Package ‘trackr’

May 24, 2021

Type Package

Title Semantic Annotation and Discoverability System for R-Based Artifacts

Version 0.10.7

Date 2021-05-20

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Description Automatically annotates R-based artifacts with relevant descriptive and provenance-related and provides a backend-agnostic storage and discoverability system for organizing, retrieving, and interrogating such artifacts.

License Artistic-2.0

Depends histry (>= 0.2.1)

Imports fastdigest, ggplot2, lattice, gridGraphics, methods.

CodeDepends (>= 0.6.2), RJJSONIO, rsolr, htmltools, miniUI, shiny, rmarkdown, roprov (>= 0.1.1), rlang

Suggests proto, png, httr, knitr, MASS, MEMSS, mlmRev, dplyr, gridExtra, rstudioapi, switchr (>= 0.12.99)

VignetteBuilder knitr

Collate 'Classes.R' 'DocCollectionRef-methods.R' 'Generics.R'

'PlotWrapper.R' 'ObjFeatureSet.R' 'Trackr-main-API.R'

'abbrev.R' 'accessor-methods.R' 'autotrack.R' 'backend-impls.R'

'coercerender.R' 'convenience_constructors.R'

'ggplotversions.R' 'knitr.R' 'makeRStudioExtras.R'

'parseCode.R' 'recordFile.R' 'shiny.R' 'showMethods.R'

RoxygenNote 7.1.1

NeedsCompilation no

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Repository CRAN

Date/Publication 2021-05-24 14:50:02 UTC
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**annotationText**

Accessor method for the annotation text (slot "annotationtext") of the plot object.

**Description**

Get the text annotations for a plot object.

**Usage**

```r
annotationText(object)
```

## S4 method for signature 'PlotFeatureSet'
annotationText(object)

## S4 method for signature 'ggplot'
annotationText(object)

## S4 method for signature 'trellis'
annotationText(object)

## S4 method for signature 'gTree'
annotationText(object)

## S4 method for signature 'PlotFeatureSet'
annotationText(object)

**Arguments**

- `object`: An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

**Value**

A character vector of text annotations appearing on the plot.

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
annotationText(fs)
```
as.list  

*Convert objects to lists*

**Description**

Convert objects to lists.

**Usage**

```r
## S3 method for class 'FeatureSet'
as.list(x, ...)
## S3 method for class 'ScriptNodeInfo'
as.list(x, ...)
```

**Arguments**

- `x`: The object to convert to a list.
- `...`: Other named arguments (currently unused).

**Value**

A list.

---

codeInfo<-  

*Accessors for the code analysis information of FeatureSet objects*

**Description**

Get or set the analysis information for the code associated with a FeatureSet object. This should not be called directly.

**Usage**

```r
codeInfo(object) <- value
codeInfo(object)

## S4 replacement method for signature 'FeatureSet'
codeInfo(object) <- value

## S4 method for signature 'FeatureSet'
codeInfo(object)
```
**coordSystem**

**Arguments**

- **object**
  An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

- **value**
  A CodeDepends::ScriptInfo object.

**Value**

A modified object of (super)class PlotFeatureSet.

**Examples**

```r
mt = datasets::mtcars
fs = makeFeatureSet(mt)
codeInfo(fs)
```

**Description**

Get the coordinate system for a plot or PlotFeatureSet.

**Usage**

```r
coordSystem(object)
```

---

**Arguments**

- **object**
  An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.
Value

A character vector describing the coordinate system employed in the plot.

Examples

```
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
coordSystem(fs)
```

---

**dataLabels<--**  
*Accessors for the axis labels PlotFeatureSet objects*

### Description

Get or set the axis label information associated with a PlotFeatureSet object. This should not be called directly.

### Usage

```r
dataLabels(object) <- value
dataLabels(object)
```

### Arguments

- **object**
  
  An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.
value A named list of variable labels of the form list(x = "X axis label", y = "Y axis label", ...).

Value

A modified object of (super)class PlotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
dataLabels(fs)

dataNames

Accessor method for the variable names of the plot object. Not an exported method.

Description

Get the variable names from a PlotFeatureSet

Usage

dataNames(object)

Arguments

object An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

Value

A named list of variable names of the form list(x = "x.name", y = "y.name", groups = list(...)).
dataTypes accessor method for the variable types (slot "vartypes") of the plot object.

Description
Get the variable types from a plot feature set

Usage
dataTypes(object)

Arguments
object An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value
A named list of variable types of the form list(x = "numeric", y = "factor", ...).

Examples
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
dataTypes(fs)
**defaultTDB**

---

**defaultTDB**  
*default TrackrDB*

---

**Description**

Get or set the default TrackrDB in use (ie the one that is used when ‘record’ is used with no trackrdb specified.

**Usage**

`defaultTDB(trackrdb)`

**Arguments**

- `trackrdb`  
  TrackrDB. The TrackrDB to which objects will be recorded by default. If missing, the current default is returned.

---

**describePackage**

*Accessor method for ObjFeatureSet "analysispkg" slot.*

---

**Description**

The analysis package, if any, that was 'in use' (i.e., that contained the working directory that was active) when the result was recorded.

**Usage**

`describePackage(object)`

