Package ‘openalexR’

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Type Package

Title Getting Bibliographic Records from 'OpenAlex' Database Using 'DSL' API

Version 1.0.0

Description A set of tools to extract bibliographic content from 'OpenAlex' database using API <https://docs.openalex.org/api/>.

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URL https://github.com/massimoaria/openalexR,
     https://massimoaria.github.io/openalexR/

BugReports https://github.com/massimoaria/openalexR/issues

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Author Massimo Aria [aut, cre, cph] (https://orcid.org/0000-0002-8517-9411),
        Trang Le [aut] (https://orcid.org/0000-0003-3737-6565)

Maintainer Massimo Aria <massimo.aria@gmail.com>

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topics documented:

- `countrycode` ........................................... 2
- `oa2bibliometrix` ....................................... 3
- `oa2df` ................................................ 4
- `oaAuthors2df` .......................................... 5
- `oaConcepts2df` ......................................... 6
- `oaInstitutions2df` ..................................... 7
- `oaVenues2df` .......................................... 8
- `oaWorks2df` .......................................... 9
- `oa_entities` ........................................... 11
- `oa_fetch` ............................................ 11
- `oa_query` ............................................ 13
- `oa_random` ........................................... 15
- `oa_request` ........................................... 16
- `oa_snowball` ........................................... 19
- `show_authors` ......................................... 20
- `show_works` ........................................... 21

Index 23

<table>
<thead>
<tr>
<th>countrycode</th>
<th>Index of Countries and their alpha-2 and alpha-3 codes.</th>
</tr>
</thead>
</table>

Description

Data frame contains the list of countries and their alpha-2 and alpha-3 codes.

Format

A data frame with 250 rows and 3 variables:

- **Country** country names
- **Alpha2** countries’ alpha-2 codes
- **Alpha3** countries’ alpha-3 codes
oa2bibliometrix

Convert OpenAlex collection from data frame to bibliometrix object

Description

It converts bibliographic collections gathered from OpenAlex database https://openalex.org/ into a bibliometrix data frame (https://bibliometrix.org/)

Usage

oa2bibliometrix(df)

Arguments

df is bibliographic collection of works downloaded from OpenAlex.

Value

a data.frame with class "bibliometrix".

Examples

## Not run:
# Query to search all works citing the article:
# An R-tool for comprehensive science mapping analysis.
# Journal of informetrics, 11(4), 959-975.
# published in 2021.
# The paper is associated to the OpenAlex id W2755950973.
# Results have to be sorted by relevance score in a descending order.

query <- oa_query(
  identifier = NULL,
  entity = "works",
  cites = "W2755950973",
  from_publication_date = "2021-01-01",
  to_publication_date = "2021-12-31",
  search = NULL,
  endpoint = "https://api.openalex.org/"
)

res <- oa_request(
  query_url = query,
  count_only = FALSE,
  verbose = FALSE
)
df <- oa2df(res, entity = "works")

M <- oa2bibliometrix(df)

## End(Not run)

---

**oa2df**

*Convert OpenAlex collection from list to data frame*

**Description**

It converts bibliographic collections gathered from OpenAlex database [https://openalex.org/](https://openalex.org/) into data frame. The function converts a collection of records about works, authors, institutions, venues or concepts obtained using `oa_request` into a data frame/tibble.

**Usage**

```r
oa2df(
  data,
  entity,
  abstract = TRUE,
  count_only = FALSE,
  group_by = NULL,
  verbose = TRUE
)
```

**Arguments**

- **data** is a list. `data` is the output of the function `oa_request`.
- **entity** is a character. It indicates the scholarly entity of the search. The argument can be equal to `entity = c("works", "authors", "venues", "institutions", "concepts")`. The default value is `entity = works`.
- **abstract** Logical. If `TRUE`, the function returns also the abstract of each item. Default is `abstract=TRUE`. The argument is ignored if `entity` is different from "works".
- **count_only** Logical. If `TRUE`, the function returns only the number of item matching the query. Default is `count_only=FALSE`.
- **group_by** Character. Property to group by. For example: "oa_status" for works. [https://docs.openalex.org/api/get-groups-of-entities](https://docs.openalex.org/api/get-groups-of-entities)
- **verbose** is a logical. If `TRUE`, information about the querying process will be plotted on screen. Default is `verbose=TRUE`.

