

Seminar Guide

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1 Organizational Comments

- Please make sure you adhere to the schedule as posted on the class website. Exceptions are only possible in extreme situations (e.g., hospitalization). If you do not deliver your documents by the times posted on the website, points will be subtracted for fairness towards your classmates.
- On the final seminar day(s), please make sure to bring your laptop, and additionally copy your presentation onto a USB stick, in case there are any problems with your laptop during the presentation.
- Please submit all documents (drafts, final papers, etc.) electronically (except, maybe, the signed word of honor page). We do not need printed versions of your seminar paper.

2 How to Find Academic Literature

Initially, you will want to browse/read the literature recommendations provided by the seminar teaching staff. Sometimes, only a reference is provided, in which case you may have to obtain the paper from somewhere else. ACM and IEEE publications can be downloaded for free from within the Uni Zürich domain. Via Google Scholar, you can find a freely available pdf-version for almost all scholarly papers.

Next you have essentially three ways of identifying *related papers*:

- You can search for papers online, using Google or GoogleScholar. You can search by keyword, by author, by topic, etc. Many authors make their work available on their personal websites. Additionally, you may also find it useful to search the ACM Digital Library, IEEE Digital Library, and Citeseer.
- After reading a good paper that you find relevant to your seminar topic, you can browse the citations mentioned in this paper. This search will usually lead to older (related) papers, on which newer research is building.

- If you have read an older but good paper, you may want to find out which papers cite this work. As a first step you can use Google Scholar: search for the paper you have read and follow the link “cited by”.

Once you have found papers that are related to your particular problem, you may want to gauge/assess their quality, to prioritize the order in which you will read them (or to decide whether you will read them at all). Note that not all published papers are good papers. There are large differences in the quality of papers (varying from excellent to useless), and it is important that you learn to identify the quality/usefulness of a scholarly paper. The number of citations (e.g., as listed in Google Scholar) is a possible proxy for paper quality, but remember to take the year of publication into account (i.e., a paper from two years ago won’t have hundreds of citations). The quality of the conference or journal that published the paper is another proxy for the paper’s quality. You can search for rankings of a journal or conference if you don’t know if a journal/conference is of high or low quality. Of course, sometimes you will start reading a paper, and half-way through it you will realize that it’s a bad paper and throw it away.

3 How to Read Research Papers

This section gives some advice on how to read a research paper. Reading research papers is a time consuming process that requires significant attention and care. Note that this section is largely based on a write-up by [Mitzenmacher \(2010\)](#) with only minor adjustments.¹

You may want to read a research paper if you are asked to review it, or if it is relevant to your own research. When you read a research paper, your goal is to understand the scientific contributions the authors are making. This is not an easy task. It may require going over the paper several times. Expect to spend several hours to read a paper. Here are some initial guidelines for how to read a paper:

- Read *critically*: reading a research paper must be a critical process. You should not assume that the authors are always correct. Instead, be suspicious. Critical reading involves asking appropriate questions.
 - If the authors attempt to solve a problem, are they solving the right problem? Are there simple solutions the authors do not seem to have considered? What are the limitations of the solution (including limitations the authors might not have noticed or clearly admitted)?
 - Are the assumptions the authors make reasonable? Is the logic of the paper clear and justifiable, given the assumptions, or is there a flaw in the reasoning?
 - If the authors present data, did they gather the right data to substantiate their argument, and did they gather it in the correct manner? Did they interpret the data in a reasonable manner? Would other data be more compelling?
- Read *creatively*: reading a paper critically is easy, in that it is always easier to tear something down than to build it up. Reading creatively involves harder, more positive thinking. What are the good ideas in this paper? Do these ideas have other applications or extensions that the authors might not have thought of? Can they be generalized further? Are there possible

¹Thanks to Michael Mitzenmacher for the permission of using and modifying his original text.

improvements that might make important practical differences? If you were going to start doing research from this paper, what would be the next thing you would do?

