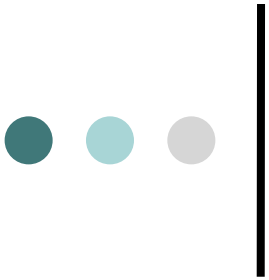

Design Science Research

MSc in Computer Science

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Lecture 4 - Summary

Writing

- Abstracts
- Papers / MSc Thesis

Lecture 5

Writing

- Abstracts
- Papers / MSc Thesis
- 800 Words
- Plagiarism and citations
- Latex

800 Words

Typical template

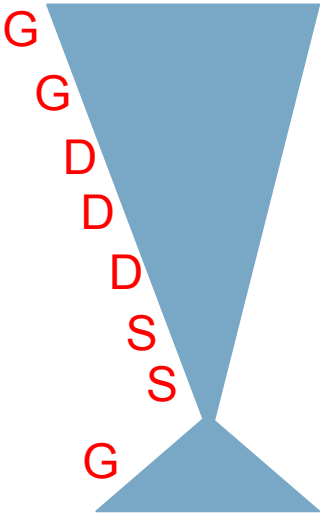
https://sites.google.com/a/fac-media.org/awareness/audience-content

Audience:

- General audience – any field or general public (G)
- Audience in your field (D)
- Specialist in your field (S)

800 Words – The formula (7 paragraphs)

- G, G, D, D, S, S, G



Examples (cf Awareness paper)

http://www.perada-magazine.eu/

http://www.awareness-mag.eu/

https://ercim-news.ercim.eu/

800 Words

Headline*

(General audience)

Keep it short (ten words or fewer), straightforward, and as free from jargon as you can. For non-specialists, you want to make clear the application/importance of your work, not the specifics (yet!). For example:

Machine intelligence is enhanced using analogue computation

800 Words

Summary*

(General audience)

This is not an abstract, just a single sentence summing up what you will cover in the article and giving the audience a reason to read on: it should be no longer than 35 words. Try not to repeat the headline in the summary. *Please write this section in the third person.* For example:

A new kind of correlation filter used with multi-spectral fingerprint scanner has reduced the time taken to detect false prints by an order of magnitude and improved the performance by 150%.

800 Words

Paragraph 1: The purpose

(General public)

Give the motivation of your work and its potential applications in a way that the public will be able to understand. Will it help us to build intelligent robots that can clean your house? More secure internet banking? Better understanding of generic drugs? Obviously, there may be many applications you could talk about. If they are broadly similar, give one representative example. If they are disparate, give three.

Please write the main text in the active voice where possible, and feel free to write in the first person or first person plural ("we have developed…"). For example:

The x-ray has been in use for a century and has revolutionized medicine, allowing doctors to see inside the body to look at broken bones. With the introduction of barium meals etc., other tissue can be revealed and analyzed...

800 Words

Paragraph 2: The problem

(General technical audience)

Now give the context of your work for a non-specialist. To what general field or fields (like artificial intelligence or data security) does your work apply, and why is this field important? Describe a goal that researchers in the field have been working towards and problems in achieving this goal (some of which you have solved, or are trying to solve, which you will explain in the rest of the article). Remember to spell out all acronyms the first time you use them, and to explain all jargon terms that aren't well understood outside your field. For example:

However using ionizing radiation for body scans has many disadvantages, particularly related to the safety of both medical staff and patients. It would be ideal if we could use visible light instead: it is simple to generate, poses little risk to humans, and can captured easily using electronic cameras. Unfortunately, however, diffusion of light rays through body tissue mean that the images that emerge are unclear…

800 Words

Paragraph 3: The set up

(General technical audience)

From the issues you described in the first paragraph, now pick out the ones that concern your work. How have people tried to solve this/these in the past? Why have these solutions fallen short? What is (briefly) your new solution? For example:

There have been many approaches to the development of micromechanical structures with very high aspect ratios. Most of those in two dimensions —for instance, as developed by Smith,[3] Singh,[4] and Chao[5]—have problems of low-yield. With three-dimensional techniques, such as … we find both resolution and sensitivity issues. To get around these problems, we have been working on a new approach called hybrid structure formation (HSF), that attempts to incorporate the advantages of both and the disadvantages of neither.

