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

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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

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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)

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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

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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

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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

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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!