Research in Medical Informatics

Class 2

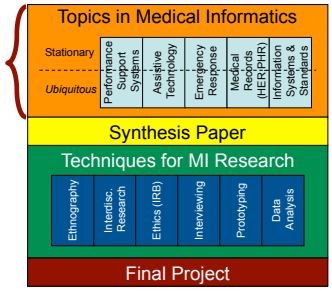
Agenda

- 3:00-3:10 Announcements
- 3:10-3:25 Technical Literature Searches
- 3:25-3:35 Scenario Exercise
- 3:35-3:50 Medical Literature Searches

Announcements

- Google Group
- Laptops Friday

Where are we?



Why read the literature?

- Increase the likelihood someone will care about your work
  - Not duplicate an already known result
  - In early stages of research, many approaches are taken
  - After a while, one approach wins out
  - The approach becomes the paradigm; people stop asking if it is the correct answer
  - The original question is forgotten/irrelevant; Solution is applied to other areas

A year of hard work can save a week of reading!

Edited from T. Veldhuizen; Waterloo U. http://kanushu.uwaterloo.ca/~tveldhui/tools.html

Caveats when reading the literature

- Do not necessarily accept the prevailing wisdom unquestioningly and not search for alternative ideas/answers (*It has already been solved…next paper)*
- The writer may be crusty - you are the new deal that could address this problem from a fresh prospective

…a certain naïveté, unburdened by conventional wisdom, can sometimes be a positive asset. *Harish-Chandra (Cole Prize in Algebra, 1954)*

Edited from T. Veldhuizen; Waterloo U. http://kanushu.uwaterloo.ca/~tveldhui/tools.html

Caveats when reading the literature

- Balance enlightenment and ignorance to create original work

Strategy:
1. *Brainstorm as many possible ideas, methods, solutions as you can.*
2. *Evaluate each solution and flesh out the most promising.*
3. *The brainstorming and evaluation gives you ideas for keywords to search for (most searches fail because people do not know what keywords to use)*
4. *Then do a literature search.*
5. *Do not get discouraged!*

Edited from T. Veldhuizen; Waterloo U. http://kanushu.uwaterloo.ca/~tveldhui/tools.html

What is a new idea?

- Computer science literature as of 2005 has approximately 2,000,000 publications (depending on how you count)
- "Nobody has done this before" are not falsifiable

Unless your idea/theorem/approach did not exist 10 years ago, you should assume the problem has been tackled and attempt to do it differently, better, etc.

Edited from T. Veldhuizen; Waterloo U. http://kanushu.uwaterloo.ca/~tveldhui/tools.html

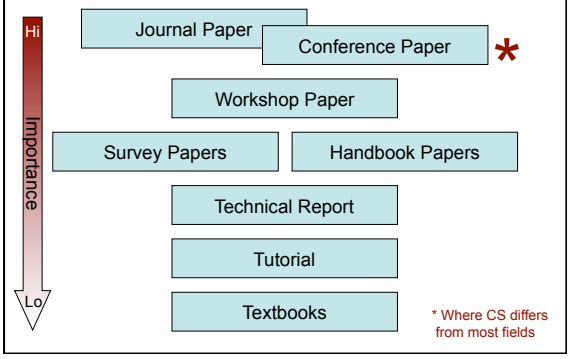
The key to most searches…

- Lots of money to join associations
- Part of a university/large library system

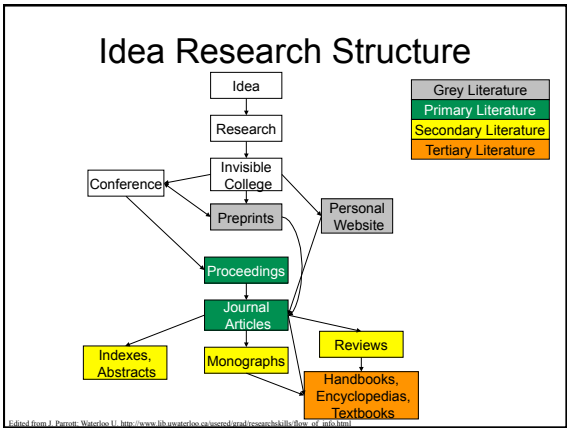
How to access university material remotely?

•VPN
- http://www.colorado.edu/its/vpn/

CS Literature Pecking Order



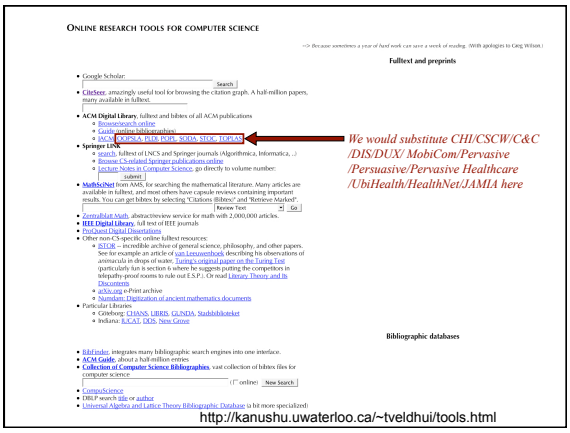
Idea Research Structure



Edited from J. Parrott, Waterloo U. http://www.lib.uwaterloo.ca/users/grad/researchskills/flow_of_info.html

What to search?