800 Words

Paragraph 4: Your approach

(Audience in your discipline)

Having mentioned your approach in the last paragraph, you should now explain the basic concepts behind it and how it works. Here you can be a little more technical, but if you use words that can't be looked up in a basic scientific dictionary, add some explanation. For example:

Neuromorphic engineering—the building of brain-like structures in silicon—was originally conceived by Carver Mead at the California Institute of Technology.[6] It is based on the idea that it is more efficient to use the physics of electronic devices to implement functions directly, rather than to simulate these functions using digital algorithms. This is a particularly advantageous approach for building neural systems as the functions that transistors perform naturally are qualitatively very similar to those in biological neurons…

800 Words

Paragraphs 5-7: What you've done

(Audience in your discipline for paragraph 5, moving to a specialist audience for 6 and 7)

This is the most straightforward section of the article, and the one that is least likely to be a problem. Go through what you've done, what your results were, and what your results mean. Just start off on the less technical side so that those that aren't right in your field can grasp the basics what you're trying to do: even if they don't understand the full details as you progress.

800 Words

Paragraph 8: Conclusion/further work

(General technical audience)

Go back and remind us of the application, the problem with it (without restating from scratch), and explain how the work you've just described has moved things on. Then tell us how you think you can make even further progress. For example:

To make the types of three-dimensional structures we need for next-generation batteries and other devices, the use of surfactants as templates seems promising. So far our results have shown that we can easily make structures at the right scale (5-10nm), in the right types of patterns (such as hexagonal cells), and that are solid enough to be viable in real devices. Our next step will be to show that the new materials can be fabricated in large-enough slabs to be useful in macroscopic products.

ERCIM News Guidelines

Other examples:

https://ercim-news.ercim.eu/call#guidelines

Title

Author (full name, max. two or three authors)

Teaser:

a few words about the project/topic. Printed in bold face, this part is intended to raise interest (keep it short).

Details describing:

what the project/product is
which institutions are involved
where it takes place
why the research is being done
when it was started/completed the aim of the project
the techniques employed
the orientation of the project
future activities
other institutes involved in this project
co-operation with other ERCIM members in this field

ERCIM News Guidelines

References:

1 - max. 3 references are mandatory for special theme articles. For articles for the section "Research and Development", you can give up to three references (not mandatory)

Authors should preferably refer important sources only (i.e. journal papers, books) and avoid meaningless references such as article in preparation, unpublished presentations, personal communications, research reports, patents, or local conference publications not listed in the major scientific digital libraries (such as IEEE, ACM, Springer).

The selected EN style is the shortened IEEE Citation Style.

The references should be as concise as possible and restricted to the minimal information needed. Avoid all unnecessary words (pages x pp., year, editors, location,...). Use acronyms instead of full conference names - OOPSLA x Object-Oriented Programming Systems, abbreviations (e.g. Conf. x Conference, IEEE TPAMI x IEEE Transaction on Pattern Analysis and Machine Intelligence, etc.).

Use et al. when three or more names are given.

Useful Link(s) (URLs separated from the references)

Contact address with:
- full name of the author
- phone number
- e-mail address

Photos, illustrations:

ERCIM News is a full-color print magazine. Each article should be accompanied by an illustration (photos, graphics), for example of the product, applications mentioned in the article, people working on the project, etc. (avoid as much as possible flow charts and screen dumps).

Photos should be submitted in jpg or tiff format in a resolution suitable for printing (pictures taken from the web are usually in a quality suitable for printing), graphics in a vector format (svg, eps or ps).

Coursework 2 – 800 Words

- Choose a topic (ideally your MSc project)
- Analyse literature and shortcomings
- Discuss your proposal
- Discuss your methodology of research
- Foresee how you will evaluate your results
- Conclude
- References
- Follow 800 words template
  - Lecture 5

➢ Deadline: December 15th

➢ Submit to Compilatio.net **- No plagiarism allowed**

➢ **No summary of existing paper allowed**

5 Levels of Plagiarism (IEEE)

1. Uncredited verbatim copying of a full paper.
2. Uncredited verbatim copying of a large portion (up to half) of a paper.
3. Uncredited verbatim copying of individual elements such as words, sentences, paragraphs, or illustrations.
4. Uncredited improper paraphrasing of pages or paragraphs (by changing a few words or phrases or rearranging the original sentence order).
5. Credited verbatim copying of a major portion of a paper without clear delineation of who did or wrote what.

