

Package ‘neurohcp’

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Type Package

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Description Downloads and reads data from Human 'Connectome' Project
<<https://db.humanconnectome.org>> using Amazon Web Services ('AWS')
'S3' buckets.

License GPL-2

LazyData true

LazyLoad true

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Suggests dplyr, knitr, rmarkdown, covr

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URL <https://db.humanconnectome.org>

BugReports <https://github.com/muschelli2/neurohcp/issues>

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bucketlist	<i>Retrieve S3 Bucket List</i>
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Description

Lists the Buckets available with the Key/Secret

Usage

```
bucketlist(region = "us-east-1", access_key = NULL, secret_key = NULL, ...)
```

Arguments

region	Region of S3 Bucket
access_key	Amazon S3 Access Key
secret_key	Amazon S3 Secret Key
...	arguments to pass to bucket_list_df

Value

List of Buckets

Examples

```
if (have_aws_key()){
  bucketlist()
}
```

download_hcp_dir	<i>Download an entire directory from HCP</i>
------------------	--

Description

Downloads a directory/folder from HCP database

Usage

```
download_hcp_dir(  
  prefix,  
  delimiter = "",  
  outdir = tempfile(),  
  verbose = TRUE,  
  ...  
)  
  
download_fcp_dir(...)  
  
download_openneuro_dir(...)
```

Arguments

prefix	Folder to download
delimiter	Delimiter for files
outdir	Output directory
verbose	Should diagnostic values be printed?
...	additional arguments to pass to hcp_list_files

Value

List of return from calling [hcp_list_files](#), the output directory, and all destination files (not subsetted by those that did in fact download)

Examples

```
if (have_aws_key()) {  
  prefix = "HCP/100307/release-notes"  
  res = download_hcp_dir(prefix = prefix, verbose = FALSE)  
}
```

download_hcp_file *Download HCP file*

Description

Downloads a file from HCP S3 Bucket

Usage

```
download_hcp_file(  
  path_to_file,  
  destfile = NULL,  
  verbose = TRUE,  
  error = TRUE,  
  ...  
)  
  
download_fcp_file(...)  
  
download_openneuro_file(...)
```

Arguments

path_to_file	Path to file on HCP S3 Bucket
destfile	Destination filename
verbose	should progress be added to downloading?
error	Should the function error if the return was bad?
...	arguments to pass to hcp_aws_url

Value

Output filename that was downloaded

Examples

```
if (have_aws_key()){  
  path_to_file <- "HCP_900/100206/MNINonLinear/100206.164k_fs_LR.wb.spec"  
  download_hcp_file(path_to_file = path_to_file)  
}
```

get_hcp_file	<i>Get HCP file</i>
--------------	---------------------

Description

Wraps a [make_aws_call](#) to a GET statement to get the file

Usage

```
get_hcp_file(path_to_file = "/", ..., verbose = TRUE, verb = "GET")
```

```
head_hcp_file(...)
```

```
get_fcp_file(...)
```

```
head_fcp_file(...)
```

```
get_openneuro_file(...)
```

```
head_openneuro_file(...)
```

Arguments

path_to_file	Path to file on HCP S3 Bucket
...	arguments to pass to make_aws_call
verbose	Should the URL be printed?
verb	passed to VERB

Value

Result of GET

hcp_1200_scanning_info	<i>Scanning Information for HCP 1200 Data</i>
------------------------	---

Description

A data.frame with all the available scanning information for the HCP 1200 data.

Usage

```
hcp_1200_scanning_info
```

Format

An object of class `tbl_df` (inherits from `tbl`, `data.frame`) with 69615 rows and 18 columns.

hcp_900_scanning_info *Scanning Information for HCP 900 Data*

Description

A data.frame with all the available scanning information for the HCP 900 data.

Usage

```
hcp_900_scanning_info
```

Format

An object of class tbl_df (inherits from tbl, data.frame) with 34406 rows and 18 columns.

hcp_aws_url *Construct AWS S3 String*

Description

Constructs url string for AWS S3 Bucket to pass in for HCP downloading

Usage

```
hcp_aws_url(
  path_to_file = "",
  bucket = "hcp-openaccess",
  region = "us-east-1",
  access_key = NULL,
  secret_key = NULL,
  lifetime_minutes = 20,
  query = NULL,
  verb = "GET",
  sign = TRUE
)
```

Arguments

path_to_file	Path to file on HCP S3 Bucket
bucket	Bucket to download from
region	Region of S3 Bucket
access_key	Amazon S3 Access Key
secret_key	Amazon S3 Secret Key

lifetime_minutes	Time that connection can be opened
query	additional query to add to url
verb	httr VERB to be used
sign	Should the url be signed?