```r
## S4 method for signature 'FeatureSet'
describePackage(object)
```

**Arguments**

- `object`  
  An object of (super)class ObjFeatureSet.

**Value**

A list holding the name, title, and description of any packages with description files on the current path.

**Examples**

```r
mt = datasets::mtcars
fs = makeFeatureSet(mt)
describePackage(fs)
```
FeatureSet-class

DocCollectionRef  
Reference to a DocCollection

Description
A reference class which carries around a DocCollection, suitable for use as a trackr backend.

Usage
ListBackend(lst = list())

Arguments
lst  
List of documents to populate the list backend with.

FeatureSet-class  
FeatureSet (and Sub)-Classes

Description
Metadata inferred about R objects or dynamic documents is stored in FeatureSet objects specific. Specific types of featuresets have specific additional metadata they contain, beyond the standard metadata inferred about all results, and represented by the core FeatureSet class.

Slots

user  character  The user who submitted the result
regdate  POSIXct  The date/time the result was recorded
analysispkg  list  The R package associated with the result (because the working directory was within the package’s directory structure).
uniqueid  character  The uniqueid of the result
tag$  character  Additional tags associated with the result
analysisfile  character  The .R file active when the result was recorded (RStudio IDE only)
rmstudio$project  character  The RStudio project active when the result was recorded (RStudio IDE only)
generatedin  character  The uniqueid of the Rmd file the result was generated in, if applicable
code  character  The code used to generate the result (by default, as captured by histry)
codeinfo  ScriptInfo  the ScriptInfo for the code
sessioninfo  sinfoOrList  The session info at the time the result was recorded
isplot  logical  Whether the result is a plot
fsetklass  character  The FeatureSet subclass for the result
trackrversion character The exact version of the trackr package used to record the result.
clineargs character The commandline arguments passed to R when starting the session the result was recorded from.
resultURI character The URI associated with the result, see featureset constructor documentation.
extrametadata list Any extra metadata associated with the result.
titles list A named list of the form list(main = "My title", sub = "My subtitle").
klass character The R object class of the result
object ANY The object itself, or NULL if the object is not available.
vars character The variable names for a data.frame result
varclasses character the variable classes for a data.frame result
varsummaries list summaries for
object ANY The object itself, or NULL if the object is not available.
data A list of data.frames containing the variables and observations used in the plot.
varlabels Variable labels of the plot object; a named list of the form list(x = "X axis label", y = "Y axis label", groups = list(...)). Note that non-empty labels are character vectors and may contain more than one entry.
annotation.text Annotation text of the plot object.
vartypes Variable types of the plot object; a named list of the form list(x = "numeric", y = "factor", ...).
grouping Grouping information on the plot object; a named list.
coordsys A character vector describing the coordinate system employed in the plot.
nobs An integer representing the number of observations in the plotted data.
haslegend A boolean indicating whether or not a legend is displayed in the plot.
tags A character vector of user-defined tags.
code R code to reproduce the plot, as a CodeDepends::Script object. May be empty.
codeinfo Information about the R code to reproduce the plot, as a CodeDepends::ScriptInfo object. May be empty.
geom A named list of parameters for geometric objects in each layer of the ggplot.
stat A named list of parameters for statistical transforms in each layer of the ggplot.
position A named list of positioning information in each layer of the ggplot.
num.layers An integer representing the number of layers in the plot.
fullData

Accessor method for the data (slot "data") that is used in plotting.

Description

Get full data associated with a plot or model fit, if possible.

Usage

fullData(object, quiet = FALSE)

## S4 method for signature 'PlotFeatureSet'
fullData(object)

## S4 method for signature 'ggplot'
fullData(object, quiet = FALSE)

## S4 method for signature 'trellis'
fullData(object, quiet = FALSE)

## S4 method for signature 'gTree'
fullData(object)

## S4 method for signature 'PlotFeatureSet'
fullData(object)

Arguments

object

An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

quiet

Should warnings about plotted data be suppressed?

Value

A list of data.frame containing the variables used in plotting.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
fullData(fs)
generateTags

generateTags (object)

Arguments

object The object to generate tags for

Details

The upsides of this mechanism is that it is easier to use and lighter weight than defining new FeatureSet classes and methods to generate them. The downsides are that the metadata are tags, rather than proper key-value pairs, as far as trackr is concerned. (A backend could be engineered such that it interpreted tags of the form 'key:value' as key-value pairs, but this won't occur without extra work, and thus those implied fields will not be queriable via the trackr api specifically. The values will be included in the metadata generally though, so non-field-specific queries will work.

Value

A character vector of tags to associate with object during the recording process

Examples

generateTags(mtcars) #character(0)

geomObject<- Accessors for the geom of GGplotFeatureSet objects

Description

Get or set the geom associated with a GGplotFeatureSet object. This should not be called directly.
Usage
geomObject(object) <- value
geomObject(object)

## S4 method for signature 'PlotFeatureSet'
geomObject(object)

## S4 method for signature 'ggplot'
geomObject(object)

## S4 method for signature 'trellis'
geomObject(object)

## S4 method for signature 'gTree'
geomObject(object)

## S4 replacement method for signature 'GGplotFeatureSet'
geomObject(object) <- value

## S4 method for signature 'GGplotFeatureSet'
geomObject(object)

Arguments

object           An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
value            A named list of parameters for geometric objects in each layer of the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
geomObject(fs)

Description

formal S4 classes for S3 classes defined in other packages.
graphSys

Accessor method for PlotFeatureSet "package" slot.

Description

Retrieve the graphics system from a PlotFeatureSet object

Usage

graphSys(object)

## S4 method for signature 'PlotFeatureSet'
graphSys(object)

Arguments

object An object of (super)class PlotFeatureSet.

Value

A character vector representing the originating R package of the plot object, i.e. base, ggplot, or lattice.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
graphSys(fs)

groupInfo

Accessor method for the panel and other grouping information (slot "grouping") of the plot object.

Description

Get the grouping info for a plot or PlotFeatureSet.
Usage

