memory as an external pointer to a **tatami**-compatible representation. This differs from the (default) behavior of `initializeCpp`, which only loads slices of the matrix on request.

Usage

```
loadIntoMemory(x, force.integer = FALSE)
```

Arguments

<code>x</code>	A HDF5Array -derived matrix or seed object.
<code>force.integer</code>	Whether to force floating-point values to be integers to reduce memory consumption.

Value

An external pointer that can be used in **tatami**-based functions.

Author(s)

Aaron Lun

Examples

```
library(HDF5Array)
y <- matrix(runif(1000), ncol=20, nrow=50)
z <- as(y, "HDF5Array")
ptr <- loadIntoMemory(z)
```

Index

`checkMemoryCache`, [2](#)

`initializeCpp`, [2](#), [3](#)

`initializeCpp, H5SparseMatrixSeed-method`
(`initializeCpp`), [2](#)

`initializeCpp, HDF5ArraySeed-method`
(`initializeCpp`), [2](#)

`loadIntoMemory`, [3](#)