Scopus API

- **Full Documentation: https://dev.elsevier.com/api_docs.html**

- **Essentials:**
    1. API keys
        - Required for most of the APIs.
        - 10 keys per account.
        - Quota refreshed every week. Some of the API quotas are as follows:

#	API Name	Enabled or Disabled	Non-subscriber	Subscriber	Weekly request quota	Requests/second
1	Serial Title	Enabled	STANDARD, COVERIMAGE views / Default 25 results / Max 200 results	STANDARD, COVERIMAGE, ENHANCED Default 25 results / Max 200 results	20,000	3
2	Citations Count Metadata	Disabled for non-subscribers	N/A	STANDARD view / Default 25 results / Max 200 results	50,000	18
3	Citations Overview	Disabled	N/A	STANDARD view / Default 25 results / Max 200 results	20,000	3
4	Subject Classifications	Enabled	No restrictions	No restrictions	N/A	N/A
5	Abstract Retrieval	Enabled	META view	All views, default FULL view	10,000	6
6	Affiliation Retrieval	Enabled	N/A	All views, default STANDARD view	5,000	6
7	Author Retrieval	Enabled	N/A	All views, default STANDARD view	5,000	3
8	Affiliation Search	Enabled	N/A	Default 25 results / Max 200 results	5,000	3
9	Author Search	Enabled	N/A	Default 25 results / Max 200 results	5,000	3
10	Scopus Search	Enabled	STANDARD view / Default 25 results	STANDARD view / Max 200 results COMPLETE view / Max 25 results	20,000	6

    2. Query options
        - Normally by names (author names and paper titles), but not very accurate.
        - Better use author id or paper DOI if you have it, which guarantees precise matches.
        - Support other search fields and their combinations, which can be found in the documentations.
        - Some fields are only available in specific "views", such as "complete" or "enhanced", you have to set the views in your request header if you want such information. Details are in documentations.

    3. Problems
        - Not smart enough for ambiguous search queries, especially author names. The best option is to search with unique ids (Scopus ID or DOI) if you have them.
        - Quota exhausts fast so you might need to prepare multiple accounts for API keys.

- **Main APIs**

Product Specific APIs

ScienceDirect APIs	Scopus APIs	Engineering Village APIs	Embase APIs	SciVal API
ScienceDirect Search V2 [*Views*] Article Metadata [*Search Tips*] [*Views*]	Affiliation Search [*Search Tips*] [*Views*] Author Search [*Search Tips*] [*Views*] Scopus Search [*Search Tips*] [*Views*]	Engineering Village Search API	EMBASE Search	SciVal Author Lookup SciVal Country Lookup SciVal Country Group Lookup SciVal Institution Lookup SciVal Institution Group Lookup SciVal Publication Lookup SciVal Scopus Source Lookup SciVal Subject Area SciVal Topic Lookup SciVal Topic Cluster Lookup SciVal World Lookup
Article Retrieval [*Views*] Article Entitlement Retrieval [*Views*] Article Hosting Permission API Object Retrieval [*Views*]	Abstract Retrieval [*Views*] Affiliation Retrieval [*Views*] Author Retrieval [*Views*]	Engineering Village Retrieval API	EMBASE Retrieval	
Serial Title Metadata [*Views*] Nonserial Title Metadata [*Views*] Subject Classifications	Citations Count Metadata [*Views*] Citations Overview [*Views*] PlumX Metrics Serial Title Metadata [*Views*] Subject Classifications			
Holdings Report	Author Feedback			

- Author search:
  o Search authors by name, author id (Scopus ID), affiliation and subject areas.
  o Doesn't work too well for special scenarios like abbreviation or people with the same name.
  o Affiliations search can be misleading. For example, while A University is a legal query, A University B Department or A University C Lab might not be recognized. If your affiliation field is too specific or contains abbreviations, you might risk losing too many results.
  o Results include names, affiliations and 3 top subject areas.

- Scopus search:
  o Search papers by doi, title, author, fund, etc. Similar to author search.
  o Relatively more accurate than author search if using titles.
  o Grants information is only available in "complete" view.
- Author retrieval
  o Retrieve detailed author profile with author id.
  o Returns more information than author search API, incl. papers count, citations count, affiliation history, all subject areas and frequencies.
- Abstract retrieval
  o Get the details of a paper including full abstract.

- The url to this API is usually listed in the result of Scopus Search API, which means you can search a paper with Scopus Search and directly use its abstract API url in the response.

- **Workflow:**
  - Search authors with the author search API by name, affiliation, etc. Get the top match (or several top matches).
  - From the previous results, collect the Scopus ids.
  - Use Scopus ids to search author profiles (Author retrieval API). Or you can use them to search papers (Scopus Search API).
  - With the results of scopus search, you have the urls for the abstract retrieval.

- **Code:**
  - Elsapy: an official module developed by Elsevier to implement the Scopus APIs.
    - https://github.com/ElsevierDev/elsapy
    - The module is good to understand how the APIs actually works, but it has too many functions that are useless for us now.
    - The module doesn't provide functions for API key switching, meaning if you quota limit is reached, it will constantly return invalid response, instead of change to another key.

  - Customized versions
    - You can modify the scripts based on the elssearch.py and elsclient.py in their module, which cover most of the useful features, but still you need to add other functions.
    - A simple request can be written like this.

```python
import requests

def retrieve_author(author, key):

    headers = {
        "X-ELS-APIKey": key,
        "Accept": 'application/json'
    }
    url = f'https://api.elsevier.com/content/author/author_id/{author}'

    try:
        r = requests.get(url=url, headers=headers, params={'view': 'ENHANCED'})
        return r
    except Exception as e:
        print(str(e))


if __name__ == '__main__':

    author = '1' # author id
    response = retrieve_author(author)
```