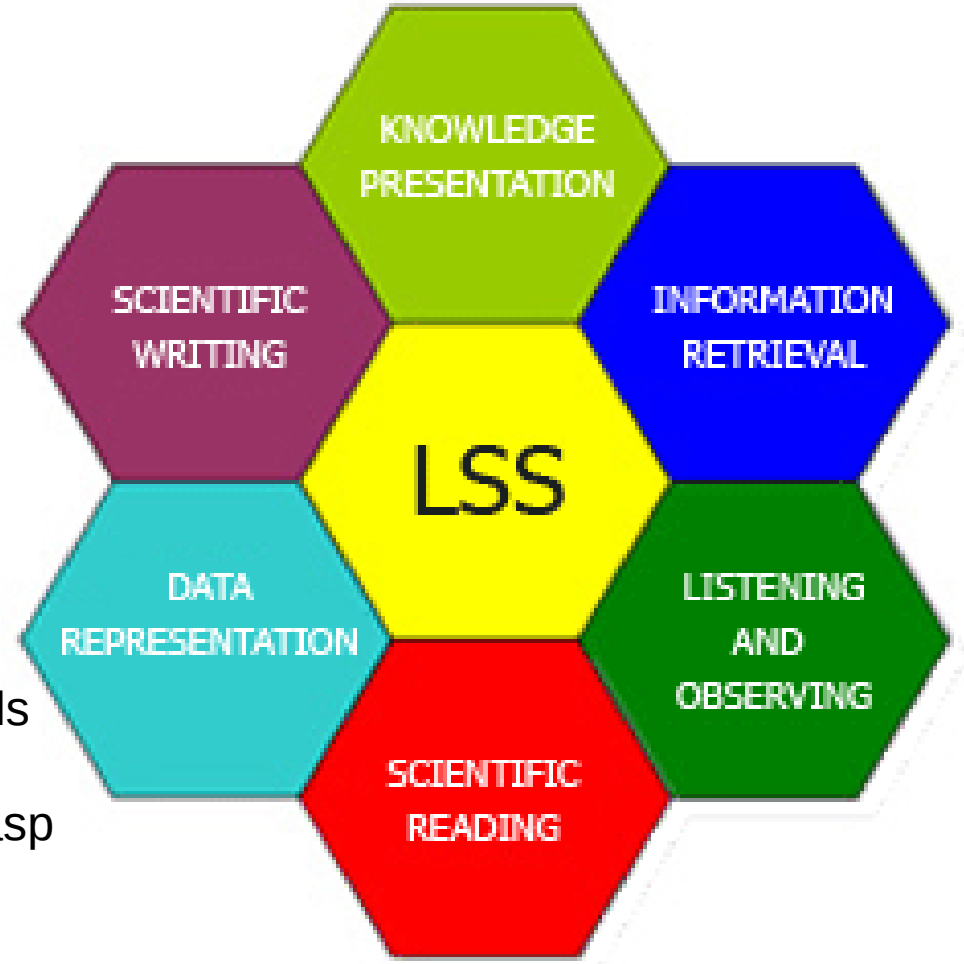
582519 Scientific Writing for MSc in Computer Science

Lecture 1, 3.9.2013

Tiina Niklander

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 10-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 11.10

(Ultimate deadline 25.10.2013)

Your scientific paper

- Scientific text/report (10 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 lead by teaching assistant (PhD students and post docs).

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 2012
- Several main classes that have many sub-classes
- For example (1998 system)

  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, Authenticate via Nelli portal

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!

Ten Commandments of Good Historical Writing

1. Thou shalt begin with an outline that buildeth thy entire paper around thy central ideas.
2. Thou shalt avoid self-conscious discussion of thy intended purposes, thy strategy, thy sources, and thy research methodology.
3. Thou mayest covet other writers' ideas but thou shalt not steal them.
4. Thou shalt strive for clarity above cuteness; thou shalt not use jargon when common language will serve, nor a large word when a small one will serve, nor a foreign term when an English one will serve, nor an abstract term where a vivid one is possible.
5. Remember thy paragraph to keep it a significant unity; thou shalt not fragment thy discussion into one short paragraph after another, and neither shalt thou write a paragraph that fails to develop a topical idea.
6. Thou shalt write as if thy reader is intelligent–but totally uninformed on any particular subject: hence, thou shalt identify all persons, organizations, etc., and shalt in every way try to make thy paper a self-sufficient unit.
7. Thou shalt use quotations sparingly and judiciously, only for color and clarity; if thou must quote, quotations should not break the flow of thine own language and logic, and thy text should make clear whom thou art quoting.
8. Thou shalt not relegate essential information to thy footnotes.
9. Thou shalt write consistently in past tense, and in other ways keep thy reader firmly anchored in time.
10. Thou shalt not use passive voice.

http://courseweb.stthomas.edu/gwschlabach/10commnd.htm