```
groupInfo(object)
```

```r
## S4 method for signature 'PlotFeatureSet'
groupInfo(object)
```

```r
## S4 method for signature 'ggplot'
groupInfo(object)
```

```r
## S4 method for signature 'trellis'
groupInfo(object)
```

```r
## S4 method for signature 'gTree'
groupInfo(object)
```

```r
## S4 method for signature 'PlotFeatureSet'
groupInfo(object)
```

Arguments

- **object**
  - An object of class `PlotFeatureSet`, `GGplotFeatureSet`, `TrellisFeatureSet`, `ggplot`, or `trellis`.

Value

A named list of grouping information parameters.

Examples

```
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
groupInfo(fs)
```
Usage

hasLegend(object)

## S4 method for signature 'PlotFeatureSet'
hasLegend(object)

## S4 method for signature 'ggplot'
hasLegend(object)

## S4 method for signature 'trellis'
hasLegend(object)

## S4 method for signature 'gTree'
hasLegend(object)

## S4 method for signature 'PlotFeatureSet'
hasLegend(object)

Arguments

object An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

A boolean indicating whether or not a legend is displayed in the plot.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
hasLegend(fs)

JSONBackend

JSON backend for trackr

Description

A JSON-file based backend. This is the default backend in trackr.

Usage

JSONBackend(file = normalizePath("./trackr_db_data.json"), data = list())
Arguments

- **file** character. The json "database" to use as a trackr backend
- **data** A list of records to pre-populate the backend with.

Value

A JSONBackend object, for use in creating a TrackrDB object.

Slots

- **data** list. An in-memory list representation of the data in the db
- **file** character. The file containing the db (to read from and write to)
- **last_load** POSIXct. The last time data was updated from disk.

Note

This is a reference class, which does NOT have standard copy-on-write semantics
This function should generally not be called directly by end-users. See instead `jsonTDB`

---

### jsonTDB

**Convenience constructors for specific trackr backends**

Description

Convenience constructors for JSON and Solr-based trackr backends.

Usage

```r
jsonTDB(
  file = "~/.trackr/objdb.json",
  opts = TrackrOptions(img_dir = img_dir, ...),
  img_dir = file.path(dirname(file), "images"),
  ...
)
```

```r
solrTDB(core, requestHandler = "search", opts = TrackrOptions(...), ...)
```

```r
listTDB(data = list(), opts = TrackrOptions(...), ...)
```

Arguments

- **file** character. The json file to use
- **opts** TrackrOptions. The options for the DB
- **img_dir** character. The directory plot images should be saved into. Passed to default construction of opts. Defaults to `<directory of file>/images`. Ignored if opts is specified explicitly.
knit_and_record

... ANY. Used to construct opts. Ignored if opts is specified explicitly.
core character. The URI for the solr core to use
requestHandler character. Passed to SolrList constructor
data list. Data the ListBackend should be prepopulated with.

Value

A TrackrDB object

Examples

tdb = jsonTDB(tempfile())

tdb2 = listTDB()

Description

This function wraps knitr's knit function in a way that captures and records some or all values generated by code within the report, as well as the report itself.

This means that many records will generally be added to the trackr db for a single call to this function.

Usage

knit_and_record(
  input,
  ...,
  verbose = FALSE,
  tmptdb = TrackrDB(backend = ListBackend(), img_dir = img_dir(defaultTDB())),
  recvars = NULL,
  dryrun = FALSE
)

Arguments

input The input argument exactly as knitr's knit function accepts it
... Passed directly to knit
verbose passed to (multiple) record calls for report and its outputs
tmptdb A TrackrDB in which to temporarily record results which are printed within the dynamic document. Generally this should not need to be changed, as it is only used to collect the records so they can be associated with the result for the whole document (in the defaultTDB).
recvars character or NULL. The names of variables generated by the code within input which should be automatically recorded, or NULL.
dryrun logical. Should a dryrun be performed?
Details

When `recvars` is NULL, any objects which are visibly printed within the report are also recorded. Otherwise, only the values of the listed variables (after all code has been evaluated) are recorded, regardless of visibility.

Note

as with all `knitr` support in the history and trackr packages, manually tracing certain functions within the `knitr` and evaluate packages will break this function.

---

**makeFeatureSet**

Construct an `ObjFeatureSet`.

---

Description

The generic function for transforming an R object into the appropriate subclass of `FeatureSet`. This includes most introspection-based metadata extraction from the object. Metadata extraction can be customized at the package/R session level for specific classes of objects by defining methods for this generic.

Usage

```r
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'ggplot'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'trellis'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'gTree'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'recordedplot'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'expression'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'call'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'FeatureSet'
makeFeatureSet(object, ...)
```

