Package: phantasus (via r-universe)

October 4, 2024

Title Visual and interactive gene expression analysis

Version 1.25.4

Description Phantasus is a web-application for visual and interactive
gene expression analysis. Phantasus is based on Morpheus – a
web-based software for heatmap visualisation and analysis,
which was integrated with an R environment via OpenCPU API.
Aside from basic visualization and filtering methods, R-based
methods such as k-means clustering, principal component
analysis or differential expression analysis with limma package
are supported.

URL https://alserglab.wustl.edu/phantasus

BugReports https://github.com/ctlab/phantasus/issues

Depends R (>= 4.3)

biocViews GeneExpression, GUI, Visualization, DataRepresentation,
Transcriptomics, RNASeq, Microarray, Normalization, Clustering,
DifferentialExpression, PrincipalComponent, ImmunoOncology

Imports ggplot2, protolite, Biobase, GEOquery, Rook, htmltools,
httpuv, jsonlite, limma, edgeR, opencpu, assertthat, methods,
httr, rhdf5, utils, parallel, stringr, fgsea (>= 1.9.4),
svglite, gtable, stats, Matrix, pheatmap, scales, ccaPP, grid,
grDevices, AnnotationDbi, DESeq2, data.table, curl, apeglm,
tidyr, config (>= 0.3.2), rhdf5client (>= 1.25.1), yaml, fs,
phantasusLite, XML

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Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

Suggests testthat, BiocStyle, knitr, rmarkdown, org.Hs.eg.db,
org.Mm.eg.db

VignetteBuilder knitr

NeedsCompilation no

Config/build/copy-method link

Repository https://bioc.r-universe.dev

RemoteUrl https://github.com/bioc/phantasus

RemoteRef HEAD

RemoteSha f315c84ab007cd560ee96266aab5f6b093d8314d

Contents

es   *Example dataset*

Description

Small slice from GSE27112-GPL6103 for runnable examples.

Usage

```
data(es)
```

Format

An object of class `ExpressionSet` with 20 rows and 5 columns.

Examples

```
## Not run:
data(es)
performKmeans(es, k = 2)

## End(Not run)
```

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fgseaExample   *Example pathway data.frame for fgsea tool*

Description

Example pathway data.frame for fgsea tool

---

generatePreloadedSession

Generate files for preloaded session from a session link.

Description

Generate files for preloaded session from a session link.

Usage

```
generatePreloadedSession(sessionURL, preloadedName, preloadedDir)
```

Arguments

sessionURL	String with session link produced by phantasus.
preloadedName	String with name that should be assigned to the session.
preloadedDir	Path to the directory with preloaded datasets and sessions.

Value

Function produces two files (preloadedName.rda with ExpressionSet and preloadedName.json with session features) in preloadedDir folder.

Examples

```
## Not run:
sessionURL <- "https://ctlab.itmo.ru/phantasus/?session=x063c1b365b9211" # link from 'Get dataset link...' tool ir
newName <- "my_session" # user defined name
preloadedDir <- "./preloaded" # directory where files will be stored. In order too get access through phantasus web-
dir.create(preloadedDir, showWarnings = FALSE)
generatePreloadedSession(sessionURL= sessionURL,
                         preloadedName = newName,
                         preloadedDir = preloadedDir)

servePhantasus(preloadedDir=preloadedDir, openInBrowser=FALSE)
# open browser manually at http://0.0.0.0:8000/phantasus/index.html?preloaded=my_session

## End(Not run)
```

---

getES   *Load ExpressionSet by GEO identifier*

Description

getES return the ExpressionSet object(s) corresponding to GEO identifier.

Usage

```
getES(
  name,
  type = NA,
  destdir = getPhantasusConf("cache_folders")$geo_path,
  mirrorPath = getPhantasusConf("geo_mirrors")
)
```

Arguments

name	String, containing GEO identifier of the dataset. It should start with 'GSE' or 'GDS' and can include exact GPL to annotate dataset, separated with dash ('-') from the identifier.
type	Type of the dataset: 'GSE' or 'GDS'. If not specified, the function will take first three letters of name variable as type.
destdir	Directory for caching loaded Series and GPL files from GEO database.
mirrorPath	URL string which specifies the source of matrices.

Value

List of ExpressionSet objects, that were available by given in name variable GEO identifier.

Examples

```
## Not run:
    getES('GSE14308', type = 'GSE', destdir = 'cache')
    getES('GSE27112')
    getES('GDS4922')

## End(Not run)
```

---

getGDS   *Load ExpressionSet from GEO Datasets*

Description

getGDS return the ExpressionSet object corresponding to GEO Dataset identifier.

Usage

```
getGDS(
  name,
  destdir = getPhantasusConf("cache_folders")$geo_path,
  mirrorPath = getPhantasusConf("geo_mirrors")
)
```

Arguments

name	String, containing GEO identifier of the dataset. It should start with 'GSE' or 'GDS' and can include exact GPL to annotate dataset, separated with dash ('-') from the identifier.
destdir	Directory for caching loaded Series and GPL files from GEO database.
mirrorPath	URL string which specifies the source of matrices.