**Value**

a data.frame.

For more extensive information about OpenAlex API, please visit: [https://docs.openalex.org/api](https://docs.openalex.org/api)
## Examples

### Not run:

```r
# Query to search all works citing the article:
# An R-tool for comprehensive science mapping analysis.
# Journal of informetrics, 11(4), 959-975.

# published in 2021.
# The paper is associated to the OpenAlex id W2755950973.

# Results have to be sorted by relevance score in a descending order.

query <- oa_query(
  entity = "works",
  cites = "W2755950973",
  from_publication_date = "2021-01-01",
  to_publication_date = "2021-04-30"
)

res <- oa_request(
  query_url = query,
  count_only = FALSE,
  verbose = FALSE
)

oa2df(res, entity = "works")
```

### End(Not run)

---

**oaAuthors2df**

*Convert OpenAlex collection of authors’ records from list format to data frame*

---

**Description**

It converts bibliographic collection of authors’ records gathered from OpenAlex database [https://openalex.org/](https://openalex.org/) into data frame. The function converts a list of authors’ records obtained using `oa_request` into a data frame/tibble.

**Usage**

```r
oaAuthors2df(data, verbose = TRUE)
```
Arguments

data is a list. data is the output of the function oa_request.
verbose is a logical. If TRUE, information about the querying process will be plotted on
screen. Default is verbose=TRUE.

Value

a data.frame.
For more extensive information about OpenAlex API, please visit: https://docs.openalex.org/api

Examples

## Not run:

# Query to search information about all authors affiliated to the University of Naples Federico II
# which have authored at least 100 publications:

# University of Naples Federico II is associated to the OpenAlex id I71267560.

query_author <- oa_query(
  identifier = NULL,
  entity = "authors",
  last_known_institution.id = "I71267560",
  works_count = ">99"
)

res <- oa_request(
  query_url = query_author,
  count_only = FALSE,
  verbose = FALSE
)

df <- oa2df(res, entity = "authors")

df
## End(Not run)

# @export

oaConcepts2df

Convert OpenAlex collection of concepts’ records from list format to
data frame

Description
It converts bibliographic collection of concepts’ records gathered from OpenAlex database https://openalex.org/ into data frame. The function converts a list of concepts’ records obtained using oa_request into a data frame/tibble.
Usage

    oaConcepts2df(data, verbose = TRUE)

Arguments

- **data** is a list. data is the output of the function `oa_request`.
- **verbose** is a logical. If TRUE, information about the querying process will be plotted on screen. Default is `verbose=TRUE`.

Value

A data.frame.

For more extensive information about OpenAlex API, please visit: [https://docs.openalex.org/api](https://docs.openalex.org/api)

Examples

```r
## Not run:

# Query to search information about all Italian educational institutions

query_inst <- oa_query(
  entity = "concepts",
  display_name.search = "electrodynamics"
)

res <- oa_request(
  query_url = query_inst,
  count_only = FALSE,
  verbose = FALSE
)

df <- oa2df(res, entity = "concepts")

df

## End(Not run)

# @export
```

Description

Converts bibliographic collection of institutions’ records gathered from OpenAlex database [https://openalex.org/](https://openalex.org/) into a data frame. The function converts a list of institutions’ records obtained using `oa_request` into a data frame/tibble.
oaVenues2df

Convert OpenAlex collection of venues’ records from list format to data frame

Description

It converts bibliographic collection of venues’ records gathered from OpenAlex database https://openalex.org into data frame. The function converts a list of venues’ records obtained using oa_request into a data frame/tibble.
Usage

```r
oaVenues2df(data, verbose = TRUE)
```

Arguments

- `data` is a list. `data` is the output of the function `oa_request`.
- `verbose` is a logical. If `TRUE`, information about the querying process will be plotted on screen. Default is `verbose=TRUE`.

