RUG_Information_Retrieval

Our application runs on **Python**.

Packages used

For this Project we will use Scholarly Package for Python https://github.com/scholarly-python-package/scholarly

Installation : By using pip3 to install from pypi

```
$ pip3 install scholarly
```

Also we will use GoogleSearch Package from SerpAPI https://serpapi.com/ To install:

```
$ pip install google-search-results
```

And finally for the GUI of our application we will use tkinter package https://docs.python.org/3/library/tkinter.html#a-very-quick-look-at-tcl-tk Installation:

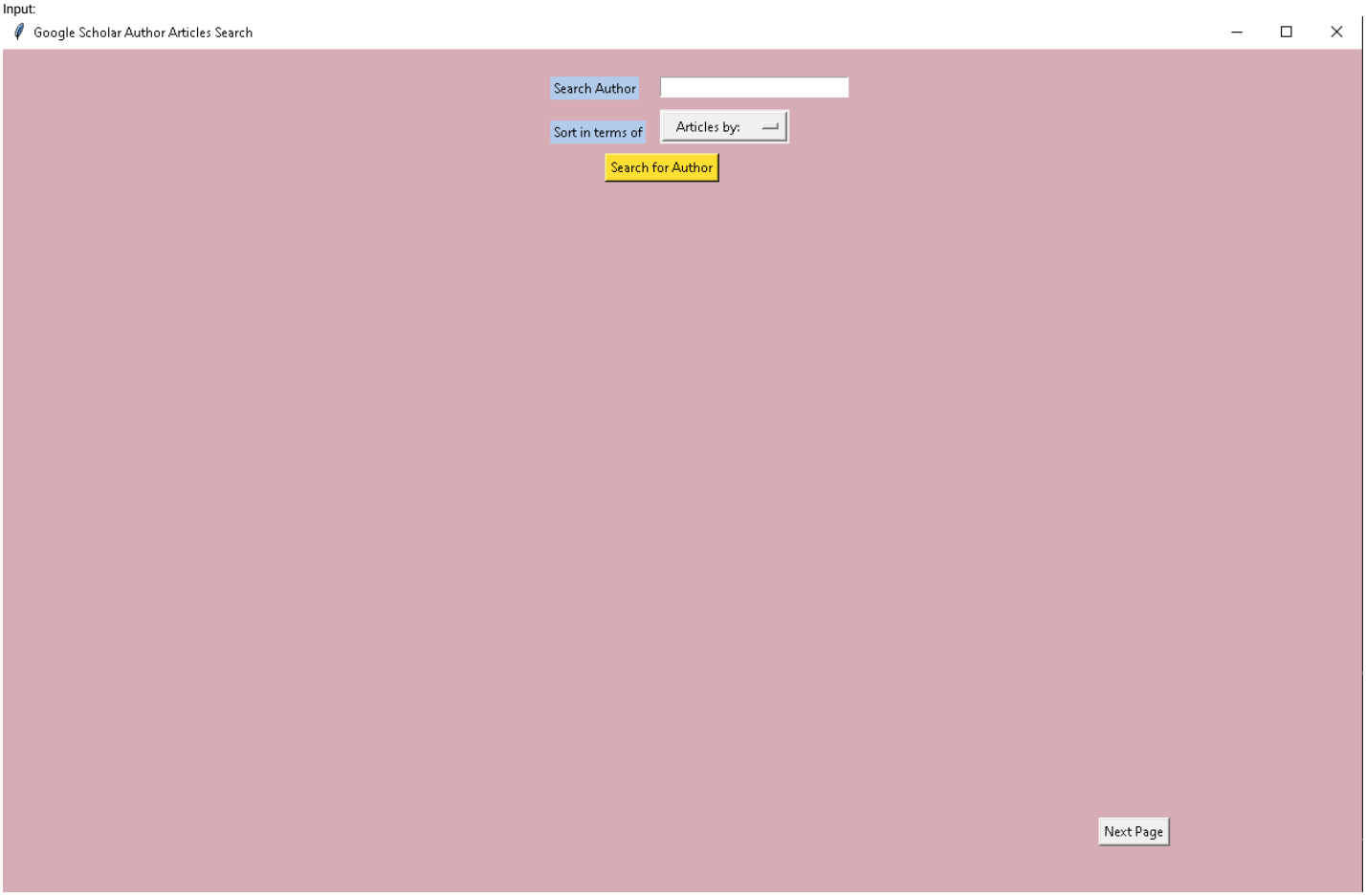
```
$ pip install tk
```

How does the application work?

