FREIE UNIVERSITÄT BERLIN

GEOWISSENSCHAFTLICHE BIBLIOTHEK

Google Scholar
Strengths and Limitations

Graphic: DALL-E

Coffee lecture, winter semester 2024/2025

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Presentation based on a coffee lecture of Pierre-Emmanuel Roy (2024)

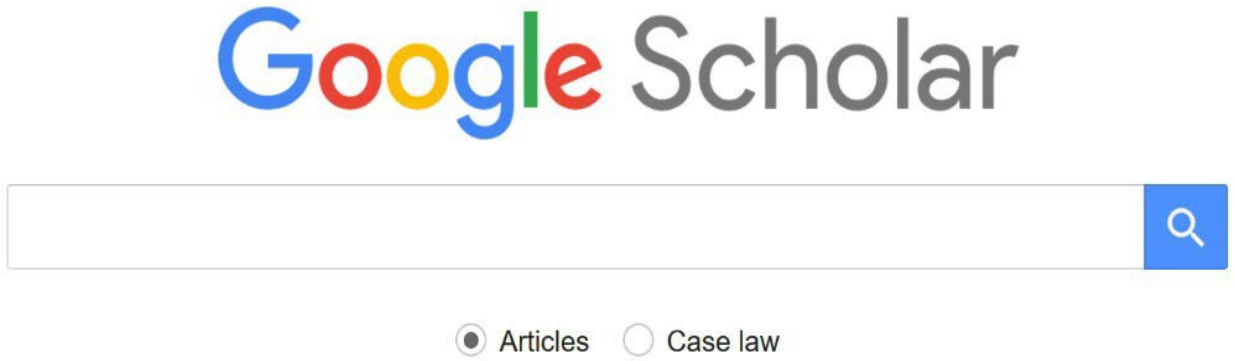
What is Google Scholar?

- Crawler-based search engine for scholarly publications
  - ➢ Sources: academic publisher websites, online journals, university repositories, scholarly websites, etc.
  - ➢ File types: PDF and HTML
  - ➢ Indexed content: articles, books, theses and dissertations, reports, posters, PowerPoint presentations, etc.
  - ➢ What you (probably) won't find: journals (only articles are indexed!), datasets, book reviews, news sections, editorials, announcements…

Source: DALL-E

Why it is so popular?

- Wide coverage: around 389 million records (Gusenbauer, 2019)
  - ProQuest: ca 280 M; Scopus: more than 90 M; Web of Science Core Collection: ca 96 M
  - Take these numbers with a grain of salt!
  - Google Scholar's coverage is not perfect!
- Simple and familiar interface, similar to Google Search



Limitations

1. Noise
2. Bad metadata
3. Limited search options
4. Inconsistent search results

Noise

[HTML] **Groundwater** recharge: an overview of processes and challenges

JJ De Vries, I Simmers - Hydrogeology Journal, 2002 - Springer

… is greatest in those areas – **groundwater** is often the only water … **groundwater** recharge in temperate and humid zones, because recharge is normally included in regional **groundwater** …

☆ Save 99 Cite Cited by 1157 Related articles All 17 versions Web of Science: 565 »

Class Common Name Species

M **Chimpanzee**, M Gorilla - SciELO Brasil

Mammalia Macaque Macaca mulatta NM_001266321. 1a NM_001033021. 1a NM_001032918. 1a NM_001266091. 1a Mammalia Baboon Papio anubis XM_009200345 …

☆ Save 99 Cite Related articles »

FOR THE FAMILY

L **Potatoes**, V Salad, B Cheesecake, CC Cookie - cal, 1977 - staging.thesimplegreek.com

Protein — and — Sauce Pita — or — Bowl Toppings — and — Finishes Page 1 1 2 3

Protein cal. 190-410 — and — Sauce cal. 10-70 Pita cal. 190-200 — or — Bowl cal. 10-280 …