Value

- a data.frame.

For more extensive information about OpenAlex API, please visit: [https://docs.openalex.org/api](https://docs.openalex.org/api)

Examples

```r
## Not run:
# Query to search information about the Journal of Informetrics (OA id:V205292342)
query_inst <- oa_query(
  identifier = "V205292342", 
  entity = "venues"
)
res <- oa_request(
  query_url = query_inst, 
  count_only = FALSE, 
  verbose = FALSE
)
df <- oa2df(res, entity = "venues")
df
## End(Not run)
```

---

**oaWorks2df**

Convert OpenAlex collection of works from list format to data frame

Description

It converts bibliographic collection of works gathered from OpenAlex database [https://openalex.org/](https://openalex.org/) into data frame. The function converts a list of works obtained using `oa_request` into a data frame/tibble.
Usage

`oaWorks2df(data, abstract = TRUE, verbose = TRUE)`

Arguments

- `data` is a list. `data` is the output of the function `oa_request`.
- `abstract` Logical. If TRUE, the function returns also the abstract of each item. Default is `abstract=TRUE`.
- `verbose` is a logical. If TRUE, information about the querying process will be plotted on screen. Default is `verbose=TRUE`.

Value

a data.frame.

For more extensive information about OpenAlex API, please visit: https://docs.openalex.org/api

Examples

```r
## Not run:

# Query to search all works citing the article:
# Journal of informetrics, 11(4), 959-975.
# published in 2021.
# The paper is associated to the OpenAlex id W2755950973.
# Results have to be sorted by relevance score in a descending order.

query <- oa_query(
  identifier = NULL,
  entity = "works",
  cites = "W2755950973",
  from_publication_date = "2021-01-01",
  to_publication_date = "2021-12-31",
  search = NULL,
  endpoint = "https://api.openalex.org/"
)

res <- oa_request(
  query_url = query,
  count_only = FALSE,
  verbose = FALSE
)

df <- oa2df(res, entity = "works")

df
```
oa_entities

Available entities in the OpenAlex database

Description

Available entities in the OpenAlex database

Usage

oa_entities()

Value

Character vector of 5 entity options.

oa_fetch

A composition function to perform query building, requesting, and convert the result to a tibble/data frame.

Description

A composition function to perform query building, requesting, and convert the result to a tibble/data frame.

Usage

oa_fetch(
  ..., identifier = NULL,
  entity = if (is.null(identifier)) NULL else id_type(identifier[[1]]),
  search = NULL,
  sort = NULL,
  group_by = NULL,
  output = c("tibble", "dataframe", "list"),
  abstract = TRUE,
  endpoint = "https://api.openalex.org/",
  per_page = 200,
  count_only = FALSE,
  mailto = NULL,
  verbose = FALSE
)
Arguments

Filter arguments. Filters narrow the list down to just entities that meet a particular condition—specifically, a particular value for a particular attribute. Filters are formatted as attribute = value. The complete list of filter attributes for each entity can be found. For example, ‘cited_by_count = “>100”’, ‘title.search = c(“bibliometric analysis”, “science mapping”)’, or ‘to_publication_date = “2021-12-31”’. at https://docs.openalex.org/api/get-lists-of-entities#filter

identifier Character. It indicates an item identifier.

entity Character. It indicates the scholarly entity of the search. The argument can be one of c(“works”, “authors”, “venues”, “institutions”, “concepts”). If not provided, ‘entity’ is guessed from ‘identifier’.

search Character. Search is just another kind of filter, one that all five endpoints support. But unlike the other filters, search doesn’t require an exact match. To filter using search, append .search to the end of the property you’re filtering for.

sort Character. Property to sort by. For example: "display_name" for venues or "cited_by_count:desc" for works. See more at <https://docs.openalex.org/api/get-lists-of-entities/sort-entity-lists>.