Value

ExpressionSet object wrapped in list, that was available by given in name variable GEO identifier.

Examples

```
## Not run:
   getGDS('GDS4922', destdir = tempdir(), mirrorPath = "https://ftp.ncbi.nlm.nih.gov")

## End(Not run)
```

---

getGSE   *Load ExpressionSet from GEO Series*

Description

getGSE return the ExpressionSet object(s) corresponding to GEO Series Identifier.

Usage

```
getGSE(
  name,
  destdir = getPhantasusConf("cache_folders")$geo_path,
  mirrorPath = getPhantasusConf("geo_mirrors")
)
```

Arguments

name	String, containing GEO identifier of the dataset. It should start with 'GSE' or 'GDS' and can include exact GPL to annotate dataset, separated with dash ('-') from the identifier.
destdir	Directory for caching loaded Series and GPL files from GEO database.
mirrorPath	URL string which specifies the source of matrices.

Value

List of ExpressionSet objects, that were available by given in name variable GEO identifier.

Examples

```
## Not run:
    getGSE('GSE14308', destdir = 'cache')
    getGSE('GSE27112')
    getGSE('GSE53986')

## End(Not run)
```

---

getPhantasusConf   *Read Phantasus Config*

Description

Read Phantasus Config

Usage

```
getPhantasusConf(
  value = NULL,
  configName = Sys.getenv("R_CONFIG_ACTIVE"),
  file = file.path(tools::R_user_dir(package = "phantasus", which = "config"),
    "user.conf")
)
```

Arguments

`value`	Value to retrieve from the config file.
`configName`	R_CONFIG_ACTIVE value. If unset, "default".
`file`	Location of the config file

`read.gct`	*Reads ExpressionSet from a GCT file. Function is deprecated, please use phantasusLite:::readGct() instead*

Description

Reads ExpressionSet from a GCT file. Function is deprecated, please use phantasusLite:::readGct() instead

Usage

```
read.gct(...)
```

Arguments

`...`	parameters for phantasusLite:::readGct() call

Value

ExpressionSet object

`reparseCachedESs`	*Reparse cached expression sets from GEO.*

Description

The function should be used on phantasus version updates that change behavior of loading datasets from GEO. It finds all the datasets that were cached and runs 'getES' for them again. The function uses cached Series and other files from GEO.

Usage

```
reparseCachedESs(destdir, mirrorPath = getPhantasusConf("geo_mirrors"))
```

Arguments

`destdir`	Directory used for caching loaded Series files from GEO database.
`mirrorPath`	URL string which specifies the source of matrices.

Value

vector of previously cached GSE IDs

Examples

```
reparseCachedESs(destdir=tempdir(), "https://ftp.ncbi.nlm.nih.gov")
```

---

servePhantasus   *Serve phantasus.*

Description

servePhantasus starts http server handling phantasus static files and opencpu server.

Usage

```
servePhantasus(
  host = getPhantasusConf("host"),
  port = getPhantasusConf("port"),
  staticRoot = getPhantasusConf("static_root"),
  preloadedDir = getPhantasusConf("preloaded_dir"),
  openInBrowser = TRUE,
  quiet = TRUE,
  background = FALSE
)
```

Arguments

host	Host to listen.
port	Port to listen.
staticRoot	Path to static files with phantasus.js (on local file system).
preloadedDir	Full path to directory with preloaded files.
openInBrowser	Boolean value which states if application will be automatically loaded in default browser.
quiet	Boolean value which states whether the connection log should be hidden (default: TRUE)
background	Boolean value which states whether the server should be started in background (default: FALSE)

Value

A handle to the server as returned by 'httpuv::startServer'

Examples

```
## Not run:
s <- servePhantasus(background=FALSE)
s$stop()

## End(Not run)

httpuv::stopAllServers() # can be used if handle is lost
```

---

setupPhantasus	*Setup phantasus. Read user config file (or create default one) and fill* `cache_root` *using sources in* `file`*.*

Description

Setup phantasus. Read user config file (or create default one) and fill `cache_root` using sources in `file`.

Usage

```
setupPhantasus(setup_name = "default", file = confFile("setup.yml"))
```

Arguments

setup_name	name of config from `file`. If unset or not existed, "default".
file	Location of the setup.yml file with setup parameters. If not existed use file from package

---

write.gct	*Saves ExpressionSet to a GCT file (version 1.3). Function is deprecated, please use phantasusLite:::writeGct() instead*

Description

Saves ExpressionSet to a GCT file (version 1.3). Function is deprecated, please use phantasusLite:::writeGct() instead

Usage

```
write.gct(...)
```

Arguments

...	parameters for phantasusLite:::writeGct() call

Value

Result of the closing file (as in 'close()' function')

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