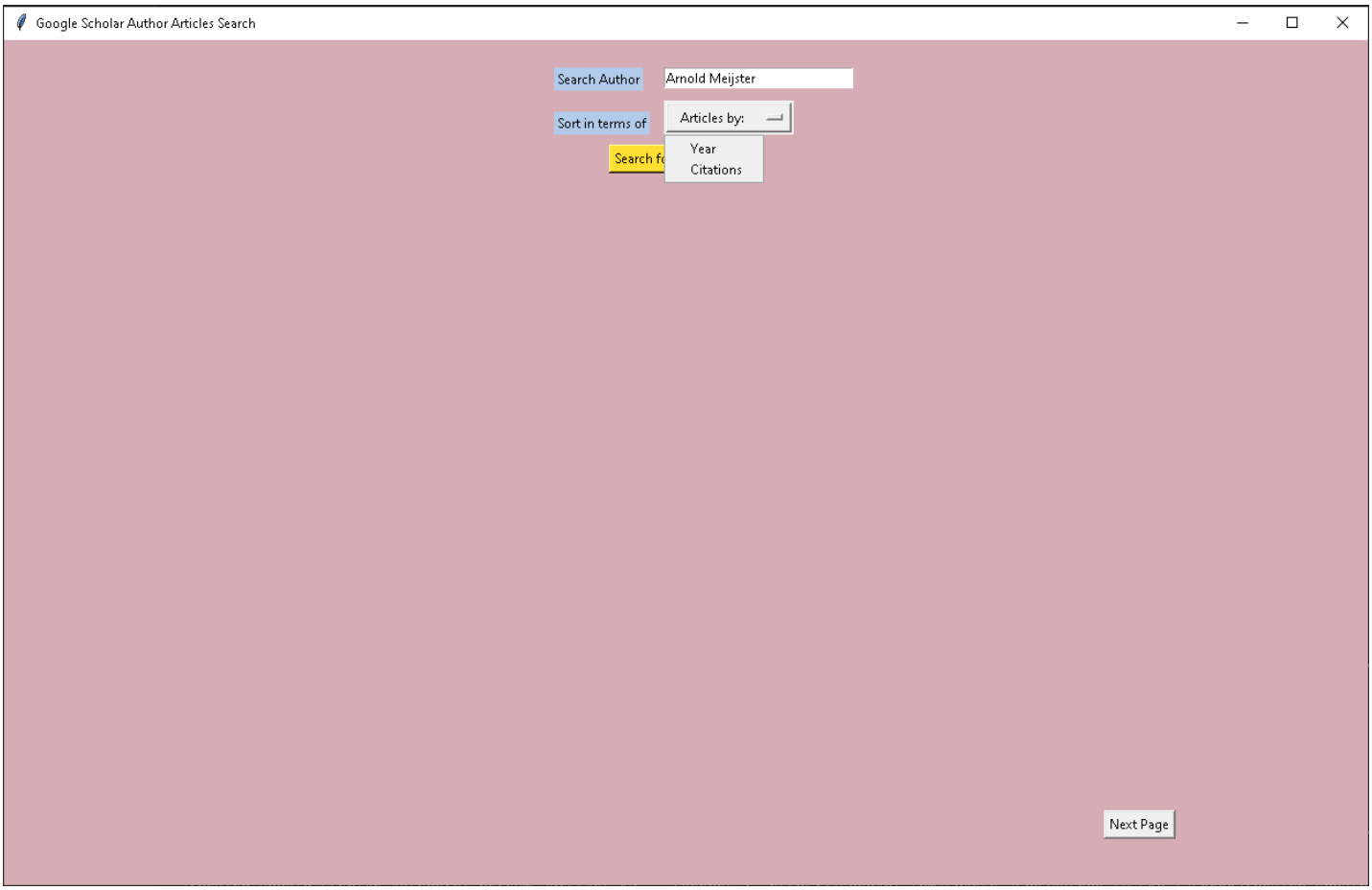
From the users perspective :