group_by Character. Property to group by. For example: "oa_status" for works. https://docs.openalex.org/api/get-groups-of-entities

output Character. Type of output, either a list or a tibble/data.frame.

abstract Logical. If TRUE, the function returns also the abstract of each item. Default is abstract = TRUE. The argument is ignored if entity is different from "works".

endpoint is character. It indicates the url of the OpenAlex Endpoint API server. The default value is endpoint = “https://api.openalex.org/”.

per_page is a numeric. It indicates how many items to download per page. The per-page argument can assume any number between 1 and 200. Default is per_page=200.

count_only is a logical. If TRUE, the function returns only the number of item matching the query. Default is count_only=FALSE.

mailto is a character. To get into the polite pool, the arguments mailto have to give OpenAlex an email where they can contact you.

verbose is a logical. If TRUE, information about the querying process will be plotted on screen. Default is verbose=FALSE.

Value

A data.frame or a list. Result of the query.

Examples

## Not run:

```r
paper_meta <- oa_fetch( 
  identifier = "W2755950973", 
  entity = "works", 
  endpoint = "https://api.openalex.org/", 
)```
OA Query

Generate an OpenAlex query from a set of parameters

Description

It generates a valid query, written following the OpenAlex API Language, from a set of parameters.

Usage

oa_query(
  ...
  identifier = NULL,
  entity = id_type(identifier[[1]]),
  search = NULL,
  sort = NULL,
  group_by = NULL,
  endpoint = "https://api.openalex.org/",
  verbose = FALSE
)
Arguments

Filter arguments. Filters narrow the list down to just entities that meet a particular condition—specifically, a particular value for a particular attribute. Filters are formatted as attribute = value. The complete list of filter attributes for each entity can be found. For example, ‘cited_by_count = ">100"’, ‘title.search = c("bibliometric analysis", "science mapping")’, or ‘to_publication_date = "2021-12-31"’. at https://docs.openalex.org/api/get-lists-of-entities#filter

identifier Character. It indicates an item identifier.

entity Character. It indicates the scholarly entity of the search. The argument can be one of c("works", "authors", "venues", "institutions", "concepts"). If not provided, ‘entity’ is guessed from ‘identifier’.

search Character. Search is just another kind of filter, one that all five endpoints support. But unlike the other filters, search doesn’t require an exact match. To filter using search, append .search to the end of the property you’re filtering for.

sort Character. Property to sort by. For example: "display_name" for venues or "cited_by_count:desc" for works. See more at <https://docs.openalex.org/api/get-lists-of-entities/sort-entity-lists>.

group_by Character. Property to group by. For example: "oa_status" for works. https://docs.openalex.org/api/get-groups-of-entities

default value is endpoint = "https://api.openalex.org/".

verbose is a logical. If TRUE, information about the querying process will be plotted on screen. Default is verbose=FALSE.

Value

a character containing the query in OpenAlex format.

For more extensive information about OpenAlex API, please visit: https://docs.openalex.org/api

Examples

---

query_auth <- oa_query(identifier = "A923435168", verbose = TRUE)

### EXAMPLE 1: Full record about an entity.

# The following paper is associated to the OpenAlex-id W2755950973.

# Journal of informetrics, 11(4), 959-975.

query_work <- oa_query(
    identifier = "W2755950973",

endpoint = "https://api.openalex.org/",
        verbose = TRUE
    )

# The author Massimo Aria is associated to the OpenAlex-id A923435168:
query_auth <- oa_query(identifier = "A923435168", verbose = TRUE)

### EXAMPLE 2: all works citing a particular work.

# Query to search all works citing the article:
# An R-tool for comprehensive science mapping analysis.
# Journal of Informetrics, 11(4), 959-975.
# Published in 2021.
# The paper is associated to the OpenAlex id W2755950973.
# Results have to be sorted by relevance score in a descending order.
query1 <- oa_query(
    entity = "works",
    cites = "W2755950973",
    from_publication_date = "2021-01-01",
    to_publication_date = "2021-12-31",
    verbose = TRUE
)

### EXAMPLE 3: All works matching a string in their title

# Query to search all works containing the exact string
# "bibliometric analysis" OR "science mapping" in the title, published in the first half of 2021.
# Results have to be sorted by relevance score in a descending order.
query2 <- oa_query(
    entity = "works",
    title.search = c("bibliometric analysis", "science mapping"),
    from_publication_date = "2021-01-01",
    to_publication_date = "2021-06-30",
    sort = "cited_by_count:desc",
    verbose = TRUE
)

## End(Not run)
Description

oa_fetch but for a random query

Usage

oa_random(
   entity = oa_entities(),
   output = c("tibble", "dataframe", "list"),
   endpoint = "https://api.openalex.org/")

Arguments

entity Character. It indicates the scholarly entity of the search. The argument can be one of c("works", "authors", "venues", "institutions", "concepts"). If not provided, ‘entity’ is guessed from ‘identifier’.

output Character. Type of output, either a list or a tibble/data.frame.

eendpoint is character. It indicates the url of the OpenAlex Endpoint API server. The default value is endpoint = "https://api.openalex.org/".

Value

A data.frame or a list. One row or one element. Result of the random query.

Examples

oa_random()

__oa_request__

Get bibliographic records from OpenAlex databases

Description

It gets bibliographic records from OpenAlex database https://openalex.org/. The function oa_request queries OpenAlex database using a query formulated through the function oa_query.

Usage

oa_request(
   query_url,
   per_page = 200,
   count_only = FALSE,
   mailto = oa_email(),
   verbose = FALSE
)
Arguments

query_url is a character. It contains a search query formulated using the OpenAlex API language. A query can be automatically generated using the function `oa_query`.

per_page is a numeric. It indicates how many items to download per page. The per-page argument can assume any number between 1 and 200. Default is `per_page=200`.

count_only is a logical. If TRUE, the function returns only the number of items matching the query. Default is `count_only=FALSE`.

mailto is a character. To get into the polite pool, the arguments mailto have to give OpenAlex an email where they can contact you.

verbose is a logical. If TRUE, information about the querying process will be plotted on screen. Default is `verbose=FALSE`.

Value

A data.frame or a list.

For more extensive information about OpenAlex API, please visit: [https://docs.openalex.org/api](https://docs.openalex.org/api)

Examples