- May apply to our own work
- May apply to choice and organisation of literature review
- Applies to figures (even creative commons)

Uncredited: no citation to the original work

Verbatim: exact words/sentences

Citations and references

Literature review / State of the art

- Do not copy sentences from original paper
- Explain the work with your own words
- Add a citation in the text and a reference in the bibliography

Quoting

- You want to use the exact words of the original paper (it highlights your own discussion)

➢ Use “ “ and add a citation and reference

Citations

Simple citations

Numerous studies and publications show that the major focus has tended to be on the development of tests (Bachman, 1990).

- Name of original author is in the reference + work described with our own words

According to

Smith (1994) proposes that: "what is needed is to take account of multiple perspectives - of participants or stakeholders with acceptability and success being matters of degree, and related to users in context." He believes that both insiders and outsiders should be involved in the evaluation process.

- Name of original author is in the sentence + quotes + own words

Secondary citations

Self-access centres (SACs), as examples of *post-industrial initiatives* (Heuring, 1997 quoting Toffler, 1980) that allow for flexible access to learning resources, are playing an increasingly central role in educational systems - particularly in Europe and Asia.

- Shows whose ideas we are citing (Toffler), and where we read about them (Heuring). In the references, mention only Heuring (we have not read the other)

Citation / References - alternatives

Books

Quirk, R., & Greenbaum, S. (1973) *A University Grammar of English.* London: Longman.

Article in journals

Morrison, B. J. (1995). Working in groups in Beijing & Hong Kong: experience of a group-access approach to language learning. *In Hong Kong Polytechnic University: Working Papers in ELT & Applied Linguistics* 1(1) (pp. 105-118). Hong Kong: Hong Kong Polytechnic University.

Article in edited volume or proceedings

Fitzgerald, S., Morrall, A., & Morrison, B. (1996). Catering for individual learning styles: experiences of orienting students in an Asian self-access centre. In L. Dickinson (ed.), *Proceedings of the International Conference Autonomy 2000: The Development of Learning Independence in Language Learning"* (pp. 55-69). Bangkok, Thailand: The British Council.

Web reference

http://vlc.polyu.edu.hk/AcademicWriter/Evidence/citations.htm **(last accessed October 14th, 2012)**

Citation / References - alternatives

Simple citations

Specialised books propose a grammar of English [1].

References

[1] Quirk, R., & Greenbaum, S. *A University Grammar of English.* London: Longman. 1973.

.

Citation styles

Computer Science Style Guide Suggestions

Collect a basic set of information for each one of your references, and then format this information to match an accepted Bibliographic Style (ACM, APA or IEEE). On this page you will find a list of the information that is needed, along with several examples.

ACM = Association of Computing Machinery

Sample citation [Phillips 2001] -- List References alphabetically, using the author's last name.

APA = American Psychology Association

Sample citation (Raskin, 2002) -- List References alphabetically, using the author's last name.

IEEE = Institute of Electrical and Electronics Engineers

Sample citations [1] or [8, 10] -- List References numerically, in the order that you have cited them.

http://guides.library.dal.ca/c.php?g=257109&p=1717772

IEEE citation style

Examples of citations for different materials:

https://pitt.libguides.com/citationhelp/ieee

Book in print

[1] B. Klaus and P. Horn, *Robot Vision*. Cambridge, MA: MIT Press, 1986.

Chapter in book

[2] L. Stein, “Random patterns,” in *Computers and You*, J. S. Brake, Ed. New York: Wiley, 1994, pp. 55-70.

eBook

[3] L. Bass, P. Clements, and R. Kazman, *Software Architecture in Practice*, 2nd ed. Reading, MA: Addison Wesley, 2003. [E-book] Available: Safari e-book. **Journal article**

[4] J. U. Duncombe, "Infrared navigation - Part I: An assessment of feasability," *IEEE Trans. Electron. Devices*, vol. ED-11, pp. 34-39, Jan. 1959.

eJournal (from database)

[5] H. K. Edwards and V. Sridhar, "Analysis of software requirements engineering exercises in a global virtual team setup," *Journal of Global Information Management*, vol. 13, no. 2, p. 21+, April-June 2005. [Online]. Available: Academic OneFile, http://find.galegroup.com. [Accessed May 31, 2005].