In the Graphical User Interface we have an input field, a menu with two choices and a button. The user should input the name of the Author he is interested in, then choose one of the two variants for sorting the results, and afterwards press on the button : "Search for Author". After processing, the results will appear in the same window on user's screen. User has option to generate another page of results by clicking the button : "Next Page".

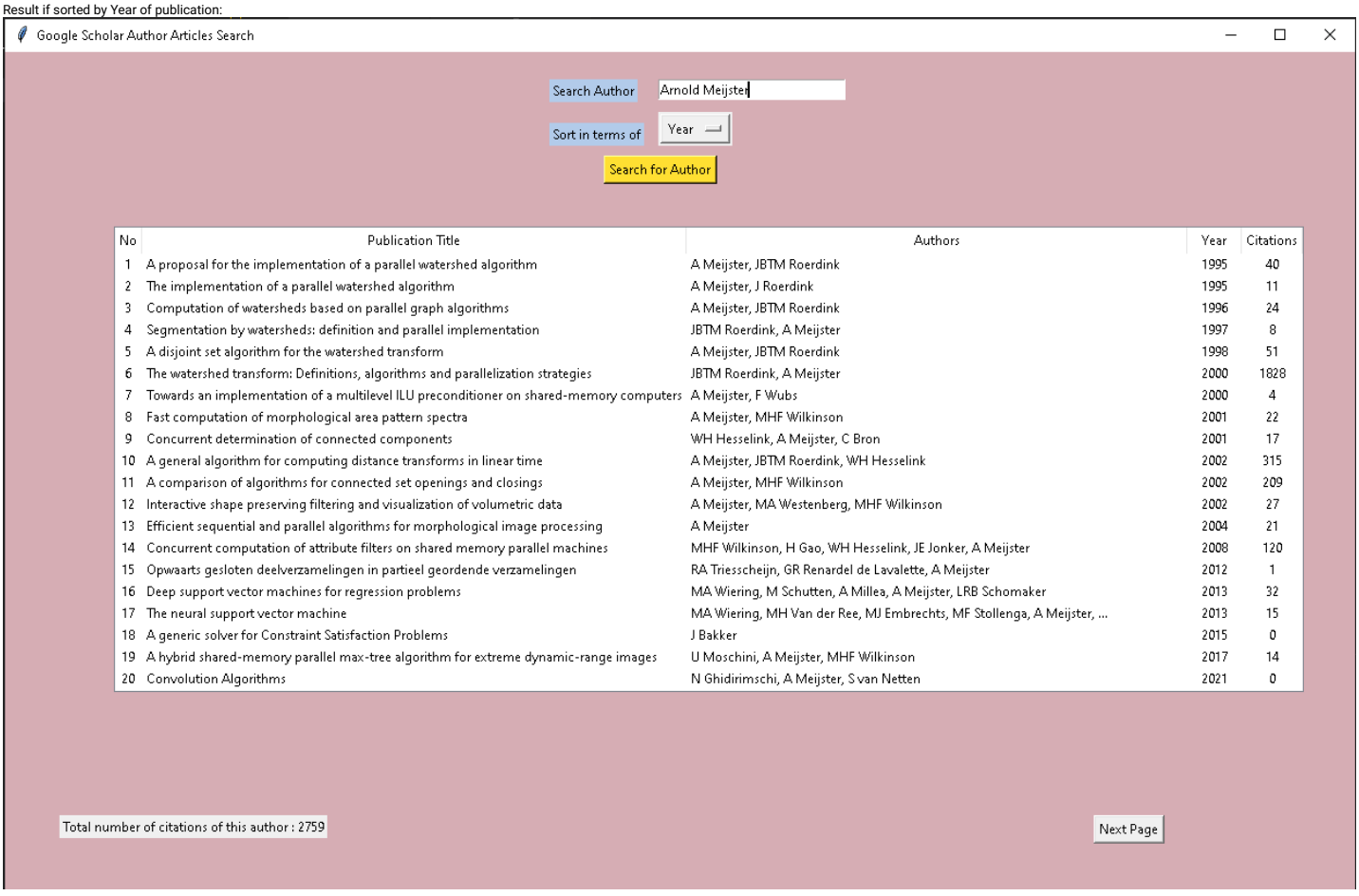
Input:



Selecting the filter by which means we will sort the result :

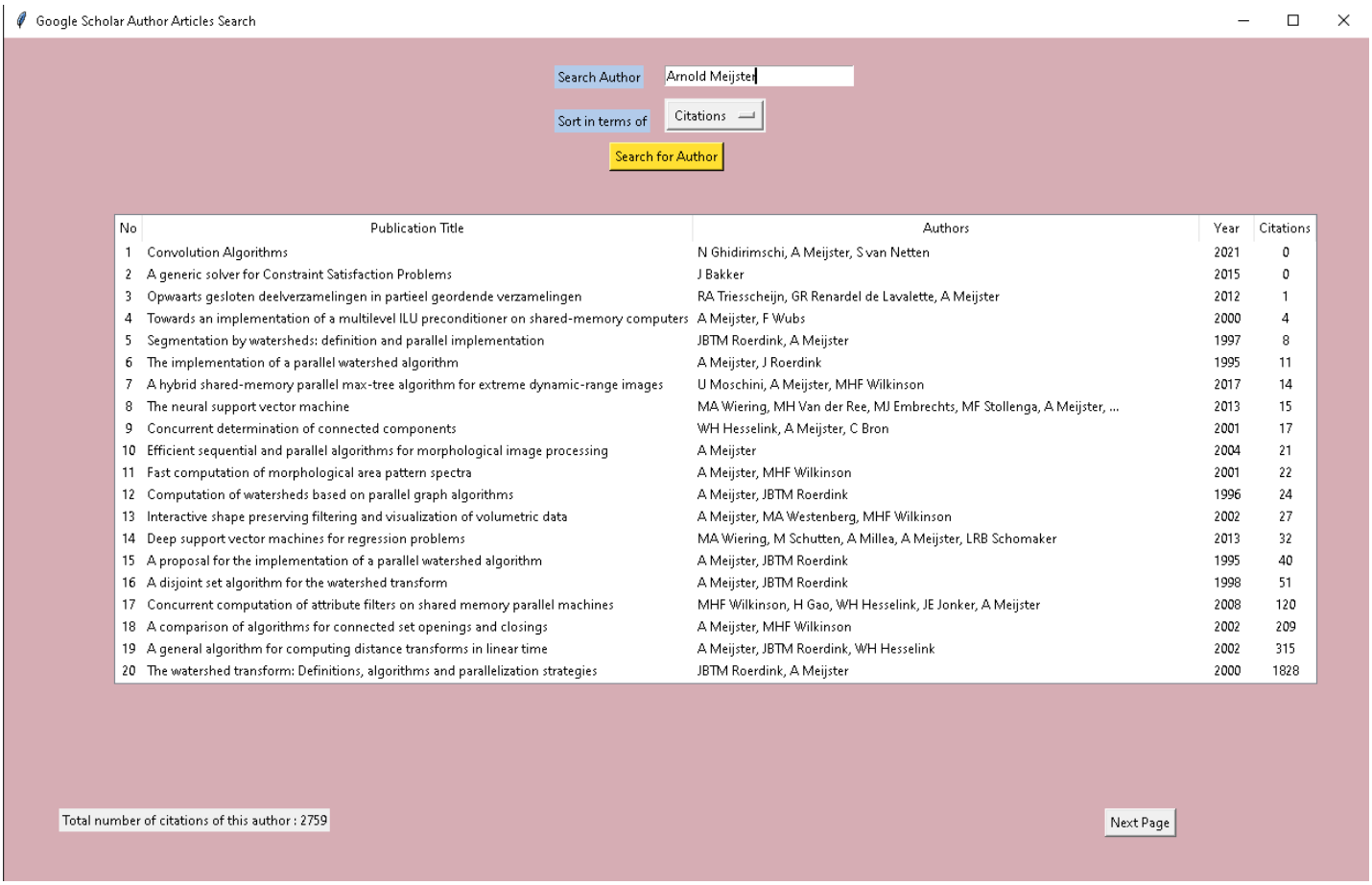


Result if sorted by Year of publication:



No	Publication Title	Authors	Year	Citations
1	A proposal for the implementation of a parallel watershed algorithm	A Meijster, JBTM Roerdink	1995	40
2	The implementation of a parallel watershed algorithm	A Meijster, J Roerdink	1995	11
3	Computation of watersheds based on parallel graph algorithms	A Meijster, JBTM Roerdink	1996	24
4	Segmentation by watersheds: definition and parallel implementation	JBTM Roerdink, A Meijster	1997	8
5	A disjoint set algorithm for the watershed transform	A Meijster, JBTM Roerdink	1998	51
6	The watershed transform: Definitions, algorithms and parallelization strategies	JBTM Roerdink, A Meijster	2000	1828
7	Towards an implementation of a multilevel ILU preconditioner on shared-memory computers	A Meijster, F Wubs	2000	4
8	Fast computation of morphological area pattern spectra	A Meijster, MHF Wilkinson	2001	22
9	Concurrent determination of connected components	WH Hesselink, A Meijster, C Bron	2001	17
10	A general algorithm for computing distance transforms in linear time	A Meijster, JBTM Roerdink, WH Hesselink	2002	315
11	A comparison of algorithms for connected set openings and closings	A Meijster, MHF Wilkinson	2002	209
12	Interactive shape preserving filtering and visualization of volumetric data	A Meijster, MA Westenberg, MHF Wilkinson	2002	27
13	Efficient sequential and parallel algorithms for morphological image processing	A Meijster	2004	21
14	Concurrent computation of attribute filters on shared memory parallel machines	MHF Wilkinson, H Gao, WH Hesselink, JE Jonker, A Meijster	2008	120
15	Opwaarts gesloten deelverzamelingen in partieel geordende verzamelingen	RA Triesscheijn, GR Renardel de Lavalette, A Meijster	2012	1
16	Deep support vector machines for regression problems	MA Wiering, M Schutten, A Millea, A Meijster, LRB Schomaker	2013	32
17	The neural support vector machine	MA Wiering, MH Van der Ree, MJ Embrechts, MF Stollenga, A Meijster, ...	2013	15
18	A generic solver for Constraint Satisfaction Problems	J Bakker	2015	0
19	A hybrid shared-memory parallel max-tree algorithm for extreme dynamic-range images	U Moschini, A Meijster, MHF Wilkinson	2017	14
20	Convolution Algorithms	N Ghidirimschi, A Meijster, S van Netten	2021	0

or by number of citations :