Value

Character of the url to be passed to httr 'VERB's

Examples

```
if (have_aws_key()){  
  path_to_file <- "HCP_900/100206/MNINonLinear/100206.164k_fs_LR.wb.spec"  
  hcp_aws_url(path_to_file)  
}
```

hcp_ids	<i>Get list of HCP Ids</i>
---------	----------------------------

Description

Returns list of IDs of folders in the HCP database

Usage

```
hcp_ids(group = c("HCP", "HCP_900", "HCP_1200", "HCP_Retest"))
```

Arguments

group	Group of IDs to return
-------	------------------------

Value

Character vector

Examples

```
if (have_aws_key()) {  
  head(hcp_ids("HCP"))  
  head(hcp_ids("HCP_900"))  
}
```

hcp_list_files *List files from HCP bucket*

Description

Lists a set of files from an HCP bucket for a specific sub-folder

Usage

```
hcp_list_files(prefix = "", delimiter = NULL, query = NULL, ...)
fcp_list_files(prefix = "", delimiter = NULL, query = NULL, ...)
openneuro_list_files(prefix = "", delimiter = NULL, query = NULL, ...)
hcp_list_dirs(prefix = "HCP/", ...)
fcp_list_dirs(prefix = "data/Projects/", ...)
openneuro_list_dirs(prefix = NULL, ...)
```

Arguments

prefix	directory folder to list files. If "", then it will be the root path
delimiter	Delimiter to list files. For example ".mat", for ".mat"
query	Additional query arguments
...	additional arguments passed to get_hcp_file

Value

List with the result of the GET command, the parsed result, and the content from the result.

Examples

```
if (have_aws_key()){
  x = hcp_list_files(prefix = "HCP/100307/unprocessed/3T/Diffusion",
    delimiter="bval")
  stopifnot(x$parsed_result$ListBucketResult$Name[[1]] == "hcp-openaccess")
  t1_niis = hcp_list_files(prefix ="HCP/100307/T1w",
    delimiter = ".nii.gz")
  all_dirs = hcp_list_dirs("HCP/")
}

if (have_aws_key()){
  res = hcp_list_dirs("HCP/")
  projects = unlist(parse_list_files(res)$prefixes)
  projects = unname(projects)
```

```
    projects = unname(projects)
    head(projects)
    head(basename(projects))
    stopifnot("100307" %in% basename(projects))
  }
  if (have_aws_key()){
    res = fcp_list_dirs()
    projects = unlist(parse_list_files(res)$prefixes)
    projects = unname(projects)
    head(projects)
    head(basename(projects))
    stopifnot("ABIDE" %in% basename(projects))
  }
  res = openneuro_list_dirs()
  projects = unlist(parse_list_files(res)$prefixes)
  projects = unname(projects)
  head(projects)
  if (length(projects) > 0) {
    head(basename(projects))
    stopifnot("ds000002" %in% basename(projects))
  }
}
```

hcp_scanning_info

Scanning Information for HCP Data

Description

A data.frame with all the available scanning information for the HCP data.

Usage

```
hcp_scanning_info
```

Format

An object of class tbl_df (inherits from tbl, data.frame) with 34406 rows and 18 columns.

make_aws_call

Construct AWS S3 Call

Description

Constructs GET information string for AWS S3 Bucket

Usage

```
make_aws_call(  
  path_to_file = "/",  
  bucket = "hcp-openaccess",  
  region = "us-east-1",  
  access_key = NULL,  
  secret_key = NULL,  
  lifetime_minutes = 5,  
  query = NULL,  
  verb = "GET",  
  sign = TRUE  
)
```

Arguments

path_to_file	Path to file on HCP S3 Bucket
bucket	Bucket to download from
region	Region of S3 Bucket
access_key	Amazon S3 Access Key
secret_key	Amazon S3 Secret Key
lifetime_minutes	Time that connection can be opened
query	additional query to add to verb command
verb	httr VERB to be used
sign	Should the url be signed?

Value

Character of the url to be passed to httr 'VERB's

Examples

```
if (have_aws_key()){  
  path_to_file <- paste0(  
    "HCP_900/100206/MNINonLinear/",  
    "100206.164k_fs_LR.wb.spec")  
  make_aws_call(path_to_file)  
}
```

parse_list_files	<i>Parse listed files from HCP bucket</i>
------------------	---

Description

This parses the result from [hcp_list_files](#) and organizes the files into data.frames

Usage

```
parse_list_files(ret)
```

Arguments

ret object with element parsed_result, usually from [hcp_list_files](#)

Value

List of 2 data.frames, the contents and the commonprefixes elements from the list

Examples

```
if (have_aws_key()){
  ret = hcp_list_files(prefix = "HCP/100307/unprocessed/3T/Diffusion")
  parsed = parse_list_files(ret)
  stopifnot(!is.null(parsed$content))
}
```

set_aws_api_key	<i>Set Amazon AWS Key</i>
-----------------	---------------------------

Description

Sets and returns the AWS keys. This will error if not all are specified.

Usage

```
set_aws_api_key(
  access_key = NULL,
  secret_key = NULL,
  default_region = "us-east-1",
  error = TRUE
)

have_aws_key()
```

Arguments

<code>access_key</code>	Amazon access key. If NULL then looks at the <code>AWS_ACCESS_KEY_ID</code> system variable.
<code>secret_key</code>	Amazon secret key. If NULL then looks at the <code>AWS_SECRET_ACCESS_KEY</code> system variable.
<code>default_region</code>	Amazon default region. If NULL then looks at the <code>AWS_DEFAULT_REGION</code> system variable.
<code>error</code>	Should this function error if things are not specified?

Value

List of `access_key`, `secret_key`, and `default_region`

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