```r
## Not run:
### EXAMPLE 1: Full record about an entity.

# Query to obtain all information about a particular work/author/institution/etc.: # The following paper is associated to the OpenAlex-id W2755950973.


query_work <- oa_query(
  identifier = "W2755950973",
  entity = "works",
  endpoint = "https://api.openalex.org/
)

res <- oa_request(
  query_url = query_work,
  count_only = FALSE,
  verbose = FALSE
)

# The author Massimo Aria is associated to the OpenAlex-id A923435168.

query_author <- oa_query(
  identifier = "A923435168",
)```
entity = "authors",
endpoint = "https://api.openalex.org/")

res <- oa_request(
  query_url = query_author,
  count_only = FALSE,
  verbose = FALSE
)

### EXAMPLE 2: all works citing a particular work.

# Query to search all works citing the article:
# An R-tool for comprehensive science mapping analysis.
# Journal of informetrics, 11(4), 959-975.
# published in 2021.
# The paper is associated to the OpenAlex id W2755950973.
# Results have to be sorted by relevance score in a descending order.

query2 <- oa_query(
  identifier = NULL,
  entity = "works",
  filter = "cites:W2755950973",
  from_publication_date = "2021-01-01",
  to_publication_date = "2021-12-31",
  search = NULL,
  endpoint = "https://api.openalex.org/")

res2 <- oa_request(
  query_url = query2,
  count_only = FALSE,
  verbose = FALSE
)