```r
## S4 method for signature 'ANY'
makeFeatureSet(object, ...)
```
## S4 method for signature 'data.frame'
makeFeatureSet(object, ...)

**Arguments**

object
The plot to summarize via metadata in an ObjFeatureSet (or subclass)

...  
Other named arguments that become slots in the new PlotFeatureSet.

**Value**

PlotFeatureSet S4 object containing a ObjFeatureSet object and extracted plot features

**Functions**

- makeFeatureSet, ggplot-method: Construct a ObjFeatureSet from an object of class ggplot.
- makeFeatureSet, trellis-method: Construct a ObjFeatureSet from an object of class trellis.
- makeFeatureSet, gTree-method: Construct a ObjFeatureSet from an object of class gTree.
- makeFeatureSet, recordedplot-method: Construct a ObjFeatureSet from an object of class recordedplot.
- makeFeatureSet, expression-method: Construct a ObjFeatureSet from an unevaluated expression.
- makeFeatureSet, call-method: Construct a ObjFeatureSet from a call.
- makeFeatureSet, FeatureSet-method: No-op if we already have a ObjFeatureSet
- makeFeatureSet, ANY-method: Catch-all for attempted construction of a ObjFeatureSet from an object not of class ggplot or trellis.
- makeFeatureSet, data.frame-method: Construct a DFFeatureSet from a data.frame

**Examples**

```r
library(ggplot2)
mt = datasets::mtcars
pg <- ggplot(mt, aes(wt, mpg)) + geom_point()
pfs <- makeFeatureSet(pg)

library(lattice)
titan <- datasets::Titanic
pl <- barchart(Class ~ Freq | Sex + Age, data = as.data.frame(titan),
               groups = Survived, stack = TRUE, layout = c(4, 1),
               auto.key = list(title = "Survived", columns = 2))
pfs <- makeFeatureSet(pl)

dffs <- makeFeatureSet(as.data.frame(titan))
```

```r
## Not run:
plot(1:10, 1:10)
pb <- recordPlot()
```
pfs <- makeFeatureSet(pb)
## End(Not run)

make_image_files

Make image files for a featureset

Description

Make image files for a featureset

Usage

make_image_files(object, opts)

## S4 method for signature 'PlotFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'RmdFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'ObjFeatureSet'
make_image_files(object, opts)

## S4 method for signature 'FeatureSet'
make_image_files(object, opts)

## S4 method for signature 'ANY'
make_image_files(object, opts)

Arguments

object A FeatureSet object
opts Options

Value

A named list with two entries: preview.path, and image.path. These should be paths to (now) existing image files for thumbnail and main display, respectively.
manifestFromRecord

Generate a (switchr) Seed Manifest from a Record

Description

Extracts the session info information within the record and uses it to generate a switchr manifest which can be used to reinstall exact versions of the R packages associated with the result.

Usage

```r
manifestFromRecord(lst)
```

Arguments

- `lst`: The record in the form of a list (e.g., an element of the list returned by `findRecords`).

Value

A switchr `SessionManifest` object.

ndoc, TrackrDB-method

Number of docs in a TrackrDB

Description

Query the backend for the number of docs it contains.

Usage

