CSCM10 Research Methodology
Bibliographies

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computerScienceProjectResearchMethods/current/index.html

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Importance of Using Scientific Publications

- Some material on the Internet is very good, some can be highly unreliable.
  - Main problem: lack of quality control.
- Students need to learn to use (official) research publications.

Research Publications

- Research publications are mainly
  - Articles in scientific Journals (paper or electronic),
  - Articles in proceedings,
  - Articles in handbooks,
  - Research monographs,
  - Text books,
  - Lecture notes (published)
  - PhD theses,
  - Master theses,
  - some other official published material having various names (e.g. "tutorials", ...).

Scientific Publishers

- Some big ones are:
  - Springer,
  - Elsevier,
  - Oxford University Press,
  - Cambridge University Press,
  - Harvard University Press,
  - MIT press,
  - ACM,
  - many many more (some big and some small).
- Your tutor/supervisor can usually be a good guide.
- Usually material by scientific publishers is highly regarded.
  - But they usually have as well non-scientific publications.
- However electronic publications bypassing scientific publishers is increasing.

Scientific Publications

- Scientific publications have to be as objective as possible.
  - Not heavy motivation to convince the reader of something – no attempt to manipulate the reader.
  - Pictures restricted to those needed to explain the topic.
  - More dry.
- Essays and theses written for this module should be of similar nature.
- There are as well some more magazine like scientific publications.

Location of Scientific Publications

- Good guidance: Search on Google Scholar (see Lecture 1).
  - But Google scholar finds as well non-published material.

Journals

- Usually journal articles are the best quality one can obtain.
- From scientific publishers such as Springer, Elsevier, Oxford University Press, Cambridge University Press, ACM, and many more.
- Typically called "Journal of", "Archive of", "Annals of", ...
- Subscriptions very expensive (typically 1000 £ per year).
- Swansea University has electronic subscriptions to many journals.
  - Off campus using Athens.
  - On Campus (might require Athens login).
- Access via DOI pages (see lecture 1).

Proceedings

- Collections of articles.
  - Usually related to a conference (published before the conference or after).
  - Might be as well collections of articles related to a birthday or retirement of somebody.
  - There are as well specific collections of articles related to a topic.
    - E.g. articles related model checking (a verification technique).
    - Sometimes called "Tutorials" (in book form).

Electronic Journals

- New trend, but many still have to build up a proper reputation.
- Sometimes maintained by small groups, associations, and free.
- Some maintained by big publishers (and require expensive subscriptions).
- Open access or not.

Handbooks

- Handbooks are often high quality collection of articles on a certain topic.
- Highly regarded if directed at a scientific audience.
- Handbooks are often very expensive and highly regarded.

Research Monographs

- Books on research topics.
- Highly regarded.
- Typically rather dry.
- Often from scientific publishers such as Elsevier, Springer, Oxford University Press, Cambridge University Press, ACM, and many more.

Textbooks

- More accessible monographs.
- Directed towards students or the general audience.

Lecture Notes

- Several series by publishers.
  - Most important in computer science: Springer lecture notes in computer science.
  - Other series, such as
    - Springer lecture notes in Artificial Intelligence,
    - Springer lecture notes in Mathematics;
    - Lecture notes in logic (Cambridge University Press and A.K. Peters),
- Original idea was: lecture notes of very advanced courses.
- Nowadays mainly:
  - Proceedings volumes,
  - Collection of articles,
  - Research monographs with restricted audience.

Material on the Web

- Many new discoveries are first presented on the Web.
- Lots of material is of high quality.
- Especially many Wikipedia pages (**not all!!!**) are very good.
- Often slides (and sometimes videos) of presentations (especially at conferences) are very good.
- You can (and in fact should) use them but you should have in your references as well non-web articles.
  - Journal articles, proceedings articles etc. available from the web count as "non-web-articles".

Good Practice for Essays, Theses, and Dissertations

- Everything you should use should be cited.
- It is expected that your documents contain citations.
- Citations are regarded as something positive.
  - A good scientists explains clearly his sources so that the reader can verify his sources independently.

Keep track of References and Sources

- Collect references for everything you use.
- Collect as well sources.
  - You are required to provide copies of the web pages you used in your MSc thesis on request.
  - Web pages change fast, you might not find the same information when you want to check it later.
  - Articles might no longer available if you look for them later
    - Might be removed.
    - Some subscriptions (e.g. Springer) are only for a limited time period (e.g. last 15 years).

Writing References

- Many different styles occur in the scientific literature.
- Most important:
  - Uniform style.
  - Uniform fonts (same font, same font size, especially in Word).
  - Alphabetically sorted (by last name of first author or first main word of title, if no author given).
  - Completeness of the citations. It should allow others to locate the article in question.

Reference Management Software

- There are lots of different reference management systems, which allow to
  - administrate your bibliography (in the form of a database),
  - format your bibliographies really good.
- You need to insert only fields needed such as "author", "title", "year", the system will format the entries for you.
- An overview over reference management software including word processor integration can be found at:
  http://en.wikipedia.org/wiki/Comparison_of_reference_management_s

- For LaTeX the most frequently used is BibTeX.
  - Used by myself
- The university has a site license for EndNote, which integrates with Microsoft word and OpenOffice/Libreoffice.
- There exist other systems, e.g. RefMan, RefWorks.