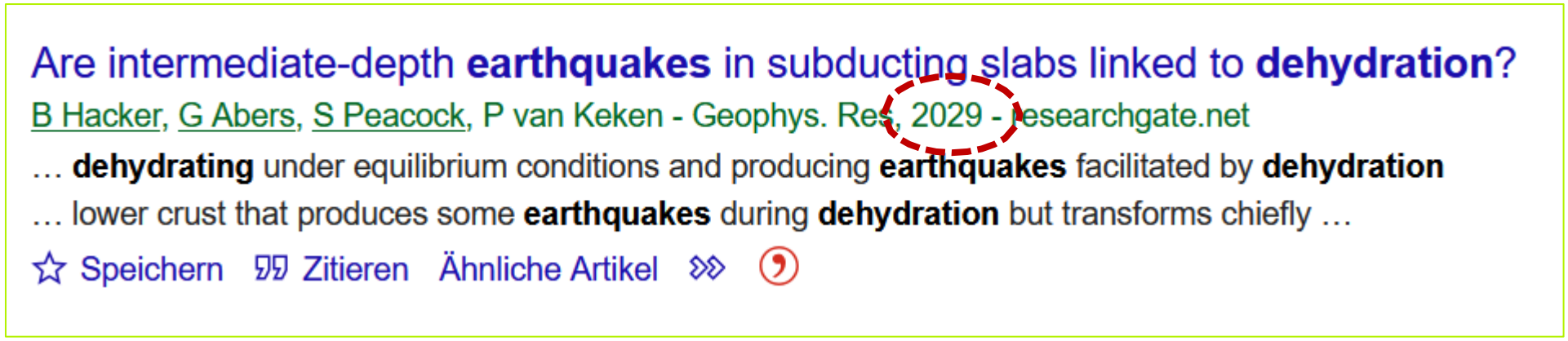
☆ Save 99 Cite Cited by 2 Related articles All 4 versions »

Noise

- Irrelevant records
- Non-peer-reviewed publications
- Obsolete versions
- Duplicates — ca 5% in Google Scholar, almost 0% in Web of Science (Gusenbauer, 2022)

→ **Noise makes it harder to find relevant articles!**

Bad metadata



Bad metadata

Rard II: The 94 million related-article recommendation dataset
J Beel, B Smyth, A Collins - arXiv preprint arXiv:1807.06918, 2018 - arxiv.org
The main contribution of this paper is to introduce and describe a new recommender-systems dataset (RARD II). It is based on data from Mr. DLib, a recommender-system as-a ...
☆ Speichern 99 Zitieren Zitiert von: 12 Ähnliche Artikel »

[PDF] Example Document
J Doe, A Bow - ACM Transactions on Interactive Intelligent Systems ..., 2016 - ceur-ws.org
The main contribution of this paper is to introduce and describe a new recommender-systems dataset (RARD II). It is based on data from Mr. DLib, a recommender-system as-a ...
99 Zitieren

RARD II: The 94 Million Related-Article Recommendation Dataset
J Beel, B Smyth, A Collins - arXiv e-prints, 2018 - ui.adsabs.harvard.edu
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99 Zitieren

Google Scholar parsed the entire PDF and believed the meta-data of the current file was a mix of strings occurring
a) in the middle of the document in a vector graphic (title and author) and
b) in one of the entries in the reference list (Journal and Year).

The (sometimes) weird indexing practice of Google Scholar
Joeran Beel (2019), https://isg.beel.org/blog/2019/08/19/the-sometimes-weird-indexing-practice-of-google-scholar/

Bad metadata

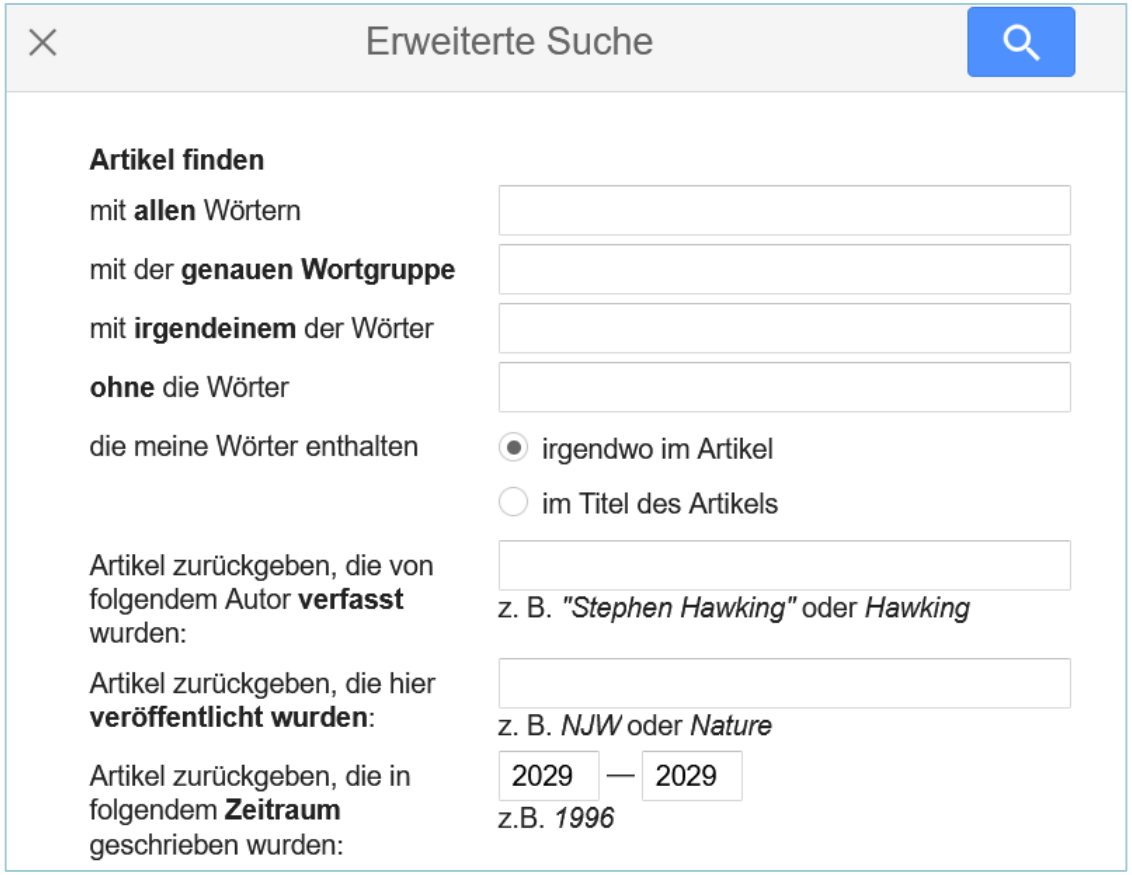
Common metadata errors in Google Scholar (Sauvayre, 2022):