IEEE citation style

Examples of citations for different materials:

eJournal (from internet)

[6] A. Altun, "Understanding hypertext in the context of reading on the web: Language learners' experience," *Current Issues in Education*, vol. 6, no. 12, July 2003. [Online]. Available: http://cie.ed.asu.edu/volume6/number12/. [Accessed Dec. 2, 2004].

Conference paper

[7] L. Liu and H. Miao, "A specification based approach to testing polymorphic attributes," in *Formal Methods and Software Engineering: Proceedings of the 6th International Conference on Formal Engineering Methods, ICFEM 2004, Seattle, WA, USA, November 8-12, 2004*, J. Davies, W. Schulte, M. Barnett, Eds. Berlin: Springer, 2004. pp. 306-19.

Conference proceedings

[8] T. J. van Weert and R. K. Munro, Eds., *Informatics and the Digital Society: Social, ethical and cognitive issues*: IFIP TC3/WG3.1&3.2 Open Conference on Social, Ethical and Cognitive Issues of Informatics and ICT, July 22-26, 2002, Dortmund, Germany. Boston: Kluwer Academic, 2003.

See all: https://pitt.libguides.com/citationhelp/ieee

Not to do

Avoid

[1] propose a grammar of English.

Work of [1] propose a grammar of English.

In [1] the authors propose a grammar of English.

The authors of [1] propose a grammar of English

Replace

Quirk et al. [1] propose a grammar of English

Specialised books propose a grammar of English [1].