### EXAMPLE 3: All works matching a string in their title

# Query to search all works containing the exact string
# "bibliometric analysis" OR "science mapping" in the title, published in 2020 or 2021.
# Results have to be sorted by relevance score in a descending order.

query3 <- oa_query(
  identifier = NULL,
  entity = "works",
  filter = "title.search:"bibliometric analysis"|"science mapping",
  from_publication_date = "2020-01-01",
  to_publication_date = "2021-12-31",
  endpoint = "https://api.openalex.org/")
### EXAMPLE 4: How to check how many works match a query

# Query to search all works containing the exact string
# "bibliometric analysis" OR "science mapping" in the title, published in 2020 or 2021.
# Query only to know how many works could be retrieved (count_only=TRUE)

query4 <- oa_query(
  identifier = NULL,
  entity = "works",
  filter = 'title.search:"bibliometric analysis"|"science mapping"',
  from_publication_date = "2020-01-01",
  to_publication_date = "2021-12-31",
  search = NULL,
  endpoint = "https://api.openalex.org/"
)

res4 <- oa_request(
  query_url = query4,
  count_only = TRUE,
  verbose = FALSE
)

res4$count # number of items retrieved by our query

## End(Not run)

---

**oa_snowball**

A function to perform a snowball search and convert the result to a tibble/data frame.

**Description**

A function to perform a snowball search and convert the result to a tibble/data frame.

**Usage**

```
oa_snowball(
  identifier = NULL,
  output = c("tibble", "dataframe"),
```
Arguments

- **identifier** Character. It indicates a vector of item identifiers.
- **output** a tibble/data.frame.
- **mailto** is a character. To get into the polite pool, the arguments mailto have to give OpenAlex an email where they can contact you.
- **endpoint** is character. It indicates the url of the OpenAlex Endpoint API server. The default value is endpoint = "https://api.openalex.org/".
- **verbose** is a logical. If TRUE, information about the querying process will be plotted on screen. Default is verbose=FALSE.

Value

A data.frame or a tibble. Result of the snowball search.

Examples

```r
## Not run:
snowball_docs <- oa_snowball(
  identifier = c("W2741809807", "W2755950973"),
  endpoint = "https://api.openalex.org/",
  verbose = TRUE
)
## End(Not run)
```

Description

This function is mostly for the package’s internal use, but we export it so you can try it out. However, we expect that you’ll likely write your own function to simplify the result however you want.

Usage

```r
show_authors(x, simp_func = utils::head)
```
**show_works**

**Arguments**

- **x**  
  Dataframe/tibble. Result of the OpenAlex query for authors already converted to dataframe/tibble.

- **simp_func**  
  R function to simplify the result. Default to 'head'. If you want the entire table, set 'simp_fun = identity'.

**Value**

Simplified tibble to display.

**Examples**

```r
show_authors(oa_fetch(
  identifier = c("A923435168", "A2208157607"),
  verbose = TRUE
))
```

---

**Description**

This function is mostly for the package’s internal use, but we export it so you can try it out. However, we expect that you’ll likely write your own function to simplify the result however you want.

**Usage**

```r
show_works(x, simp_func = utils::head)
```

**Arguments**

- **x**  
  Dataframe/tibble. Result of the OpenAlex query for authors already converted to dataframe/tibble.

- **simp_func**  
  R function to simplify the result. Default to 'head'. If you want the entire table, set 'simp_fun = identity'.

**Value**

Simplified tibble to display.
Examples

```r
to_do_one(tso <- tso_search(  
    identifier = c("W2741809807", "W2755950973"),  
    verbose = TRUE  
))
```

```r
show_works(tso_fetch(tso))
```

Index

countrycode, 2
oa2bibliometrix, 3
oa2df, 4
oa_entities, 11
oa_fetch, 11
oa_query, 13
oa_random, 15
oa_request, 16
oa_snowball, 19
oaAuthors2df, 5
oaConcepts2df, 6
oaInstitutions2df, 7
oaVenues2df, 8
oaWorks2df, 9

show_authors, 20
show_works, 21