Mastering Google for Science and Engineering:

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Objectives:

- Understand when to use Google
- Learn Google search commands
- Understand Google limits

Let's try to find information about **magnetically levitated vehicles (MagLev).**

- Most of us would just type the whole thing into Google, right?
- This would yield around 80,000 results
- Can we say which ones are good or correct? Tough call! Let's see how we can narrow those down with some commands

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" "

Putting quotes around a phrase - two words or more - improves your precision as it limits results to an exact phrase. Example – ["magnetically levitated" vehicles]

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site:

When you will use this command Google will restrict your search results to the site or domain you specify. For example the following query - [("magnetically levitated" OR MagLev) vehicles (site:edu OR site:gov)] - will retrieve results only from US universities or US government websites. Some useful domains include the following - edu (US universities), gov (US government), ca (Canadian content), ac.uk (UK universities), org (mostly NGO's). You can also restrict your results to a site or domain through the *Advanced Search* page.

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filetype:

Including this command in your query, will instruct Google to restrict the results to specific file formats. For example the following search will find only the powerpoint presentations – [("magnetically levitated" OR MagLev) vehicles (site:edu OR site:gov) filetype:ppt]. Some useful formats include the following - pdf (Adobe Acrobat), doc (MS Word), ppt (MS PowerPoint), and jpeg (Web images). You can also restrict your results to a specific format through the *Advanced Search* page.

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intitle:

This command will result Google to retrieve documents containing the requested terms in their title. Example - [(intitle:"magnetically levitated" OR intitle:MagLev) vehicles site:gc.ca]. You will need to use intitle: command for each search term that you want to appear in a document title.

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conversion

Just type the appropriate numbers and units, following this example – [150 lb in kg]. You have to know the units abbreviation though.

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define:

While using this command Google will show you definitions from pages on the web for the appropriate term(s). This advanced search operator is useful for finding definitions of words, phrases, and acronyms. Example - [define:MRI]

Google Scholar (GS):

- Launched in November 2004, uses Google's crawler to search scholarly material
- What's it searching? Scholarly material (e.g. articles, theses, books, preprints, abstracts, reports) published by academic publishers, professional societies, repositories and universities
- Unfortunately, Google does not list its sources, unlike other scholarly search engines (like Scirus.com)
- Good for getting started or looking for a specific citation/needle in a haystack.
- GS does citation indexing (similar to Web of Science)
- Not good for advanced or comprehensive searches for known scope of indexed materials and better retrospective coverage.
- Seems to cover approximately 90% of engineering articles (particularly good for materials starting with the mid-1990s) [1]
- Use the same command language as in regular Google
- You can install UBC eLink under Scholar Preferences to see articles we own @ UBC

Now let's play with GS:

Let's run the same search for ("magnetically levitated" OR Maglev) vehicles)

- In what order are the results displayed? Can you change this display?
- Can you limit your search to a specific publication type (e.g. review articles)? Can you limit your search by date?
- Select 3 citations and email the abstracts to yourself.

Google Scholar vs. Compendex: The Battle

1. Topic search
    a. Lets try the topic of organic superconductors
        i. GS – 20,000 – the first results are from the early 1990s. Are those the most relevant?
        ii. Compendex – 4,000 results, let's try to narrow those down using the categories on the right part of the screen. Let's select "Organic Superconducting Materials "
    b. Let's try an example of digital paper in both Google Scholar and Compendex
        i. GS – almost 2,700,000 results. The first few citations are odd and are not necessarily relevant, are they?
        ii. Compendex – 120,000 results. Try re-arranging them by dates
2. Author search
    a. Dirk Van Zyl – UBC faculty – mining engineering
        i. GS – lets run this search from the advanced search (author search box) – 90 results. Is it the same person? Hmmm…Doesn't seem

[1] Meier, J. J., & Conkling, T. W. (2008). Google Scholar's coverage of the engineering literature: An empirical study. *The Journal of Academic Librarianship, 34*(3), 196-201.

so…and when I limit my results to Engineering, Computer Science, and Mathematics – I get only 4 results…

ii. Compendex – try author index from expert search tab – all variations of the person's name – 24 records

3. Journal coverage:
   a. Lets take a look on the highest ranked journal in applied physics - NATURE MATERIALS
      i. GS – let's run a search from the advanced search page – under "Publication: Return articles published in". We receive 1,800 articles
      ii. Compendex – let's run the search from the serial title – 1,200 articles. If you follow up closely you can see that Compendex covers this journal from volume 1. So, there is duplication in GS, lots of duplication…
   b. Lets try the same for JOURNAL OF CATALYSIS – one of the top chemical engineering journals
      i. GS - 25,000 results
      ii. Compendex – 2,500 results. Why such a huge difference? Lots of duplication, lots…
4. Now let's try a topic of your own, shall we? What do you think? Now let's have a vote: would you use in your next academic search – GS or Compendex?