Summary

Writing

- 800 Words
- Plagiarism and citations

Latex – style and bib

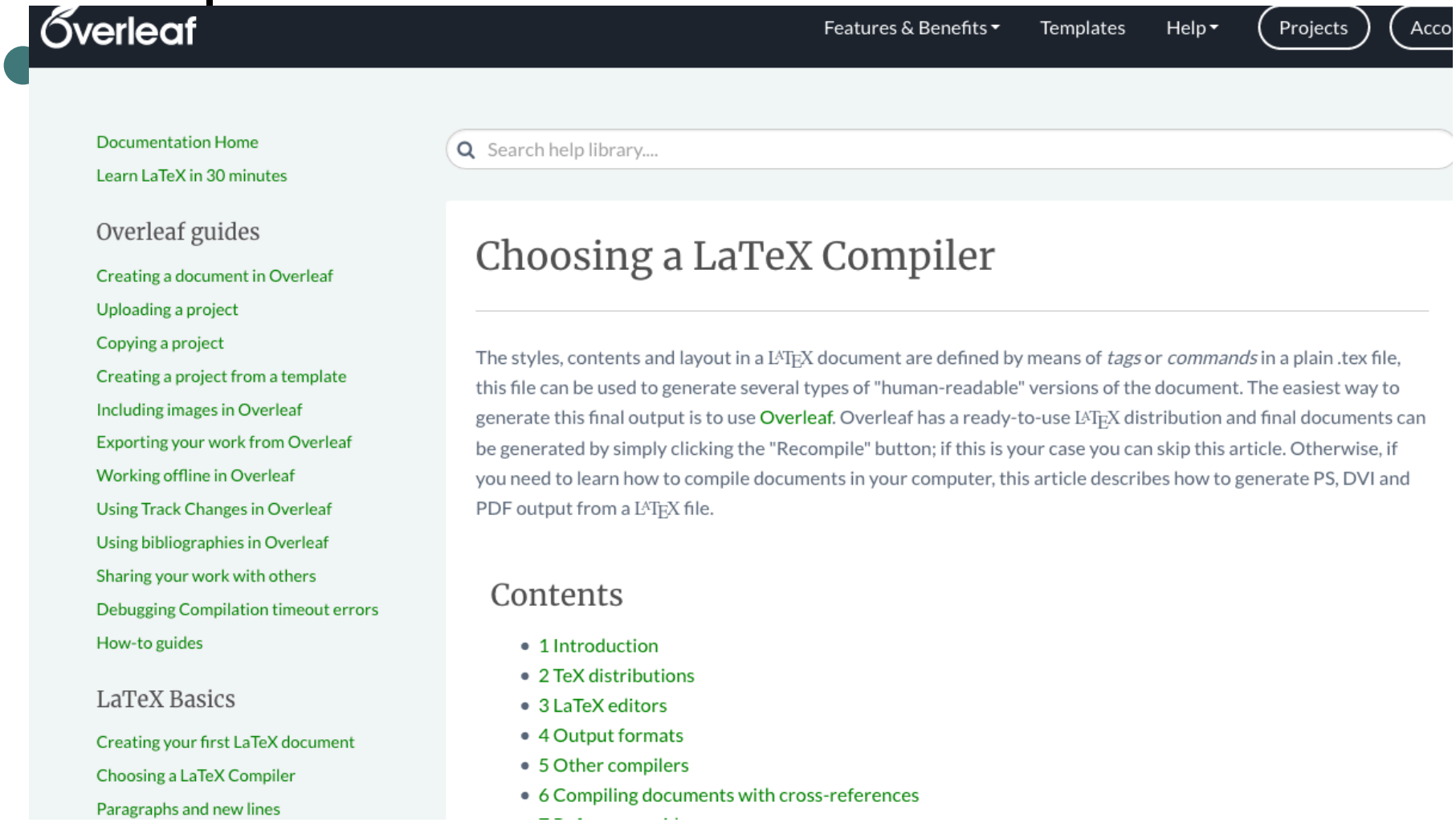
Choose a latex editor / compiler

https://www.overleaf.com/learn/latex/Choosing_a_LaTeX_Compiler

For instance:

