

Literature research

Synthesis in The Age of Information

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(original material from Roelof Kemp & Nick Palmer)

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Why?

- Why would you search literature anyway?
- Part of the scientific method:
 - Find out what is known, and build on that



Steps

- Find literature
 - Identify a set of papers or books
- Judge literature
 - Identify the most valuable elements
- Combine literature
 - Combine and connect information from different the sources



Find literature



Tools

- Google Scholar
- CiteseerX
- ACM Digital Library
- IEEE Xplore
- DBLP ("complete search")
- (Web of Science)
- (PubMed)



Find literature



Use boolean operators

- Cigarettes AND effect
- Smoking OR cigarettes AND health
- (tobacco OR smoking)
AND (cancer or effect)



Word games

- Synonyms: memory OR RAM
- Plurals: liberty/liberties, mouse/mice
- Wordstems: educat*
- Quotes: "mental health"



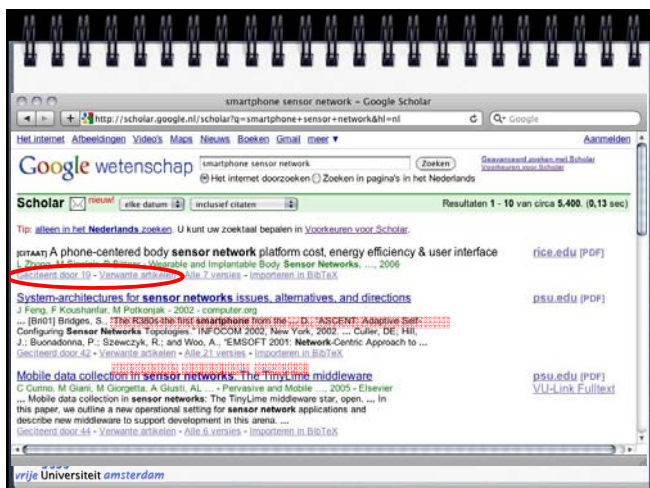
Google Scholar: pro's & cons

- +More results (books, journals, theses, etc)
- +Simple to use
- +Links to full text items (use UBVU proxy)
- +Cited references, related papers
- Less quality control, some non-academic
- Too many results
- Inconsistent bibliograph information



And then what?

- Follow the references
 - In a paper (outgoing links)
 - To a paper (incoming links)
 - Related (as in Google Scholar)
 - From the same authors



Good to know

- Many papers have a unique number
 - DOI: Document Object Identifier
 - Bijv. 10.1109/BSN.2012.3
- That number gets you to the online version at the publisher
 - Use: <http://dx.doi.org/UNIEKNUMMER>
- The VU netwerk gives access to many commercial publishing sites
 - Works at home as well:
 - <http://ub.vu.nl/nl/faciliteiten/thuis-werken/>