```r
## S4 method for signature 'TrackrDB'
ndoc(x, ...)
```

Arguments

- `x`: TrackrDB.
- `...`: Not used.
Accessors for the number of layers of GGplotFeatureSet objects

Description

Get or set the number of layers associated with a GGplotFeatureSet object. This should not be called directly.

Usage

nLayers(object) <- value
nLayers(object)

## S4 method for signature 'PlotFeatureSet'
## S4 method for signature 'ggplot'
## S4 method for signature 'trellis'
## S4 method for signature 'gTree'
## S4 replacement method for signature 'GGplotFeatureSet'

Arguments

object An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
value An integer representing the number of layers in the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
nObs

fs = makeFeatureSet(plt)
nLayers(fs)

nObs

Accessor method for the number of observations (slot "nobs") of the plot object.

Description

Number of observations plotted in a plot or associated PlotFeatureSet.

Usage

nObs(object)

## S4 method for signature 'PlotFeatureSet'
nObs(object)

## S4 method for signature 'trellis'
nObs(object)

## S4 method for signature 'gTree'
nObs(object)

## S4 method for signature 'PlotFeatureSet'
nObs(object)

## S4 method for signature 'ggplot'
nObs(object)

Arguments

object An object of class PlotFeatureSet, GGplotFeatureSet, TrellisFeatureSet, ggplot, or trellis.

Value

An integer representing the number of observations in the plotted data.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
nObs(fs)
objCode<-  

Accessors for the code of FeatureSet objects

Description

Get or set the code associated with a FeatureSet object. This should not be called directly.

Usage

objCode(object) <- value

objCode(object)

## S4 replacement method for signature 'FeatureSet'
objCode(object) <- value

## S4 method for signature 'FeatureSet'
objCode(object)

Arguments

object  
An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

value  
A CodeDepends::Script object.

Value

A modified object of (super)class PlotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
objCode(fs)
Description

Constructors for different typed FeatureSet subclasses. These should only be used when customizing metadata extraction, i.e., in custom makeFeatureSet methods. Not intended to be called directly by end users. Because the arguments listed here unavoidably map to class slots, and because most of them should NOT be set directly even in customization code, they are semi-internal implementation details and are subject to change.

Arguments described as 'Do not manually set' have default values that should be used in virtually all cases. Overriding these in custom makeFeatureSet methods can lead to undefined behavior by the trackr system.

Usage

ObjFeatureSet(
  object,
  code = as.character(parseCode(object)),
  codeinfo = CodeDepends::getInputs(parseCode(code)),
  klass = getTopS3Class(object),
  uniqueid = gen_hash_id(object),
  tags = character(),
  user = unname(Sys.info()$"user"),
  regdate = Sys.time(),
  analysispkg = scrape_descr(),
  analysisfile = .analysisFileOrNA(),
  rstudioproject = .rstudioProjOrNA(),
  fsetklass = "ObjFeatureSet",
  isplot = FALSE,
  generatedin = character(),
  clineargs = commandArgs(),
  resultURI = character(),
  provtable = ProvStoreDF(),
  ...
)

PlotFeatureSet(
  object,
  fsetklass = "PlotFeatureSet",
  package = NA_character_,
  ...
)

GGplotFeatureSet(object, fsetklass = "GGplotFeatureSet", ...)

TrellisFeatureSet(object, fsetklass = "TrellisFeatureSet", ...)

GraphicsFeatureSet(object, fsetklass = "GraphicsFeatureSet", ...)

DFFeatureSet(
  object,
ObjFeatureSet

fsetklass = "DFFeatureSet",
vars = names(object),
varclasses = .makeClassesTab(object),
varsummaries = structure(lapply(object, .makeSummaryTable), names = names(object)),
nobs = nrow(object),
...
)

RmdFeatureSet(
rmdfile, 
outputfile, 
uniqueid, 
rmdfileid = gen_hash_id(readLines(rmdfile)),
chunks,
numouts = length(trackr_backend(objtdb)),
nnumplots = sum(sapply(objrecords, function(x) x$isplot)),
titles = "", 
author = "",
textkeywords = character(),
codekeywords = character(),
outputids = sapply(objrecords, function(x) x$uniqueid, USE.NAMES = FALSE),
tags = character(),
user = unname(Sys.info()$"user"),
regdate = Sys.time(),
analysispkg = scrape_descr(),
analysisfile = .analysisFileOrNA(),
rstudioproject = .rstudioProjOrNA(),
fsetklass = "RmdFeatureSet",
objrecords = findRecords(".", db = objtdb),
objtdb,
figurefiles = NA_character_,
resultURI = "",
...
)

Arguments

object  object to extract metadata from
code    The code which generated the object. Do not manually set
codeinfo Do not manually set
klass   The class of the object. Do not manually set
uniqueid The uniqueID for the result. Do not manually set. EVER.
tags    Tags to associate with the object
user    The user who recorded the object. Do not manually set
regdate The registration date/time. Do not manually set
analysispkg The analysis R package in which the session was run. Do not manually set
analysisfile  The .R file code was executed from to create the object. Do not manually set
rstudioproject The RStudio project in which the object was created. Do not manually set
fsetklass  The FeatureSet subclass being created. This should be overridden with custom FeatureSet subclasses
isplot  Is the object a plot. Do not manually set.
generatedin  The uniqueID of a parent result (e.g. an RMD report the object was generated within). Do not manually set
clineargs  The command-line arguments passed to the R session in which the object was recorded. Do not manually set.
resultURI  An optional character value which defines a location within a hierarchical grouping for results tracked by trackr. E.g. '/groups/Becker/HousingData/analysis3'
provtable  A ProvStoreDF object containing "value lineage" provenance information
...  For ObjFeatureSet and RmdFeatureSet, unused. For Other constructors, passed to the parent constructor.
package  The plotting package used to create a plot.
vars  Do not manually set
varclasses  Do not manually set
varsummaries  Do not manually set
nobs  Do not manually set
rmdfile  The (input) RMD file
outputfile  the path to the woven report
rmdfileid  Id associated with the input .Rmd file. Do not manually set. EVER.
chunks  The code and text chunks of the dynamic document
numouts  Do not manually set
numplots  Do not manually set
titles  Do not manually set
author  Do not manually set
textkeywords  Keywords extracted from the text
codekeywords  Keywords extracted from the code
outputids  Do not manually set
objrecords  Do not manually set. EVER.
objtdb  The (temporary) trackerdb where individual displayed outputs were recorded during the weaving process.
figurefiles  image files of plot as figures for woven report. Do not manually set.

Value

An object of a class that inherits from FeatureSet
## Description

Parse result creation code

### Usage

parseCode(code)

- **parseCode**: An expression, call or character vector, or a PlotFeatureSet or plot object. If missing, this method will attempt to extract code out of the plot object.

- **Value**: A CodeDepends::Script object.

## Description

Display the plot object owned by PlotFeatureSet objects and subclasses thereof.

### Usage

plotFeatureSet

- **plotFeatureSet**: (re)draw the plot associated with a PlotFeatureSet record.
Usage

