How to perform a bibliographic research

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What can we find ?

- Wikipedia
  - Just to start before the coffee ☺
- Thesis
  - PhD, Master
- Books
  - Sometimes collections of papers
- Project deliverables
  - Not reviewed by third party
  - Often obfuscated for intellectual property reasons
- Standards
  - Often they do not aim at explaining reasons
  - Sometimes well written (e.g., RFCs)
- Papers
  - Fully reviewed research reports

Research engines

- Very general
  - http://www.google.it
  - Everything: Wikipedia, PhD Thesis, Master Thesis, etc.
- General (but be carefull)
  - http://scholar.google.it/
  - IEEE, ACM, Elsevier, less important societies
- IEEE
  - http://ieeexplore.ieee.org/
- ACM
  - http://dl.acm.org/

Paper types

- Long papers
  - Found on “Journal …”, “Transactions on …”, “Proceedings of IEEE”, “Magazine”
  - Survey and overview on a topic
  - Detailed solutions
  - Not last-minute results (high preparation/publication delay)
- Short papers
  - Found on “Conference …”, “Workshop …”, “Symposium … “
  - Last-minute results (low preparation/publication delay)
  - No space for details and survey
  - Written worse than journal papers

Survey and overview

- Look for these keywords in the title or abstract or check inside Magazines
- Description of the literature about a given topic
- Usefull to understand the last-decade trends on a given topic

Paper creation process

- Journals
  - Submission
  - 1-2 revision cycles (if accepted)
  - Publication queue
  - Process length: 1-2 years!
- Conferences and similar
  - Submission
  - One shot review
  - Pubblication
  - Process length: 4-5 months

Look at the label!

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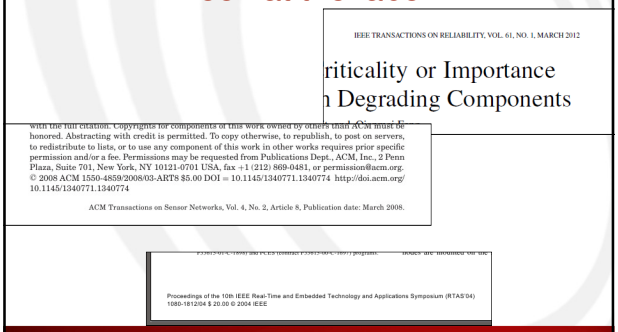

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ACM Transactions on Sensor Networks, Vol. 4, No. 2, Article 8, Publication date: March 2008.

Proceedings of the 10th IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS'04)
1080-1812/04 $ 20.00 © 2004 IEEE

Take note of the bib info

- To cite other papers in you paper or thesis
- BibTex format
  - Standard
  - Directly reusable
  - Little bit tricky
- Plain text
  - Immediate
  - Less reusable

Organization of a paper

- IMRAD
  - Introduction, Methods, Results and Discussion
- Plus
  - Title, abstract, authors, acknowledgements, declarations, references
  - Tables and figures; legends

Reading a scientific paper

- This is not a novel
- No need for a linear approach
- Look at
  - Title
  - Abstract
  - Figures, tables
  - Introduction, results, discussion
  - Then methods

Abstract & Introduction

- Abstract should give you a brief summary of the paper's main finding
- Introduction provide a background to the paper and a rationale for the investigation in more detail than is possible
- The abstract an introduction help you to decide whether, why and how to read

Methods

- Should be detailed enough for another scientist to replicate the work (volumes, times, company material was purchased from etc.)
- In reality, often compressed and you may need to look up another paper that is referenced for more detail.

13

Results

- While the introduction poses the questions being asked, the results describes the outcome of the experiments that were done to answer the questions.
- Results are often simply stated with *interpretation* of them coming later in the discussion.
- Figures and tables allow the reader to see the outcomes of the experiments for themselves!

14

Discussion

- Data is analyzed to show what the authors believe the data show. (You don't have to agree with their interpretations!)
- Findings are related to other findings in the field (contribute to knowledge, correct errors, etc.)– How is this work significant?

15

Reading a scientific paper

- Get into question-asking mode
  - doubt everything
  - find fault
  - just because it's published, doesn't mean it's right
  - get used to doing peer review

Blame the authors if…

- Logical connections left out
  - Instead of saying why something was done, the procedure is simply described.
- Cluttered with jargon, acronyms
- Lack of clear road-map through the paper
  - side issues given equal air time with main thread
- Difficulties determining what was done
  - Ambiguous or sketchy description
  - Endless citation trail back to first paper
- Data mixed up with interpretation and speculation

17

Critical assessment of the paper

- Read the experimental results – that is the figures and tables together with their legends – at least as closely as the main text
- Avoid reading the discussion section
- Readers should evaluate results before reading the authors' conclusions
- Use your own judgment

18

Evaluating a paper

- What questions does the paper address?
- What are the main conclusions of the paper?
- What evidence supports those conclusions?
- Do the data actually support the conclusions?
- What is the quality of the evidence?
- Why are the conclusions important?

19

Reflections and Criticisms

- Do you agree with the authors' rationale for setting up the experiments as they did?
- Did they perform the experiments appropriately? (Repeated a number of times, used correct control groups, used appropriate measurements etc)
- Were there enough experiments to support the one major finding they are claiming?
- Do you see patterns/trends in their data that are problems that were not mentioned?
- Do you agree with the authors' conclusions from these data? Are they over-generalized or too grand? Or are there other factors that they neglect that could have accounted for their data?
- What further questions do you have? What might you suggest they do next?

20