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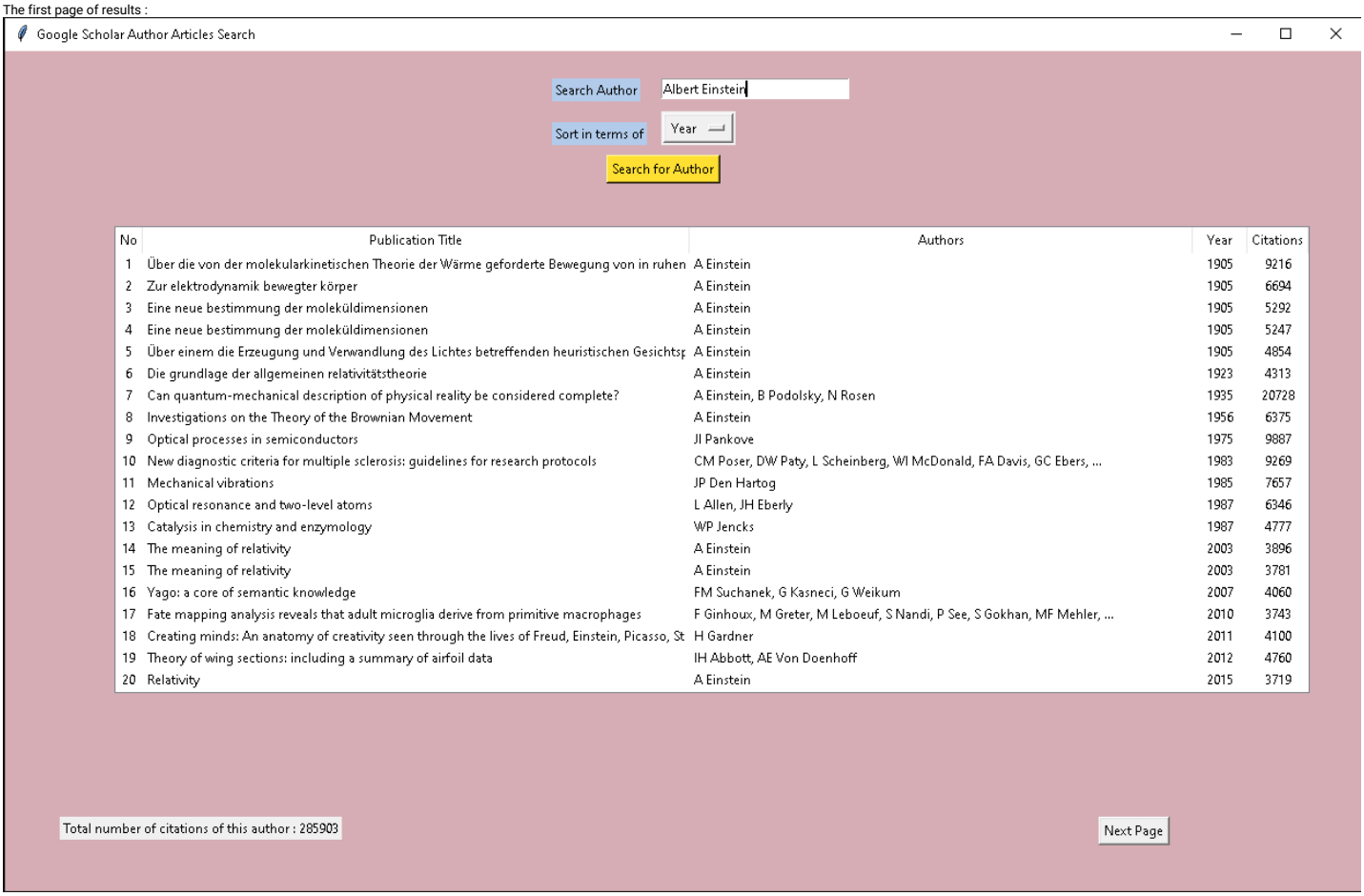