```r
## S4 method for signature 'PlotFeatureSet,missing'
plot(x, y, ...)
```

Arguments

- **x**: An object of (super)class `PlotFeatureSet`.
- **y**: Should be left empty. Included only because it is a mandatory signature element.
- **...**: Other named arguments (currently ignored).

Value

The plot object, plotted through its native print method.

---

**position<-**

**Accessors for the position of GGplotFeatureSet objects**

Description

Get or set the position associated with a `GGplotFeatureSet` object. This should not be called directly.

Usage

```r
position(object) <- value

position(object)
```

```r
## S4 method for signature 'PlotFeatureSet'
position(object)
```

```r
## S4 method for signature 'ggplot'
position(object)
```

```r
## S4 method for signature 'trellis'
position(object)
```

```r
## S4 method for signature 'gTree'
position(object)
```

```r
## S4 replacement method for signature 'GGplotFeatureSet'
position(object) <- value
```

```r
## S4 method for signature 'GGplotFeatureSet'
position(object)
```
Arguments

- **object**: An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
- **value**: A named list of positioning information in each layer of the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
position(fs)
```

---

**print.gTree**  
*Print method for an object of class gTree.*

Description

print a gTree object.

Usage

```r
## S3 method for class 'gTree'
print(x, ...)
```

Arguments

- **x**: An object of class gTree.
- **...**: Other named arguments (currently unused).

---

**record**  
*Primary high-level API functions for Trackr Databases*

Description

These functions define the high-level, user-facing trackr API.
Usage

record(
  object,
  db = defaultTDB(),
  resultURI = "",
  code = histry::histry_tracker(),
  force = FALSE,
  verbose = FALSE,
  symorpos = NULL,
  dryrun = FALSE
)

rmRecord(object, db = defaultTDB(), verbose = FALSE)

findRecords(
  pattern,
  db = defaultTDB(),
  fields = NULL,
  ret_type = c("doclist", "id", "backend"),
  verbose = FALSE
)

recordFiles(
  object,
  ingestfun = NULL,
  db = defaultTDB(),
  resultURI = "",
  code = histry::histry_tracker(),
  force = FALSE,
  verbose = FALSE,
  symorpos = NULL,
  dryrun = FALSE
)

Arguments

object ANY. An object to record. Or (for recordFiles) a vector of one or more files to record or the path of a single directory whose contents will be recorded. Or (for rmPlot) the unique ID of an object in the database to remove.

db TrackrDB. The database

resultURI A URI which can be used to define a grouping/hierarchy of results recorded via trackr. Currently unused by trackr itself except as additional metadata to search across. Defaults to an empty string.

code ANY. Code/evaluation history to be associated with object

force logical. Overwrite any existing entry matching object. (default: FALSE)

verbose logical. Should extra informative messages be displayed (default: FALSE)
The symbol or position corresponding to object in code. For normal usage this will not be required.

logical. Should a "dry run" be performed. If true, the insert_record and tracker_write steps of the record process are not run, and the result of prep_for_backend is immediately returned.

character. A regular expression to match against the text in fields

character or NULL. The fields in which to match, or NULL to include all fields.

character. Format in which to return the response. Options are: "id" - id of matching documents (default), "list" - A list containing the matching documents represented as R lists, and "backend" - a backend specific representation of the set of matching documents

function or NULL. A function which must accept only the paths argument which will take object and return an R object to be recorded and linked to the raw files indicated by object

These functions allow end-users to interact with trackr databases. Each function does what its name suggests.

When more than one file is passed to recordFiles, either via a vector of paths or the path to a directory, the files will be zipped up into a single file which will be recorded.

Examples

prevtdb = defaultTDB()
defaultTDB(listTDB(img_dir = tempdir()))
mt = datasets::mtcars
record(mt)

res = findRecords("mtcars")
stopifnot(length(res) == 1)
rmRecord(mt)

res = findRecords("mtcars")
stopifnot(length(res) == 0)

## Not run:
f = function(paths) readLines(paths)
fil = system.file("test_docs", "knitr_test.Rmd", package = "trackr")
recordFiles(fil, ingestfun = f)

res= findRecords("test_docs")

## End(Not run)
defaultTDB(prevtdb)
**regDateTime**<sup>-</sup>  

**Accessors for the registration Date/Time of FeatureSet objects**

**Description**
Get or set the registration time associated with a FeatureSet object. This should not be called directly.

**Usage**

```r
gregDateTime(object) <- value
gregDateTime(object)
```

```r
## S4 replacement method for signature 'FeatureSet'
gregDateTime(object) <- value

## S4 method for signature 'FeatureSet'
gregDateTime(object)
```

**Arguments**
- **object**: An object of (super)class ObjFeatureSet.
- **value**: A POSIXct timestamp representing the moment when the plot was registered.

**Value**
A modified object of (super)class ObjFeatureSet.

**Examples**

```r
mt = datasets::mtcars/fs = makeFeatureSet(mt)
regDateTime(fs)
```

---

**RStudioExtras**  

**RStudioExtras class**

**Description**
A class to contain information about the current session when working inside the RStudio IDE.
saveBasicPlot

Save the plot object owned by an object of class/superclass PlotFeatureSet as an image.

Description

Save a plot to an image file as part of the record process. This generally shouldn’t need to be overwritten.

Usage

saveBasicPlot(object, filename, ...)