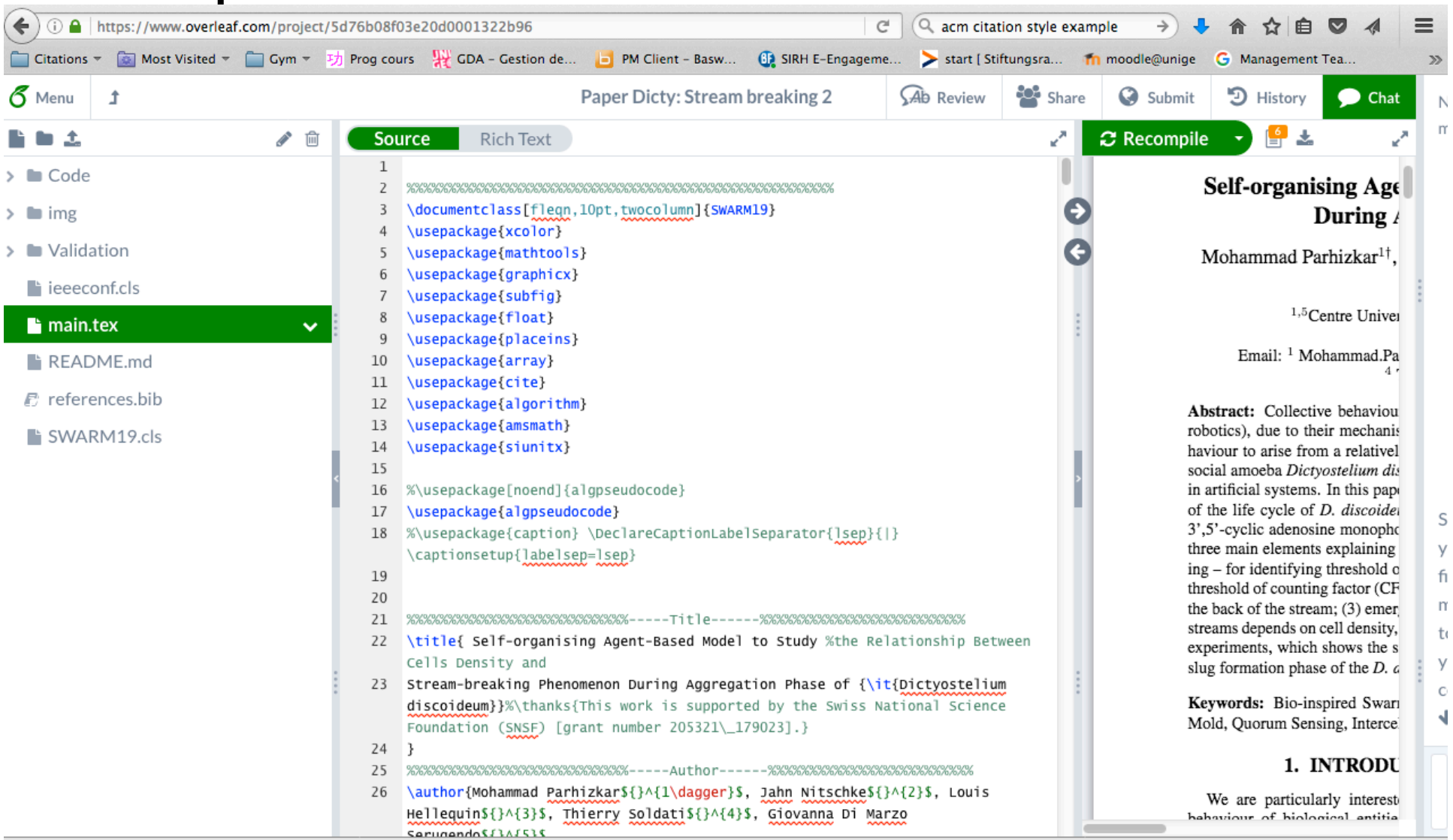
Overleaf.com

Texshop

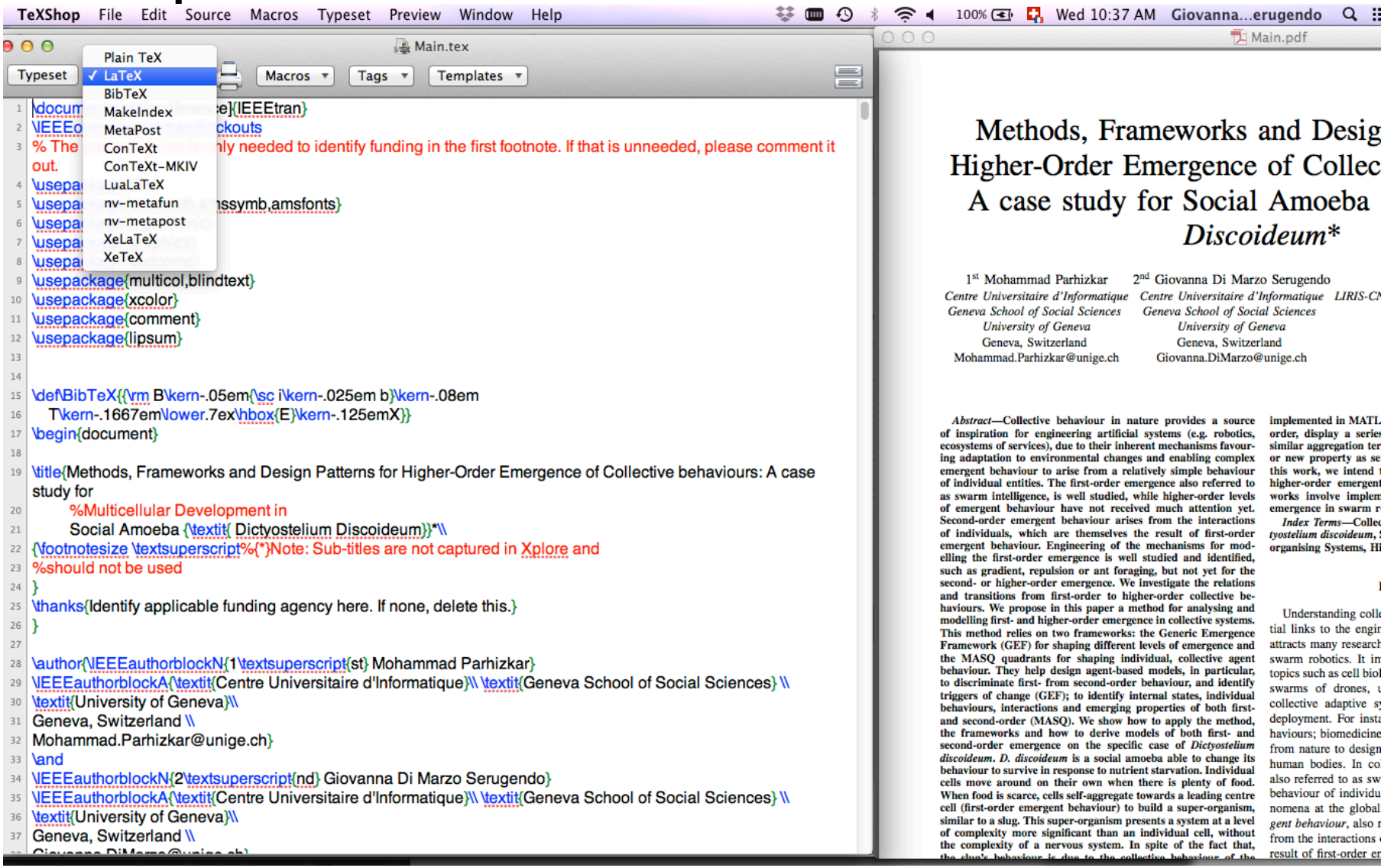


