582519 Scientific Writing for MSc in Computer Science

Lecture 1, 4.9.2012

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Learning Skills for Science

Source: The Learning Skills for Science programme http://www.sep.org.uk/lss.asp

Learning objectives of this course

• GOAL: To write a 15-page scientific report (article or essay) based on existing scientific journal and conference articles using your own voice

• You will practise and learn:
  • how to find relevant material
  • how to read the articles
  • how to structure your own text
  • the actual writing and editing process
  • how to review an article

Strict schedule

Week 1: Paper layout +

Material search and creation of bibliography

Week 2: Create your table of content + Organising the material + reading and searching

Week 3: Introduction + Chapter 2

Week 4: Chapters 2-4

Week 5: Draft version ready - Peer review by other students (and group leader) - feedback for editing

Week 6: Editing your work

Deadline: Friday 12.10

(Ultimate deadline 24.10.2012)

Your scientific paper

• Scientific text/report (15 pages in the given layout)
• Aims
  • Deeper understanding of the subject
  • Bring the subject into structure
  • Understandable presentation of the subject
• The structure of the thesis (use the departmental layout model)
• Scientific style, good written English

Course organization

Small group with a PhD student as teaching assistant.

Randomly selected groups, topics given by TAs.

Your tasks:

- Be and do on time
- Follow the instructions

TA's tasks:

- Monitor your progress
- Give guidance
- NO language teacher -> other courses for this

Lectures: Tue 10-12 B222

Week 1: Startup + hints for material hunt
Week 2: Writing process
Week 3: Use of Refences (+time management)
Week 4: Ethics of writing
Week 5: Reviewing a paper
Week 6: Future: seminars and MSc thesis

Outline

- Scientific information retrieval and scientific reading
- Classification of scientific texts
- Bibliographies, digital libraries, search engines, and other sources of articles
- Scientific reading
- Quality of retrieved material
- Question list for reading
- Notes for retrieved articles

Scientific information retrieval and scientific reading

- Every research project is based on former known research
- Finding relevant source material is important, but can be very challenging
- In computer science most articles are nowadays available in digital form
- Articles should be read critically
- You must read every article that your are referring to in your text!

Classification of scientific texts

- The most important classification system of computer science literature is A*CM Computing Classification Systems* (CCS)
  - www.acm.org/about/class
- Different versions, newest from 1998
- Several main classes that have many sub-classes
- For example

  H. Information Systems

  H.2 Database Management

  H.2.4. Systems

Computing bibliographies

- Bibliography is a collection of the most important bibliographical facts of articles
- One of the oldest and best-known computing bibliographies is *ACM Guide to Computing Literature* (portal.acm.org)
- Another example of computing bibliographies is Michael Ley's *Digital Bibliography & Library Project* (DBLP)

Digital libraries

- Collections of digital versions of articles published by a certain publisher
- Most important digital libraries in computer science are
  - *The ACM Digital Library* (http://portal.acm.org/dl.cfm)
  - *IEEE Xplore* (http://ieeexplore.ieee.org/Xplore/dynhome.jsp)
  - *SpringerLink* (www.springerlink.com)
  - *Elsevier* (http://www.sciencedirect.com/)

Digital libraries (2)

- University of Helsinki has a license for these digital libraries
- List of available digital libraries and bibliographies can be found via *the Nelli portal* (www.nelliportaali.fi)
- Use of the libraries and bibliographies is possible in the network of the University only
- Use HY-VPN for these restricted services (ask help from the IT Services, helpdesk@helsinki.fi)
- If VPN not possible, Authenticating Proxy available (ask help from the IT Services)

Search engines

- There are several search engines specialised in scientific information retrieval
- Examples of such engines are
  - *Google Scholar* (scholar.google.com)
  - SiteSeer.IST *Scientific Literature Digital Library* (citeseer.ist.psu.edu)
  - Elsevier's *Scirus for scientific information only* (www.scirus.com)
- Other relevant databases and search engines can be found in Wikipedia's article *Academic databases and search engines*

Other sources of material

- Citation indexes
- Following reference chains
- Web pages of
  - individual researchers
  - research groups
  - departments
  - universities
- Scientific libraries
  - Books, journals, technical reports, theses, ...

Scientific reading

- Easily a lot of articles on a given topic
- Usually it is enough to ***know well*** only a small number of most relevant articles
- Other articles must be **read**
  - to widen the understanding of the topic, and
  - to understand better the relevance of the most essential articles
- Quick scan of articles:
  - Read abstract, introduction, related work and conclusions
  - Decide whether it is worth to read the whole paper

Quality of retrieved material

- Publication forum
- Quality of the publication forum
- Web documents/articles may not have been published anywhere else
- Newer articles are often preferred to old ones
- **Reader must always be curious and suspicious!**

Question list for reading

- What is the main result of the article?
- How precise are the claims?
- How can the results be used?
- What are the arguments for the results?
- How are the arguments obtained?
- How are the measurements done?
- How precise are the descriptions of the algorithms and experiments?

Question list for reading (2)

- Is the article trustworthy and reliable?
- Are the writers referring to a right kind of a related work?
- Can the results be reproduced and how?
- Recognise the contributions and the shortcomings of the article!

Notes for retrieved material

- Only few of the retrieved articles are central, most of them are auxiliary
  - Many references to central sources
  - A few references to auxiliary sources
- When you find an interesting article, write directly down at least the bibliographical data of the article
  - See the departmental layout model for what information is needed from each type of publications

Notes for retrieved material

- It is also good to write down
  - a short summary of the article
  - the ACM classification information
- Start making the notes from the very beginning – otherwise
  - it will never be done, or/and
  - it takes even more of your time!