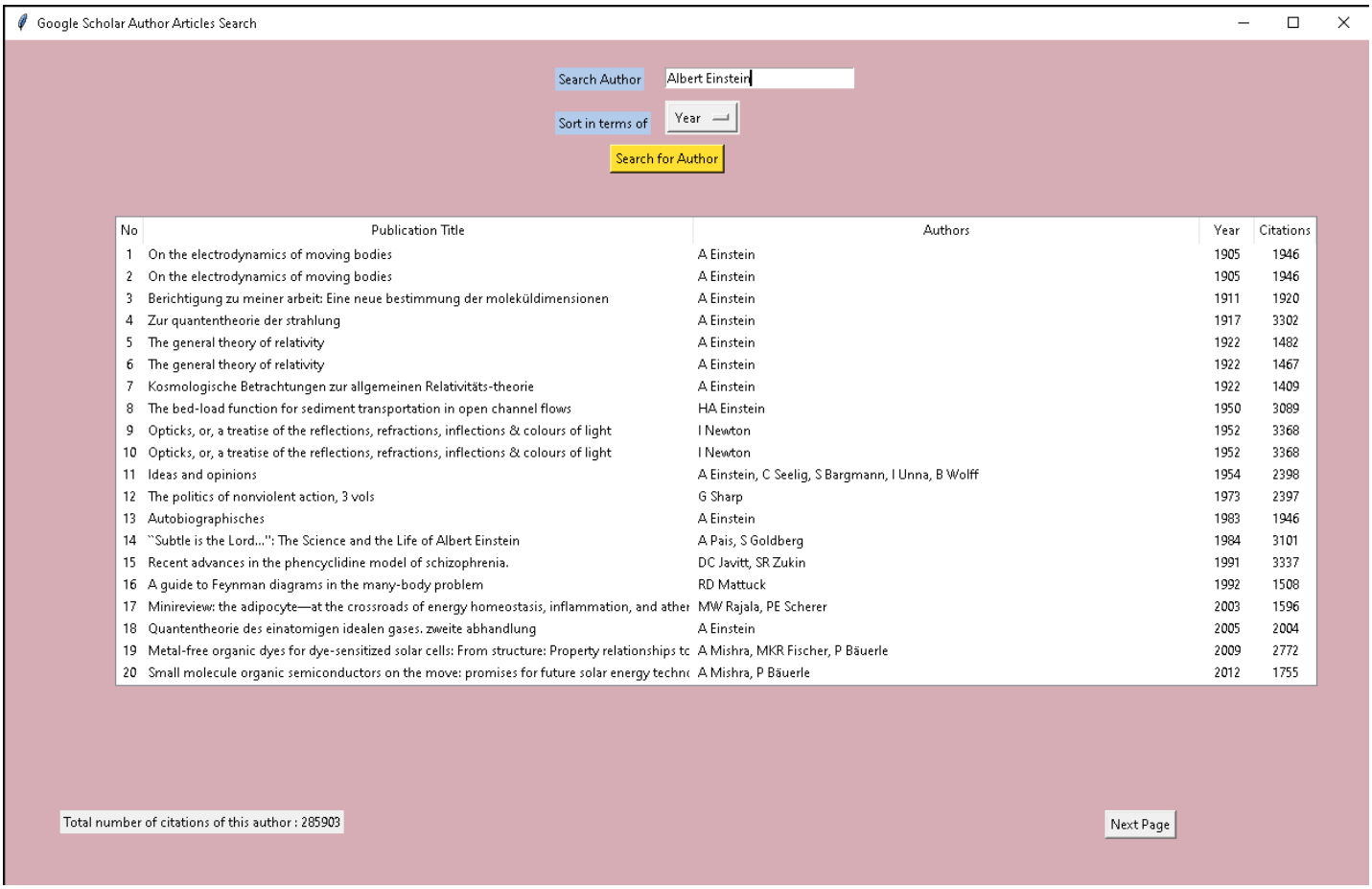
The first page of results :