- Author errors
- Citation errors (phantom citations)
- Title errors
- Publication year errors
- Publication source errors (journal name, etc.)

“only 2 of 281 (0.71%) references collected from GS were free from errors.”

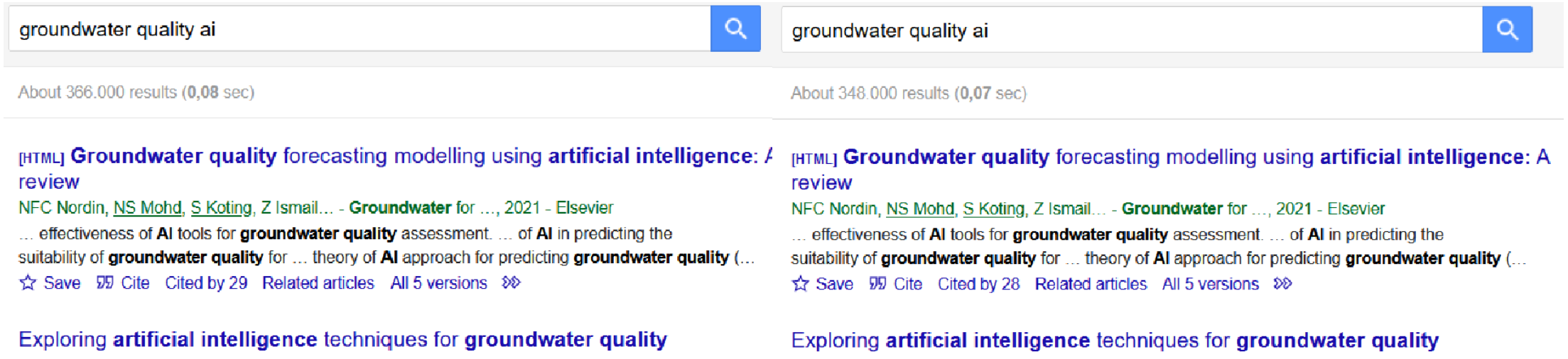
Limited search options

- Boolean operators (AND, OR, -) and quotation marks work
  (Ex. "deep drainage" OR "deep percolation")
- No truncation (geolog*)
- No filters (document type, peer reviewed, language, field, etc.)
- No subject indexing



Inconsistent search results

- Same search query, large fluctuations in number of hits (Gusenbauer, 2019; Bramer, 2016)
- Limits Google Scholar's usefulness for systematic searches



Best use of Google Scholar

- Do not limit yourself to Google Scholar, also use…
  - other multidisciplinary databases with fewer erroneous records and better search functions (Web of Science, BASE, ProQuest…)
  - specialized databases (Geo-Leo, GEODOK, etc.)
  - Datenbank-Infosystem
- Google Scholar might be better suited for “lookup searching” than for “exploratory and systematic searching” (Gusenbauer, 2021)

Thank you for your attention!

Any questions?

Source: DALL-E

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