Package 'OctMatrix'

January 8, 2015

Type Package

Title A scalable matrix operations package runs on the single-node R or distributed computing platforms.

Version 0.1

Date 2015-01-05

Author PASALab

Maintainer PASALab <yhuang@nju.edu.cn>

Depends R (>= 3.0), methods, rJava, Matrix

Description A high-level analytical programming package provides ease-to-use scalable matrix operations from R and executes computation on the single-node R or distributed computing frameworks such as Spark, Hadoop, MPI, etc.

Encoding UTF-8

License xxx

R topics documented:

`*,ANY,OctMatrix-method`
matrix elemwise multiply

Description

matrix elemwise multiply

Usage

```
numeric * matrix, matrix * numeric, matrix * matrix(elemwise)
```

Arguments

`e2`	a numeric or an OctMatrix
`e1`	a numeric or an OctMatrix

`+,ANY,OctMatrix-method`
matrix add

Description

matrix add

Usage

```
numeric + matrix, matrix + numeric, matrix + matrix
```

Arguments

`e2`	a numeric or an OctMatrix
`e1`	a numeric or an OctMatrix

Value

an OctMatrix

`-,ANY,OctMatrix-method`
matrix minus

Description

matrix minus

Usage

```
numeric - matrix, matrix - numeric, matrix - matrix
```

Arguments

`e2`	a numeric or an OctMatrix
`e1`	a numeric or an OctMatrix

Value

an OctMatrix

`/,ANY,OctMatrix-method`
/ matrix divide

Description

/ matrix divide

Usage

```
numeric / matrix, matrix / numeric, matrix / matrix(elemwise)
```

Arguments

`e1`	a numeric or an OctMatrix
`e2`	a numeric or an OctMatrix

`apply,OctMatrix,numeric,function-method`
apply a function to matrix, MARGIN can only be 2 or c(1,2)

Description

apply a function to matrix, MARGIN can only be 2 or c(1,2)

Usage

```
## S4 method for signature 'OctMatrix,numeric,`function`'
apply(X, MARGIN, FUN)
```

Arguments

`X`	matrix
`MARGIN`	: 1 indicates rows, 2 indicates columns, c(1, 2) indicates rows and columns.
`FUN`	function which applied to matrix

`as.matrix,OctMatrix-method`
transform OctMatrix to R matrix

Description

transform OctMatrix to R matrix

Usage

```
## S4 method for signature 'OctMatrix'
as.matrix(x)
```

Arguments

`x`	OctMatrix

Value

R matrix

cbind2,OctMatrix,OctMatrix-method

bind x and y via columns

Description

bind x and y via columns

Usage

```
## S4 method for signature 'OctMatrix,OctMatrix'
cbind2(x, y)
```

Arguments

x	OctMatrix
y	OctMatrix

Value

the binding OctMatrix

dim,OctMatrix-method

calculate the rows and cols of matrix

Description

calculate the rows and cols of matrix

Usage

```
## S4 method for signature 'OctMatrix'
dim(x)
```

Arguments

x	matrix

Value

first value is row number, second is col number

GetSparkCores *get the spark calcaluate cores*

Description

get the spark calcaluate cores

Usage

```
GetSparkCores()
```

GetSparkPartitions *get the spark default partitions*

Description

get the spark default partitions

Usage

```
GetSparkPartitions()
```

inv,OctMatrix-method *the inv of a OctMatrix*

Description

the inv of a OctMatrix

Usage

```
## S4 method for signature 'OctMatrix'
inv(x)
```

Arguments

x	a square OctMatrix

`length.OctMatrix` *calculate the size of matrix*

Description

calculate the size of matrix

Usage

```
## S3 method for class 'OctMatrix'
length(x)
```

Arguments

x	vector or matrix

`max,OctMatrix-method` *the max value of all the elements of matrix.*

Description

the max value of all the elements of matrix.

Usage

```
## S4 method for signature 'OctMatrix'
max(x)
```

Arguments

x	Matrix

`mean,OctMatrix-method` *the mean value of all the elements of matrix.*

Description

the mean value of all the elements of matrix.

Usage

```
## S4 method for signature 'OctMatrix'
mean(x)
```

Arguments

x	OctMatrix

`min,OctMatrix-method` *the min value of all the elements of matrix.*

Description

the min value of all the elements of matrix.