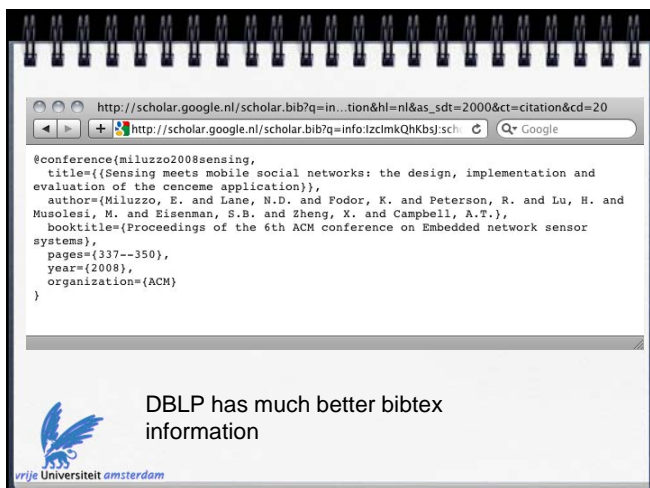
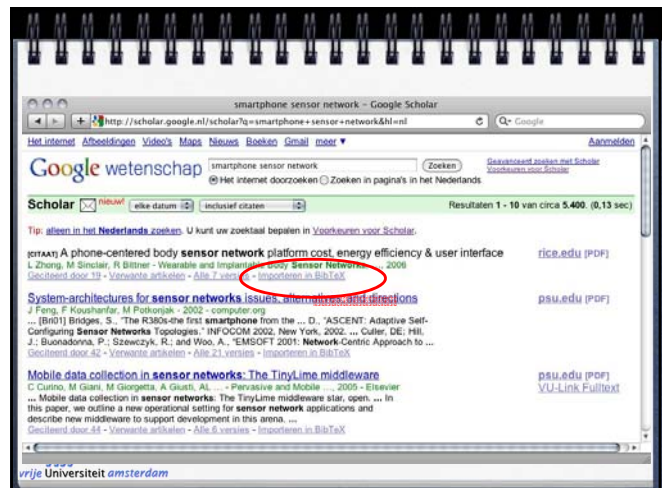
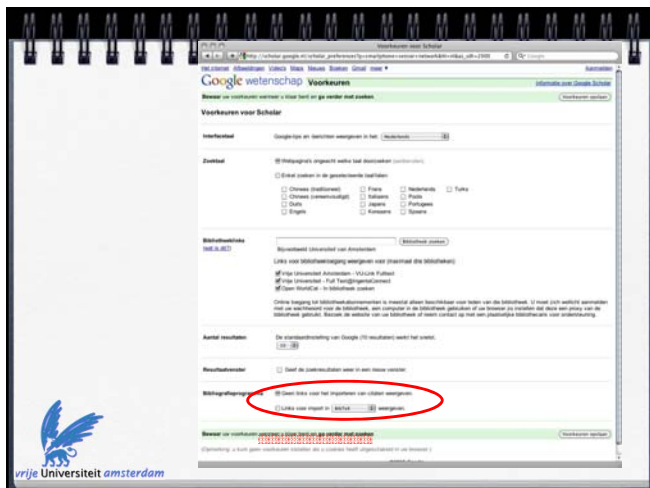
Information overload!

- Bibliography management
 - Keep track of what you have read
 - Keep track of what you want to read



Manage the overload!

- Use software:
 - BibDesk (MacOS)
 - JabRef (Java)
 - Mendeley (online)
 - etc...
- Exchange format for references
 - Bibtex (related to LaTeX)



DBLP has much better bibtex information



Three types of literature

- Primary sources = original research (e.g. Research papers)
- Secondary sources = about primary (e.g. Survey papers, text books)
- Tertiary sources = about secondary (e.g. Handbooks, encyclopedia)



Primary sources

- Original research materials
- Not filtered through interpretation ("80% of everything is cr*p")
- Not evaluated by second party
- Examples: journal articles, PhD theses



Secondary sources

- Sources about primary (original) information
- Modified/selected/re-arranged for a specific purpose or audience
- Examples: textbooks, review articles



Tertiary sources

- About secondary (twice removed from originals)
- High quality, but (of course) somewhat older
- Examples: Handbooks, encyclopédias



With a bit of luck...

- Survey Paper
 - Another's Literature Study
 - Often with taxonomy
- But:
 - Doesn't always exist
 - Isn't always on target



Work your way up & down

- Start with secondary or tertiary sources
- Use the references to get to (older) primary sources
- Use "cited-by" search to get to newer primary sources



Judge & critique



How to read?

- Save time:
 - Read abstract
 - Read introduction
 - Read conclusion
 - » Read the rest



Tools

- PDF Reader
 - You need Highlighting
 - You need bookmarking
- Eg: FoxIT PDF Reader
- (recently also: Adobe Acrobat Reader DC)



Judge on what?

- Clear problem / subject?
- Significant? (scope, relevance)?
- Right perspective?
- Research methods?
- Theoretical framework?



Judge on what...

- Link between theory and experiment?
- The right references?
- Correct data acquisition?
- Correct data analysis?



Judge on what.....

- Correct argumentation?
- Sufficient focus?
- Strong and weak points?
- Relation with your own topic?



Practical tips

- Make notes!
 - use a bibliography manager!
 - What were their questions
 - What were their contributions
 - What open issues remain



Combining literature



What you want to find out:

- What is known?
- What is unknown?
- What is broadly accepted?
- What is controversial
- What still needs to be done?



How to do that?

- Look at your notes:
 - Find overlapping areas
 - Find unique contributions
 - Identify the controversies
 - Identify the consensus
 - Identify the open questions



Build Structure

- Organise your findings
 - Taxonomy?
 - Chronology?
 - Thematically?
 - Methodologically?



Report on your reading

- Show us you've searched thoroughly
- Show us you have insight
- Give us an analysis
- Identify the important contributions