Obtaining Bibliography Entries

- The pages from publishers for articles (especially DOIs) often have links for creating very good references for the above mentioned systems.
- For mathematical articles you can go to "Zentralblatt Math" or "Mathematical Reviews" to obtain good bibliography entries.
- Google scholar allows to create bibliography entries for some of these systems
  - Sometimes good, sometimes not very good.
  - I only use it if I can't get an entry from the publisher, and usually need to adapt it.
- If you search in a search engine for title words and/or author of an article plus "BibTeX" (or EndNote or . . .), you often find good entries (but quality varies).
  - Entries provided by the authors are often the best references available.

Adapting of Entries

- Many bibliography entries found by the above methods (including from publishers) need some tweaking.
- Titles in capitals only should be replaced by lower case except for first word and names.
- Make sure that acronomys, especially for conferences, are in form (lower/uppercase) as officially used.
- For BibTeX:
  - special characters in BibTeX need to be replaced by LaTeX commands.
  - Letters required to be in capital need to be put in {} (e.g. {J}ava)
    - Bibtex will in titles convert all capitals into lowercase if not surrounded by {$\cdots$}.

Identifying a Bibliography Style

- Best to take one or two articles, look at their bibliography and follow their style uniformly.
- Ask your tutor or supervisor to correct your bibliography.
- In the following presentation of one style
  - you can use most styles occurring in the scientific literature!!
  - however you should be uniform.
- If you use a bibliography managing system, often you can rely on the system formatting it for you
  (**if your entries are correct! – tweaking necessary**)

Bibliography Style alpha

- One of the most commonly used styles from Bibtex.
- Abbreviations used are of the form [Ab07].
  - Ab are the first two letters of the author (here Andreas Abel).
  - 07 stands for 2007.
  - 96 stands for 1996.
- Other system is numbered (e.g. [3], [12]).
  - Difficult to guess in text what is meant by a citation [13].
  - Because of alphabetic order, numbers change when adding new publications. Difficult to maintain, if you **don't use reference management software**.
  - Therefore this (or similar non-numbered styles) are especially recommended if you **create your bibliography by hand**.

- Multiple authors: use the capitals of the authors, e.g. [BKS96] for an article by authors with surnames Berger, Kullmann, Setzer, or [BK03] for an article by authors with surnames Berger, Kullmann.
- If no author available take the letters of the first main word in the title.
    - Omit words such as "The", "On", ...
    - "The art of computer programming" published 2001 without author is abbreviated as [Ar01].
- Web pages have always a title (displayed in the browser) and sometimes an author.

Bibliography Style alpha

- If you have multiple entries which would get the same abbreviation
  - E.g. assume you have two entries which would get abbreviation [Ab03]:
  - Then use [Ab03a], [Ab03b] for your two entries.

Example Entry: Journal

[AAD07] Andreas Abel, Klaus Aehlig, and Peter Dybjer.
         Normalisation by evaluation for Martin-Löf Type
         Theory with one universe. *Electron. Notes Theor.
         Comput. Sci.*, 173:17 – 39, 2007. doi:
         10.1016/j.entcs.2007.02.025

Example Entry: Journal

- Authors in the order as they occur in the article (often alphabetical, but not always).
- Title in Roman font, Journal name in italic.
- 173 is the volume of the journal (usually there is one volume per year, sometimes there are more volumes per year or volumes stretching over several years).
- 17 - 39 are the pages.
  - Sometimes there is a number (subvolume of a volume) written as e.g. $173(3):17 - 39$, where the number is 3.
- 2007 is the year.
- Note order, punctuation:
  Authors. Title. *JournalNameAbbreviated*, volume:page – page, year.
- doi is the document identifier page.
  You can use a link to it as well, i.e.
  http://dx.doi.org/10.1016/j.entcs.2007.02.025

- If you get a web reference for an article which is published, then cite the **published version** including the **doi** or **webreference** from the **publisher**, even if your copy is not the official one (e.g. the author's copy).

Example: Proceedings

[Al01] Thorsten Altenkirch. Representation of first order function types as terminal coalgebras. In Samson Abramsky, editor, *Typed Lambda Calculi and*, *applications*, pages 8 – 21. Springer Lecture Notes in Computer Science 2044, 2001. doi: 10.1007/3-540-45413-6_5

- Order: Author. TitleContribution. In Editor, editor, *Booktitle*, pages first – last. Publisher, year, doi.
- Note the keyword "**In:**"
- In this example we have a "Lecture Notes in Computer Science" volume, which is cited by writing instead of the publisher Springer Lecture Notes in Computer Science + number.