https://www.overleaf.com/learn/latex/Choosing_a_LaTeX_Compiler

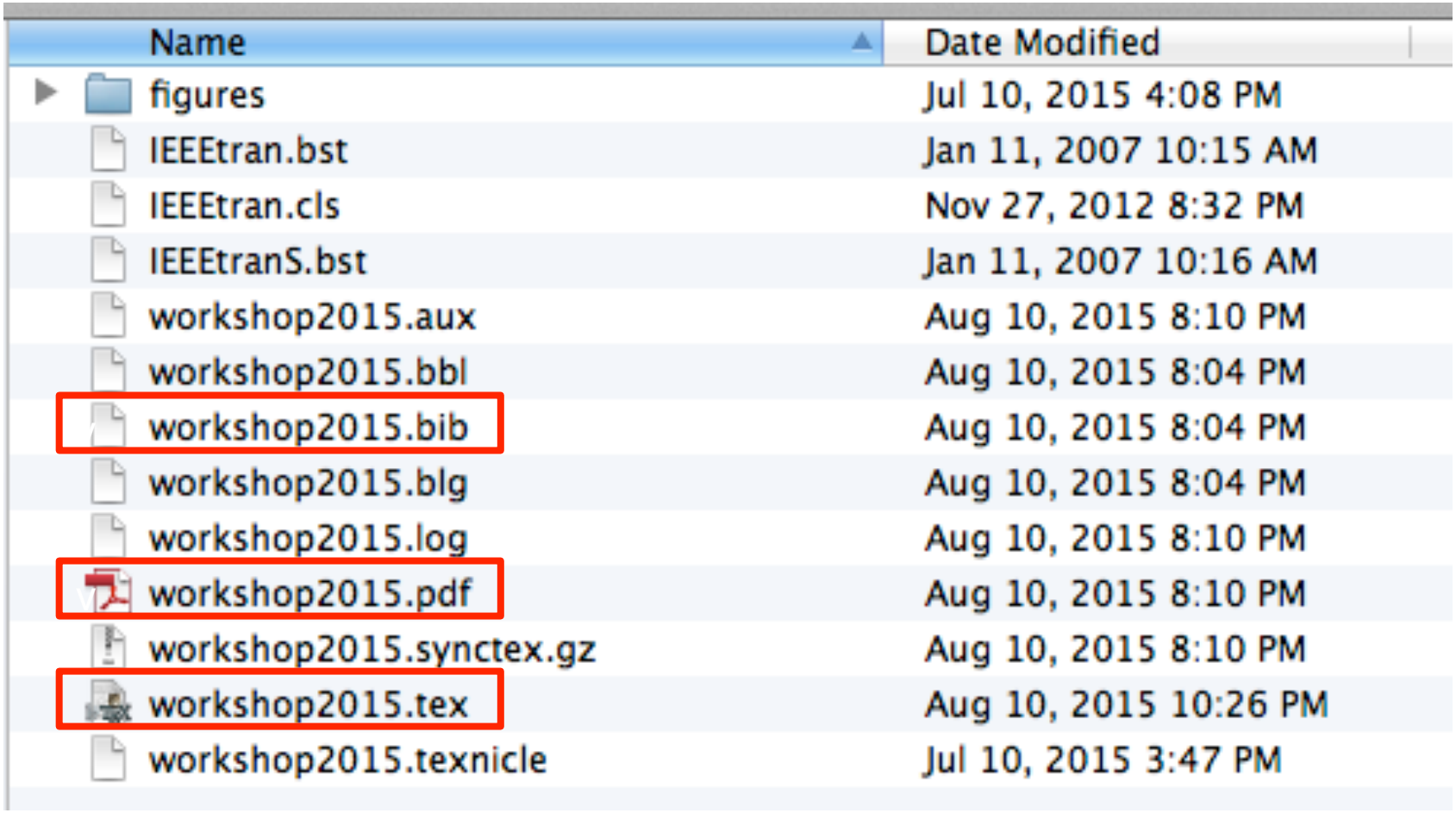
Overleaf – shared env.



