

Advanced skills for investigation research (tipsheet)

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Tipsheets:

bit.ly/Dan-IRE-Tipsheet2014

bit.ly/Dan-IRE-Tipsheet2013 (with link to the PDF of 2013 presentation)

Presentation at IRE 2015

[Link to Dan's presentation at IRE 2015 \(June 6, 2015\)](#)

Dan's blog:

SearchResearch1.blogspot.com (search challenges each Wednesday)

Dan's site:

sites.google.com/site/dmrussell/ - links to videos, papers, and presos on searching

Dan's G+:

[G+ link](#). I post many of my blog challenges here.

Dan on Twitter:

@dmrussell - stream of tips, search ideas, commentary on research methods

Google Search Operators Cheatsheet

bit.ly/Google-Cheatsheet

Dan's MOOC on PowerSearching

PowerSearchingWithGoogle.com

AGoogleADay.com

Daily search challenges at AGoogleADay.com

List of Google Search Operators

[Document with most of the operators that Google accepts in the query](#)

PRESENTATION OUTLINE

1. What matters, what doesn't matter in search
2. Operators (what are they)
3. Finding a particular KIND of document
4. Search heuristics
5. Removing results with *minus* operator
6. When to use quotes
7. Combining operators
8. Limiting search results by time (and what does TIME mean, anyway?)
9. Advanced search UI
10. Using *related*:
11. Using Custom Search Engines
12. Social search
13. Search by image
14. Subimaging
15. Filter by color / type / size
16. Related images
17. Putting pieces together
18. Alerts
19. Number of results
20. Google Trends
21. Correlate
22. Other Googles Exist!
23. Language Translate
24. Other Wikipedias
25. Finding Tools (e.g., reverse dictionary)
26. Control-F (because I have to tell you this!)
27. Searchable Web History
28. Define
29. Scholar
30. Google Books
31. Google Patents
32. Google Datables
33. Public Data Explorer
34. Google Maps & Earth
35. StreetView and Archives
36. Maps Gallery
37. Metadata Viewer
38. Context search terms
39. Google News
40. Question-answering in the future

DETAILS

* **Wikipedia is a great first stop when learning about a field.** (But it's not the place to stop.) Pay attention to the references to get a sense for what journals exist. Also pay attention to the language of the article; what words / concepts should you know?

* **Read Wikipedia carefully.** Often the "Talk" page is valuable for getting a sense for what the controversial points in a field are, and what debates are up for discussion. (See slide for path)

* **Learn the language / argot of the domain / the value of having the right terms.** In particular, practice your skill of Anti-reading – i.e., the skill of finding words you don't know, then looking them up (don't rely on your ability to deduce the meaning from context). A search for [**domain glossary**] or [**domain dictionary**] can be really useful. (Note that having the right word to search for in domains that you don't know much about can be invaluable.)

* **Terminology tricks:** use: [define term] or a *-search to find examples of the term used in context. Example: search for ["childhood * obesity"] or ["apraxia * treatment"]

* **Look for groups of people** (blogs, forums, listservs, mailing lists) interested in your domain. In this case, there are lots of support groups for people with apraxia. Do a search such as [apraxia blog] or [apraxia listserv] or [apraxia forum]

* **Specialized content:** There are lots of them out there--scienceresearch.com; WOL; ERIC; MedLine; ... Do a search for: [domain databases] OR look on Wikipedia for a list of such databases (site:Wikipedia.org domain database] – look in particular for CATEGORY Wikipedia entries.

* **Use your library to help find specialty databases.** As I'm talked about before, libraries often have access to proprietary databases, which are useful if they're on the domain of interest. (For example, the various genealogy databases are very good for that domain of research.) (Ask your librarian – use "Ask a librarian service if it's late at night") Get a library card.

* **Use the TOC of Books to give you a quick overview.** The Table-of-contents of books in Books.Google.com can be a wonderful place to start looking.

* **For scholarly/academic topics, check Google Scholar.** A search on a domain in Scholar will often give you the latest and greatest academic work in an area. Often, it will be a bit TOO technical to be useful to you. (It happens to me all the time.) But you can use Scholar to identify the people and institutions that are doing the best work. Then you can search for those people and more broad-brush articles they might have written.

* **In Scholar, check out the "cited-by" link.** Then you could browse through the papers citing a specific papers by clicking the "Cited by XXX" for the paper, e.g. "Cited by 922" for an early paper on symbolic execution by King. You can browse more recent papers first by clicking "Since 2011", "Since 2010", (from a pull down menu shown near the top of the result page) one at a time to browse from newer papers to older papers.

* **Search for syllabi from courses at universities.** [site:.edu "machine intelligence"] This will find you lots of syllabi from various classes. This is a great way to get into a topic rapidly.