No	Publication Title	Authors	Year	Citations
1	Über die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhen	A Einstein	1905	9216
2	Zur elektrodynamik bewegter körper	A Einstein	1905	6694
3	Eine neue bestimmung der moleküldimensionen	A Einstein	1905	5292
4	Eine neue bestimmung der moleküldimensionen	A Einstein	1905	5247
5	Über einem die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtsp	A Einstein	1905	4854
6	Die grundlage der allgemeinen relativitätstheorie	A Einstein	1923	4313
7	Can quantum-mechanical description of physical reality be considered complete?	A Einstein, B Podolsky, N Rosen	1935	20728
8	Investigations on the Theory of the Brownian Movement	A Einstein	1956	6375
9	Optical processes in semiconductors	JI Pankove	1975	9887
10	New diagnostic criteria for multiple sclerosis: guidelines for research protocols	CM Poser, DW Paty, L Scheinberg, WI McDonald, FA Davis, GC Ebers, ...	1983	9269
11	Mechanical vibrations	JP Den Hartog	1985	7657
12	Optical resonance and two-level atoms	L Allen, JH Eberly	1987	6346
13	Catalysis in chemistry and enzymology	WP Jencks	1987	4777
14	The meaning of relativity	A Einstein	2003	3896
15	The meaning of relativity	A Einstein	2003	3781
16	Yago: a core of semantic knowledge	FM Suchanek, G Kasneci, G Weikum	2007	4060
17	Fate mapping analysis reveals that adult microglia derive from primitive macrophages	F Ginhoux, M Greter, M Leboeuf, S Nandi, P See, S Gokhan, MF Mehler, ...	2010	3743
18	Creating minds: An anatomy of creativity seen through the lives of Freud, Einstein, Picasso, St	H Gardner	2011	4100
19	Theory of wing sections: including a summary of airfoil data	IH Abbott, AE Von Doenhoff	2012	4760
20	Relativity	A Einstein	2015	3719