## S4 method for signature 'PlotFeatureSet'
saveBasicPlot(
  object, filename,
  type = c("png", "jpeg", "jpg", "tiff", "tif", "bmp"),
  width = 7,
  height = 7,
  dpi = 300
)

Arguments

- object: An object of (super)class PlotFeatureSet or plot object of class ggplot or trellis.
- filename: The full filename, including path, where the plot should be saved.
- ...: Other named arguments passed on to the class-specific save method.
- type: The type of image to save. Default is "png"; should be one of "jpeg", "jpg", "tiff", "tif", "png", or "bmp". In future versions, this should be automatically determined from the filename.
- width: Width of output, in inches
- height: Height of output, in inches
- dpi: Resolution of output, in pixels per inch

Value

A boolean indicating success of the save operation.

Functions

- saveBasicPlot,PlotFeatureSet-method: Save the plot object owned by an object of class/superclass PlotFeatureSet as an image.
Description

Get or set the stat transform(s) associated with a GGplotFeatureSet object. This should not be called directly.

Usage

statTransform(object) <- value
statTransform(object)
## S4 method for signature 'PlotFeatureSet'
statTransform(object)

## S4 method for signature 'ggplot'
statTransform(object)

## S4 method for signature 'trellis'
statTransform(object)

## S4 method for signature 'gTree'
statTransform(object)

## S4 replacement method for signature 'GGplotFeatureSet'
statTransform(object) <- value

## S4 method for signature 'GGplotFeatureSet'
statTransform(object)

Arguments

object  An object of class GGplotFeatureSet. For accession, also plot objects of class ggplot.
value   A named list of parameters for statistical transforms in each layer of the plot.

Value

A modified object of class GGplotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
tags<-  

```r
fs = makeFeatureSet(plt)
statTransform(fs)
```

---

**summary,PlotFeatureSet-method**  
*Summarize an object of class/superclass PlotFeatureSet*

---

**Description**  
Summary methods for PlotFeatureSet objects

**Usage**  
```
## S4 method for signature 'PlotFeatureSet'
summary(object)
```

**Arguments**  
- `object`  
  An object of (super)class PlotFeatureSet.

---

**tags<-**  
*Accessors for the tags of FeatureSet objects*

---

**Description**  
Get or set the tags associated with a FeatureSet object. This should not be called directly.

**Usage**  
```
tags(object) <- value
editTags(object, value, option)
tags(object)
```

```
## S4 replacement method for signature 'FeatureSet'
tags(object) <- value
```

```
## S4 replacement method for signature 'ggplot'
tags(object) <- value
```

```
## S4 replacement method for signature 'trellis'
tags(object) <- value
```

```
## S4 replacement method for signature 'gTree'
tags(object) <- value
```
## S4 method for signature 'FeatureSet'
editTags(object, value, option = c("replace", "add", "remove"))

## S4 method for signature 'FeatureSet'
tags(object)

## S4 method for signature 'ggplot'
tags(object)

## S4 method for signature 'trellis'
tags(object)

## S4 method for signature 'gTree'
tags(object)

## S4 method for signature 'ANY'
tags(object)

### Arguments

- **object**
  - An object of (super)class FeatureSet

- **value**
  - A character vector of tags.

- **option**
  - One of c("replace", "add", "remove"), with default "replace" (equivalent to "tags<-" with an additional uniqueness check), describing the action to be taken with the tag vector provided.

### Value

A modified object of (super)class PlotFeatureSet.

A modified object of (super)class PlotFeatureSet.

### Examples

```r
library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet=plt)
tags(fs)
```

### Description

Get or set the titles associated with a FeatureSet object. This should not be called directly.
Usage

titles(object) <- value

titles(object)

## S4 method for signature 'PlotFeatureSet'
titles(object)

## S4 method for signature 'ggplot'
titles(object)

## S4 method for signature 'trellis'
titles(object)

## S4 method for signature 'gTree'
titles(object)

## S4 replacement method for signature 'PlotFeatureSet'
titles(object) <- value

## S4 method for signature 'FeatureSet'
titles(object)

Arguments

object An object of (super)class PlotFeatureSet. For accession, also plot objects of class ggplot or trellis.

value A named list of titles of the form list(main = "My title", sub = "My subtitle").

Value

A modified object of (super)class PlotFeatureSet.

Examples

library(ggplot2)
mt = datasets::mtcars
plt = qplot(mt$mpg, mt$cyl)
fs = makeFeatureSet(plt)
titles(fs)
**Description**

This function initiates a shiny server which allows users to search a trackr database and view the results. It can be used as a stand-alone Shiny application or from within the RStudio IDE as an addin.

**Usage**

`trackrAddin(tdb = defaultTDB())`

**Arguments**

- **tdb**
  - The database to search. Defaults to the current default database

---

### `TrackrDB-class`

**Description**

A `TrackrDB` object is a combination of a backend and a `TrackrOptions` object controlling trackr’s behavior.

**Usage**

`TrackrDB(opts = TrackrOptions(...), backend = JSONBackend(), ...)`

**Arguments**

- **opts**
  - `TrackrOptions` object.
- **backend**
  - ANY. The backend to use.
- **...**
  - ignored.

---

### `TrackrOptions-class`

**Description**

`TrackrOptions` objects dictate various behavior by trackr when interacting with or preparing to interact with backends. See individual parameters for behaviors controlled in this manner.