* **Browse online proceedings of recent major conference** or journal contents in your research topic area from digital libraries (such as ACM digital library <http://portal.acm.org/> or IEEE Explore library <http://ieeexplore.ieee.org/Xplore/>) to find out relevant papers. Browse online technical programs or accepted papers of major conferences posted on their conference webs before the proceedings are available in digital libraries, and then search specific paper titles since some researchers may post their paper PDF files on their homepages (typically after camera ready deadlines).

* **Look for professional associations in that area:** Search or browse ACM digital library <http://portal.acm.org/> or IEEE Explore library e.g., ieeexplore.ieee.org/Xplore/ to find papers and their references, as well as the papers citing them. ACM's digital library could more easily allow you to navigate from a paper to papers from the list of references cited by this paper.

* **Find out who are the relevant / best writers in the domain.** And once you know that, find out what else they've written. Often, it will be on topic and relevant to your quest. Check on Google Books for their collected books. Look at the bottom of the page to see "related books"

* **Find out the best institutions that work in the domain.** Same idea, except you want to limit your searches to that particular place. For example, you might find that the team doing the best research is all in the Geophysics department at the University of Pocatello (fictitious example).... then a site-limited search like [site:upocatello.edu/geophysics] might reveal a lot of things you never thought about.

* **learn about the space of ideas by suggestions...** Type in the keyword of a specific research topic (such as "machine intelligence") or the title of a research paper known to you. Then for relevant papers, you could see a list of papers related to the keyword, typically with those papers with more citations shown earlier.

* **Remember Reddit.** There are amazing reddit groups. Be aware that reddit groups exist that have large numbers of people standing by to identify your strange fish, insect, flower, or animal behavior. Try: [site:reddit.com domain]

* **Filter by filetype:** If you find too many irrelevant results, you could add [filetype:pdf domain] to find only the PDF files, often the format of research papers and government reports.

* **Check Google Books for books on the domain.** You might be surprised at how often books are still incredibly useful to learn something quickly. Pay attention to the table of contents to get a quick lay-of-the-land. The authors have gone to a lot of trouble to organize a book in terms of all the pieces you need to know about. Check it out in this example: the table-of-contents for a textbook on aphasia). Then search inside the book to find more precisely targeted content.

* **Use your social networks.** As I'm mentioned before, sometimes the best way into a field is to reach out to your friends, especially those that have broad-ranging interests or are really well-connected themselves. Often a post to Facebook or G+ (or your favorite community) can get you the right information very quickly. (In truth, this is why I lurk on a number of lists... just so I can learn from them and ask the occasional question.) Teachers sometimes talk about their PLN (Personal Learning

Networks)--it's the same idea--developing and cultivating a group of people that you can ask questions of (and implicitly, also answer their questions too). (Example: In my PLN, I know people who served in WWII submarines...)

*** Find trade associations in the domain.** Use context terms in your searches to describe what you're looking for. (e.g. "association")

*** Other Media often have very useful information as well:**

** Check YouTube for videos on the domain. Remember that you can use many of the tricks from regular web-search on YouTube. (e.g., using context terms to describe what you seek)

** Try images: ["electric motor" motorcycle diagram] or [cichlid evolution]

** Check shopping... Learn what kinds of brand names exist in this area; names of retailers, producers, etc.

*** Look for review articles in scientific journals** (once you find the journal, you can either use THEIR on-journal search tool, or use site: filter in Google) See Scholar.Google.com

*** Try Microsoft Academic Research tool**, especially to discover connections between co-authors <http://academic.research.microsoft.com/> (Microsoft's equivalent to Google Scholar)
Nice method to get information about the journals that are publishing in a particular field. Click on the journal name to find out information about the journal's publication record, number of papers, etc. (Yeah, I know I work for Google, but MS has a good tool here. You think I'd ignore it or not tell you about it?)

*** Search for tutorials and lessons on the domain.** When you need to learn something quickly, do some searches where you explicitly search for things like [domain tutorial] or [domain seminar] or [domain training] or [domain lesson] or [domain lecture] Pro tip: Sometimes it's really useful to also limit your search to presentations. Example: [aphasia filetype:PPT OR filetype:PPTX tutorial]

*** Look for a QA site in the domain.** Some domains (like math, programming, English, finance, bicycling, music, cognitive science, etc) have QA sites (question-answering) that are amazingly good. In particular, check out the StackExchange QA sites are pretty great as a broadly based set of experts can answer questions (be sure to look for your question before you ask it out loud). Some of these QA sites are pretty junky, but the StackExchange sites are generally very good.

*** Look for diagrams / infographics that capture info about your domain.** Try looking in Google Images for [domain diagram] [domain infographic] -- and then try SITE: limiting your searches to places where you might plausibly find summary information graphics about the topic. [site:nytimes.com domain] or [site:scientificamerican.com domain]