- Need to have background so you know
  - What questions to ask
  - What terms to search for
- Things to look for
  - Key papers (weights provided by Google Scholar, CiteSeer)
    - E.g., Charting Past, Present, and Future - Google Scholar
  - Key researchers (DBLP is good for this)
    - E.g., G. Abowd
- Things to create
  - Citation graph
  - Backward bibliography search
  - Forward bibliography search
- Ask around



Brainstorm Exercise Scenario

Think of this scenario...

You have a meeting with Patty Brennan, Ph.D., a nurse researcher at the University of Wisconsin Department of Industrial and Systems Engineering.

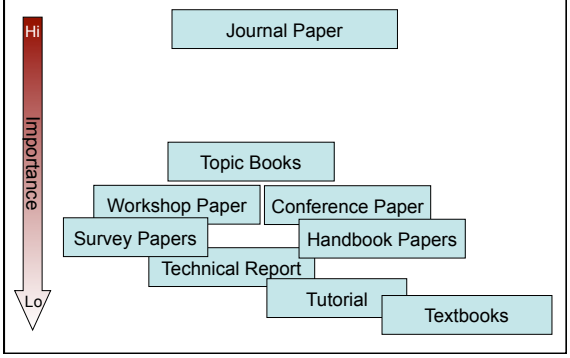
What can you find out about her? Where did you find it?

- What are her research interests?
- What papers has she published recently?
- Where did she publish those papers?

Difficult part about medical informatics research…

- Medical researchers most likely do not post their publications on their websites
- Medical researchers may not have a website
- They publish in different venues…

Medical Literature Pecking Order



How to solve this problem…

- Google them (standard answer)
  - Do they have a personal website?
  - Are they associated with a group/university/etc.?
    - Is there a publication site associated with that group?
- Find out what their interests are
- Identify papers that may be of interest to you and get the papers…
  - Full reference? If not, google to find full reference
  - Google the paper - someone may have it out there for free (probably not)
  - Go to the library http://libraries.colorado.edu/
  - Select Find E-Journals
  - Use reference to find paper (pdf papers are the best)

Alternative sites that help…

- PubMed - National Library of Medicine Site
  - http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=PubMed
- Journal of the American Medical Informatics Association
  - http://www.jamia.org/
- BioInfoBank Library
  - http://lib.bioinfo.pl/

Help! The library does not have the journal/book/etc.!

- Get the complete reference
- Go to the Interlibrary Loan Site
  http://ucblibraries.colorado.edu/ill/expanding.htm
- Wait 2 days - 8 weeks… (depends on request)

- E.g., Mobile Applications that Empower People to Monitor their Personal Health. Kay H. Connelly, Anne M. Faber, Yvonne Rogers, Katie A. Siek, and Tammy Toscos. In Springer e&i, 123(4):124, 2006.

  ISSN: 0932-383X (gedruckte Version); ISSN: 1613-7620 (elektronische Version)
- http://www.ove.at/medien/eui/aktuell.htm
- http://www.springer.com/west/home/springerwiennewyork/computer+science?SGWID=4-40631-70-1086776-0

Great - I found the literature… now what?

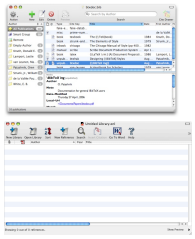
You can write a survey paper…

You can start a new project…

You can organize your references…

- LaTeX
  - BibTeX
    - Bib2html
    - BibDesk
  - Word
    - EndNote
    - Bookends (Mac) – takes BibTeX & RIS
- Citeulike
- RefWorks
  - http://ucblibraries.colorado.edu/how/refworks.htm
- Endnote to BibTeX
  - http://libraries.mit.edu/help/endnote/endnotelatexfaq.html#3
- BibTeX to Endnote
  - http://www.clib-jena.mpg.de/main/endnote/endnote_latex_en.htm?mp=18

Blurbs come in handy here



Looking forward

- Week 1: Friday – Bring laptops for information searches\
  - Topic Selection Due: August 31
  - Topic Assignment Out: September 1
- Week 2: Pervasive Healthcare
  - September 1 NO CLASS – Labor Day
  - Quiz: September 3
- Week 3: Assistive Technologies
- Week 4: Qualitative Field Methods
  - September 17 NO CLASS – Field Exercises