TeXShop - local



Set up your files in a folder



Name	Date Modified
figures	Jul 10, 2015 4:08 PM
IEEEtran.bst	Jan 11, 2007 10:15 AM
IEEEtran.cls	Nov 27, 2012 8:32 PM
IEEEtranS.bst	Jan 11, 2007 10:16 AM
workshop2015.aux	Aug 10, 2015 8:10 PM
workshop2015.bbl	Aug 10, 2015 8:04 PM
workshop2015.bib	Aug 10, 2015 8:04 PM
workshop2015.blg	Aug 10, 2015 8:04 PM
workshop2015.log	Aug 10, 2015 8:10 PM
workshop2015.pdf	Aug 10, 2015 8:10 PM
workshop2015.synctex.gz	Aug 10, 2015 8:10 PM
workshop2015.tex	Aug 10, 2015 10:26 PM
workshop2015.texnicle	Jul 10, 2015 3:47 PM

Bibtex - examples

.bib

```
@inproceedings{Parhizkar:15:SADDISR,
    title = {{Social Amoeba Dictyostelium Discoideum
      as an Inspiration for Swarm Robotics}},
    year = {2015},
    booktitle = {IEEE 9th International Conference on
      Self-Adaptive and Self-Organizing Systems
      (SASO), 2015},
    author = {Parhizkar, Mohammad and Di Marzo
      Serugendo, Giovanna},
    pages = {162--163}
}
```

.tex

```
The work reported in this paper is part of a larger
      research project, in which we aim at deriving
      engineering principles inspired by
      \textit{Dictyostelium discoideum} to develop
      collective adaptive artificial systems (e.g.
      swarm robotics)~\cite{Parhizkar:
      15:SADDISR}.
```

Bibtex - examples

.pdf (text)

The work reported in this paper is part of a larger research project, in which we aim at deriving engineering principles inspired by *Dictyostelium discoideum* to develop collective adaptive artificial systems (e.g. swarm robotics) [25]. During the transition from growth to de-

.pdf (references)

[25] Mohammad Parhizkar and Giovanna Di Marzo Serugendo. Social Amoeba Dictyostelium Discoideum as an Inspiration for Swarm Robotics. In *IEEE 9th International Conference on Self-Adaptive and Self-Organizing Systems (SASO), 2015*, pages 162–163, 2015.

Latex templates

See Latex Templates on Moodle

References

Vijay K. Vaishnavi, William Kuechler Jr, Design Science Research Methods and Patterns – Innovating Information and Communication Technology. Auerbach Publications, 2008

Tutorial on research methods http://win.ua.ac.be/~sdemey/Tutorial_ResearchMethods/

Robert K. Yin. Case Study Research: Design and Methods, Applied Social Research Methods Series, Vol. 5, Sage Publications, 2003

Empirical research methods, how to be rigorous in experimentation - http://www.cs.jhu.edu/~nasmith/erm/

Hevner et al. Design Science in IS Research. MIS Quarterly, 28(1), 2004

Reading and writing papers
http://datasearch.ruc.edu.cn/course/researchmethod/computermethod.html

Edward de Bono. Lateral Thinking.Penguin Books, 1990.

Descriptive vs Informative Abstracts

*www.cognitrix.com/pages/tips-hints/**abstracts**.pdf*

Abstracts

http://writingcenter.unc.edu/handouts/abstracts/

References

Plagiarism

http://www.csee.umbc.edu/~pmundur/courses/CMSC691M-04/IEEE-plagiarism-defn.html

How to cite

http://owl.english.purdue.edu/owl/resource/747/02/

http://vlc.polyu.edu.hk/AcademicWriter/Evidence/citations.htm

Passive vs Active Voice

- http://www.dailywritingtips.com/passive-vs-active-voice/
- http://owl.english.purdue.edu/owl/resource/539/1/