Usage

```
## S4 method for signature 'OctMatrix'
min(x)
```

Arguments

`x`	Matrix

`OctMatrix` *OctMatrix.*

Description

OctMatrix.

construct Matrix from vector, the matrix is filled by columns

Usage

```
OctMatrix(data, nrow = 1, ncol = 1, engineType = "R", byrow = FALSE)
```

Arguments

`data`	vector or matrix, if data is a matrix, can not specify the nrow and ncol
`nrow`	rows of matrix
`ncol`	cols of matrix
`engineType`	which type of matrix, "R" "Spark" "Mpi" "Hadoop"
`byrow`	logical. If FALSE (the default) the matrix is filled by columns, otherwise the matrix is filled by rows.

`OctMatrix-class` *the Matrix Class*

Description

the Matrix Class

`ones` *construct nrow * ncol matrix which elements are 1*

Description

construct nrow * ncol matrix which elements are 1

Usage

```
ones(nrow, ncol = nrow, type = "R")
```

Arguments

`nrow`	row number
`ncol`	column number
`type`	which type of matrix, "R" "Spark" "Mpi" "Hadoop"

Value

an OctMatrix contains nrow * ncol elements 1

`print,OctMatrix-method` *print the matrix*

Description

print the matrix

Usage

```
## S4 method for signature 'OctMatrix'
print(x)
```

Arguments

`x`	matrix

ReadOctMatrix *construct Matrix from file*

Description

construct Matrix from file

Usage

```
ReadOctMatrix(filePath, engineType = "R")
```

Arguments

filePath	where to load a matrix(support local, hdfs and tachyon), must be a directory
engineType	which type of matrix, "R" "Spark" "Mpi" "Hadoop"

Value

an OctMatrix

rep,OctMatrix-method *repeat OctMatrix*

Description

repeat OctMatrix

Usage

```
## S4 method for signature 'OctMatrix'
rep(x, times)
```

Arguments

x	OctMatrix, number of its column must be 1, otherwise result not defined
times	the repeated number of x

SetSparkLazyCalCulation *set the mode of spark calculation*

Description

set the mode of spark calculation

Usage

```
SetSparkLazyCalCulation(mode)
```

Arguments

mode	TRUE(1) for lazy, FALSE(0) for instant

SetSparkPartitions *set the spark initial partitions*

Description

set the spark initial partitions

Usage

```
SetSparkPartitions(parts)
```

Arguments

parts	the number of partitions

split,OctMatrix,OctMatrix-method *split divides the data in the OctMatrix x into the groups defined by f*

Description

split divides the data in the OctMatrix x into the groups defined by f

Usage

```
## S4 method for signature 'OctMatrix,OctMatrix'
split(x, f)
```

Arguments

x	OctMatrix
f	OctMatrix

Value

list of OctMatrix

`sum,OctMatrix-method` *the sum of all the elements of OctMatrix*

Description

the sum of all the elements of OctMatrix

Usage

```
## S4 method for signature 'OctMatrix'
sum(x)
```

Arguments

`x`	OctMatrix

`t,OctMatrix-method` *Matrix Transpose*

Description

Matrix Transpose

Usage

```
## S4 method for signature 'OctMatrix'
t(x)
```

Arguments

`x`	OctMatrix

WriteOctMatrix *write OctMatrix to file*

Description

write OctMatrix to file

Usage

```
WriteOctMatrix(m, filePath, name = "N/A")
```

Arguments

m	OctMatrix
filePath	where to save OctMatrix(support local, hdfs and tachyon)
name	the matrix name if needed, default 'N/A'

zeros *construct nrow * ncol matrix which elements are 0*

Description

construct nrow * ncol matrix which elements are 0

Usage

```
zeros(nrow, ncol = nrow, type = "R")
```

Arguments

nrow	row number
ncol	column number
type	which type of matrix, "R" "Spark" "Mpi" "Hadoop"

Value

an OctMatrix contains nrow * ncol elements 0

`[,OctMatrix,ANY,ANY,ANY-method`
get the elements in matrix

Description

get the elements in matrix

Usage

```
m[i,j], m[i,], m[,j],m[]
i,j can be a vector, if < 0 means not include
```

Arguments

x	matrix
i	numeric or missing(to get multi rows, i should be rowStart:rowEnd)
j	numeric or missing(to get multi columns, j should be colStart:colEnd)

Value

a matrix contains the included elements

`%*%,OctMatrix,OctMatrix-method`
matrix multiply

Description

matrix multiply

Usage

```
## S4 method for signature 'OctMatrix,OctMatrix'
x %*% y
```

Arguments

x	an OctMatrix
y	an OctMatrix

Index