After clicking the button "Next page" :



No	Publication Title	Authors	Year	Citations
1	On the electrodynamics of moving bodies	A Einstein	1905	1946
2	On the electrodynamics of moving bodies	A Einstein	1905	1946
3	Berichtigung zu meiner arbeit: Eine neue bestimmung der moleküldimensionen	A Einstein	1911	1920
4	Zur quantentheorie der strahlung	A Einstein	1917	3302
5	The general theory of relativity	A Einstein	1922	1482
6	The general theory of relativity	A Einstein	1922	1467
7	Kosmologische Betrachtungen zur allgemeinen Relativitäts-theorie	A Einstein	1922	1409
8	The bed-load function for sediment transportation in open channel flows	HA Einstein	1950	3089
9	Opticks, or, a treatise of the reflections, refractions, inflections & colours of light	I Newton	1952	3368
10	Opticks, or, a treatise of the reflections, refractions, inflections & colours of light	I Newton	1952	3368
11	Ideas and opinions	A Einstein, C Seelig, S Bargmann, I Unna, B Wolff	1954	2398
12	The politics of nonviolent action, 3 vols	G Sharp	1973	2397
13	Autobiographisches	A Einstein	1983	1946
14	``Subtle is the Lord...'': The Science and the Life of Albert Einstein	A Pais, S Goldberg	1984	3101
15	Recent advances in the phencyclidine model of schizophrenia.	DC Javitt, SR Zukin	1991	3337
16	A guide to Feynman diagrams in the many-body problem	RD Mattuck	1992	1508
17	Minireview: the adipocyte—at the crossroads of energy homeostasis, inflammation, and ather	MW Rajala, PE Scherer	2003	1596
18	Quantentheorie des einatomigen idealen gases. zweite abhandlung	A Einstein	2005	2004
19	Metal-free organic dyes for dye-sensitized solar cells: From structure: Property relationships to	A Mishra, MKR Fischer, P Bäuerle	2009	2772
20	Small molecule organic semiconductors on the move: promises for future solar energy techno	A Mishra, P Bäuerle	2012	1755

General workflow of the application :

We receive a string with the name of Author input by the user, this string is then used as a query parameter to the scholarly package. As the output from scholarly we opt to extract the unique author ID on Google Scholar platform. This ID is then used as a parameter in performing the search through SerpAPI. The output following this search is then parsed and inserted in a special list of tuples, where each tuple consists of Article's title, author's, year of publication and number of citations. Depending on the user choice, this list is sorted by the given parameter. As the last step, the list is used to draw the final final table which is displayed to the user as the output of the application.