**Usage**

`TrackrOptions(
    insert_delay = 0,
    img_dir = "./images",
    img_ext = "png",
    backend_opts = list(...),
    ...
)
`
Arguments

- **insert_delay**: numeric. delay in seconds between insertions.
- **img_dir**: character. Directory to save image files in. This will be normalized via normalizePath.
- **img_ext**: character. extension to give image files.
- **backend_opts**: list. list of options specific to the backend. Currently ignored by trackr machinery.
- **...**: additional arguments, which are collected into a list for the default backend_opts value.

---

**trackropts**

*trackr options environment*

---

**Description**

An environment where the default trackrdb and history tracker are stored. Users should not modify the contents of this environment directly.

**Usage**

```r
trackropts
```

**Format**

An object of class `environment` of length 3.

---

**trackr_knit_env**

*Internal details*

---

**Description**

This environment should never be manipulated or interacted with directly by end users. It is exported only due the vagaries of how parts of trackr are implemented.

**Usage**

```r
trackr_knit_env
```

**Format**

An object of class `environment` of length 0.
Description

This page describes the API which must be implemented by all Trackr backends. Any class with methods for these generics can be used in the backend slot of a TrackrDB object. These functions should not be called directly by an end-user.

Usage

- `trackr_lookup(object, target, opts, exist = FALSE)`
- `insert_record(object, id, target, opts, verbose = FALSE)`
- `prep_for_backend(object, target, opts, verbose = FALSE)`
- `remove_record(object, target, opts, verbose = FALSE)`
- `trackr_write(target, opts, verbose = FALSE)`
- `trackr_search(pattern, target, opts, fields = NULL, ret_type = c("doclist", "id", "backend"), verbose = TRUE)`

Arguments

- `object`: ANY. The object to lookup, add, remove, etc.
- `target`: ANY. The backend of the TrackrDB instance.
- `opts`: TrackrOptions. The trackr-level options. Typically extracted from `target` in a TrackrDB method and passed down.
- `exist`: logical. Return TRUE/FALSE rather than the looked-up object. (default: FALSE)
- `id`: character. The id to assign to the recorded result within the target backend.
- `verbose`: logical. Should extra informative messages be displayed? (default: FALSE)
- `pattern`: character. A regular expression to match against the text in `fields`
- `fields`: character or NULL. The fields in which to match, or NULL to include all fields.
- `ret_type`: character. Format in which to return the response. Options are: "id" - id of matching documents (default), "doclist" - A list containing the matching documents represented as R lists, and "backend" - a backend specific representation of the set of matching documents (generally the same class as backend).
Details

Methods should be written to be dispatched on \texttt{target}, and, where appropriate on \texttt{codeobject/codedoc}.

These methods should be endomorphic with respect to the \texttt{target} argument. That is, they should return an object of the same class as was passed to \texttt{target}, which reflect the requested change to the backend state.

\texttt{insert_record} may or may not involve writing to disk, which can alternatively occur during \texttt{trackr_write}. Writing, if any is desired, must occur within at one and only one of these methods. If \texttt{insert_record} performs the writing, \texttt{trackr_write} should be a no-op.

Value

- For \texttt{trackr_lookup}: If \texttt{exist} is \texttt{TRUE}, a logical indicating whether \texttt{object} was found in \texttt{db}. Otherwise, the object stored in the database (or \texttt{NULL} if it was not found).
- For \texttt{insert_record} and \texttt{remove_record}: The \texttt{TrackrDB (db parameter)} after the plot has been added or removed.
- For \texttt{prep_for_backend}, \texttt{object}, representend in the form that the \texttt{insert_record} method for \texttt{backend} expects.

Note

\texttt{remove_record} should have the same writing behavior as \texttt{insert_record}

\texttt{remove_record} should have the same writing behavior as \texttt{insert_record}

---

\textbf{trackr\_options} \hspace{1cm} \textit{options extraction}

\textbf{Description}

These functions extract the \texttt{trackr options} associated with a backend.

\textbf{Usage}

\begin{verbatim}
trackr_options(db)

img_dir(db)

img_ext(db)
\end{verbatim}

\textbf{Arguments}

\begin{verbatim}
db \hspace{1cm} \text{Object to extract information from}
\end{verbatim}
uniqueID<-  

Accessor methods for "uniqueid" of FeatureSet objects

Description
Get or set the uniqueID field of a FeatureSet. This should not be called directly by end users.

Usage

uniqueID(object) <- value
uniqueID(object)

## S4 method for signature 'FeatureSet'
uniqueID(object)

## S4 replacement method for signature 'FeatureSet'
uniqueID(object) <- value

Arguments

object An object of (super)class ObjFeatureSet.
value A character vector serving as the unique ID of the plot object in the database.

Value
A modified object of (super)class ObjFeatureSet.

user<-  

Accessors for the "user" of FeatureSet objects

Description
Get or set the user associated with a FeatureSet object. This should not be called directly.

Usage

user(object) <- value
user(object)

## S4 replacement method for signature 'FeatureSet'
user(object) <- value

## S4 method for signature 'FeatureSet'
user(object)
Arguments

object An object of (super)class ObjFeatureSet.
value A character vector serving as the username associated with the plot object in the database.

Value

A modified object of (super)class ObjFeatureSet.

Examples

mt = datasets::mtcars
fs = makeFeatureSet(mt)
user(fs)
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