Example: Book

[ML84] Per Martin-Löf. *Intuitionistic type theory*.
Bibliopolis, Naples, 1984. ISBN: 978-8870881059

- Author is abbreviated as ML (and not Ma) since it is a double name.
- Order: Author. *Booktitle*. Publisher, LocationOfPublisher, year, isbn.
- If the publisher is well known (e.g. Springer, Elsevier), one can omit the location of the publisher.
- Sometimes a book (as will have handbooks, proceedings below) have an editor instead of an author.
  - Then write e.g.
    "John Smith (Ed.)" or "Andreas Abel, Helmut Schwichtenberg (Eds.)"
    or alternatively "John Smith, editor", or "Andreas Abel, Helmut Schwichtenberg, editors",

Handbook Articles

- You can reference the whole handbook as a book. (You can cite as well a complete proceedings volume as a book).
- You can reference individual chapters separately, especially if by different authors).
- References of articles in the same was as proceedings volumes.
- You can as well (especially if you have multiple articles from the same volume) add a reference to the proceedings volume or handbook, and then, when citing the individual article, refer to that citation, by writing e.g.:

  [Al01] Thorsten Altenkirch. Representation of first order function types as terminal coalgebras. In [Ab01], pages 8 − 21. doi: 10.1007/3-540-45413-6_5

[McB11] Conor McBride. Let's see how things unfold. Extended abstract. Available from http://strictlypositive.org/ObsCoin.pdf, 2011.

- Author is abbreviated as McB (and not Mc) because of the second capital in his name.
  (Don't worry about such sophisticated abbreviations, using "Mc" would have been perfectly okay).
- Order: Author. Title. Minidiscription. Available from `webaddress`, year.
- Extended abstract was here part of the title.
- If you can't determine a date, use e.g. "Retrieved 22 Oct. 2017".

[McB11] Conor McBride. Let's see how things unfold. Extended abstract. Available from http://strictlypositive.org/ObsCoin.pdf, 2011.

- Minidescription is here "Extended abstract" as provided by the author. Other descriptions occurring are: "Slides" (if it are the slides of a talk). "Draft", "Manuscript" (if it is hand written), "Blog".
- If no year given explicitly, write instead: downloaded date/monthy/year, e.g. downloaded 12 July 2011.
- You need to provide information on how to obtain this article

PhD Thesis, Master Thesis, Third Year Projects, Lecture Notes of your Course

- You need to provide the university, and the department/school/etc it was d produced for.
- If available provide a web-link.
- For preprints (often informal series) provide the number of the preprint, if available.

Examples: PhD thesis, Lecture Notes, Coursework

[Se93]   Anton Setzer. Proof theoretical strength of Martin-Löf Type Theory with W-type and one universe. PhD thesis, Dept. of Mathematics, University of Munich, 1993, `http://www.cs.swan.ac.uk/~csetzer/articles/weor0.pdf`

[Se17]   Anton Setzer. Bibliographies. Slides of Lecture CSCM10, Dept. of Computer Science, Swansea University, Swansea SA2 8PP, UK, `http://www.cs.swan.ac.uk/~csetzer/lectures/computerScienceProjectResearchMethods/current/masterlecture3Bibliographies.pdf`

[Sm16]   John Smith: Verifying Bitcoins in Agda. Report for module CSCM10, Dept. of Computer Science, Swansea University, Swansea SA2 8PP, UK.

Citing

- Citing in the text is written as follows:
  - In [McB11], p. 50, McBride writes: "Let's see how things unfold".
  - In [ML84], p. 20, Martin-Löf introduces the W-type.
  - Java is consistent [CA03,De05].
  - Java is consistent [CA03], p. 15.
  - It has been shown [CA03,De05] that Java is consistent.

Referencing parts of a publications

- **Don't** put references to a specific page (unless it is an independent article or abstract) into your references.
- From a handbook or proceedings volume you can reference individual chapters separately, if they are separate entities (especially if by different authors).
- From a monograph one would in most cases not put references to individual sections into the bibliography.

Layout of References

References

[AAS17]   Andreas Abel, Stephan Adelsberger, and Anton Setzer: Interactive programming in Agda – Objects and graphical user interfaces. *Journal of Functional Programming*, 27, e8, 54 pages, 2017. doi: 10.1017/S0956796816000319

[Se07]   Anton Setzer: Object-oriented programming in dependent type theory. In: Henrik Nilsson (Ed.): Trends in functional programming. Vol. 7, Series Trends in functional programming, Intellect, Bristol and Chicago, pp. 91 – 108, ISBN 978-184150-188-8.

(Text should be justified, didn't happen on my slides because of use of slide environment)

Discuss with Tutor Supervisor

- Please ask your tutors and supervisors for advise on
  - correct referencing,
  - correct writing of references,
  - correct formatting of references.
- Your supervisor/tutor might prefer a different style than the one presented.
- Different research groups have different traditions.
- Note that the style presented was only one example of how to format references.
  - What is most important is that you use one style uniformly.

Summary

- Use **scientific publications** (journals, proceedings, books, monographs).
- References should be
  - **consistently formatted**,
  - **alphabetically sorted**,
  - **sufficient to locate the source** (as far as it is possible; for lecture notes or coursework submissions, a web reference might not be available).
- Easiest way to obtain good references is by using **reference management software**.
- Use **citations frequently**.
- Refer to example references in the scientific literature.
- Ask your tutor or supervisor about formatting.