- Make *notes* as you read the paper: many people cover the margins of their copies of papers with notes. Use whatever style you prefer. If you have questions or criticisms, write them down so you do not forget them. Underline key points the authors make. Mark the data that is most important or that appears questionable. Such efforts help the first time you read a paper and pay big dividends when you have to re-read a paper after several months.
- After the first read-through, try to *summarize* the paper in one or two sentences. Almost all good research papers try to provide an answer to a specific question. Sometimes the question is a natural one that people specifically set out to answer; sometimes a good idea just ends up answering a worthwhile question. If you can succinctly describe a paper, you have probably recognized the question the authors started with and the answer they provide. Once you have focused on the main idea, you can go back and try to outline the paper to gain insight into more specific details. Indeed, if summarizing the paper in one or two sentences is easy, go back and try to deepen your outline by summarizing the three or four most important sub-points of the main idea.
- If possible, *compare* the paper to other works. Summarizing the paper is one way to try to determine the scientific contribution of a paper. But to really gauge the scientific merit, you must compare the paper to other works in the area. Are the ideas really novel, or have they appeared before? It is worth mentioning that scientific contributions can take on many forms. Some papers offer new ideas; others implement ideas, and show how they work; others bring previous ideas together and unite them under a novel framework. Knowing other work in the area can help you to determine which sort of contribution a paper is actually making.

4 What Content We Expect in a Seminar Paper

Your main task and minimum requirement for this seminar is to “summarize” the current state of research in a particular field. At the least you should present the main concepts, ideas, findings, and approaches from the area in a coherent and consistent way. This also includes naming the most important open questions.

In addition, you are free but not required to identify open questions/problems yourself. You can also do a little bit of research yourself on a problem that you have found yourself or which you found in the literature. In this case your paper can consist of only a short introduction containing the survey and critique of existing work (perhaps 3-5 pages) and otherwise focus on solving the open research problem.

When writing about the current state of research in an area, we mainly expect a summary/review of existing work. However, you need to tie things together:

- pointing out the economic aspects/challenges/ideas.
- pointing out the computational aspects/challenges/ideas.
- highlighting the open research problems, or the value of certain ideas in the future.

Here are some questions that may help you to summarize prior work:²

1. What is the main contribution of the paper?
2. Is this important and why?
3. Is this a contribution to computer science, to economics, or both?
4. What was the main insight in getting the result?
5. What is not clear to you?
6. What did the authors not do?
7. What are the most important assumptions, and how limiting are they?
8. What applications does this suggest?
9. How does this relate to other things you have seen before?
10. How could this work be extended/generalized/improved?
11. Can you suggest a two-sentence project idea based around the ideas in this paper?

5 How to Write a Seminar Paper

In this section, we provide some advice on how to write your seminar paper.

- *English language*: ensure that you write in correct and understandable English. Note that the “presentation” of your paper is as important as the “content” of the paper. Bad writing can make your thoughts confusing and hard to follow, and this makes a bad paper. Make sure you use a spell checker. Have someone else proofread your paper. Make sure someone else, not familiar with the topic, can easily follow your thought process.
- *Formality*: be as formal and precise as possible (where appropriate). As computer scientists, we have formal languages (e.g., mathematics) that can help make things precise. Use definitions when appropriate. Formalize important aspects of the (1) problem statement and (2) proposed solutions. This applies to the papers you are surveying as well as to your own research ideas.
- When *summarizing another paper*, it sometimes helps to use examples and/or figures. Furthermore, it is not enough to simply say “what” the authors have done. Rather you must succinctly summarize “how” they have done it. What are the key ideas and techniques they introduced? In your own words, you need to explain what they did and how they did it. Furthermore, phrases like “I found x very interesting” or “this is a great paper” etc., should not be in your paper.

²We thank Yiling Chen for giving us permission to use this list of questions from her course website: <http://www.eecs.harvard.edu/cs286r/courses/fall12/index.html>

Section name	Use	Description
Abstract	mandatory	Briefly and succinctly summarize what the reader can expect in this paper.
Introduction	mandatory	Introduce/explain the problem and motivate why the problem is important.
Key Concepts	mandatory	Explain/define (perhaps formally/mathematically) the key concepts you will use in your paper.
Related Work	mandatory	Summarize related papers in your own words and critique them.
Research Problem	optional	Motivate and define the research problem you identified.
Solution Path	optional	Explain the solution path for the open research problem.
Conclusion	mandatory	Summarize your paper, focusing on your findings, and mention future work.
References	mandatory	List of papers you cite, appropriately formatted.
Word of Honor	mandatory	Declaration that you have written this paper by yourself.

Table 1: Outline of mandatory and optional sections in your paper

- When *critiquing a paper*, it is not enough to say “I wish they had also done x” and statements like “the paper is too long/too short” are not helpful. You should reflect on what the authors did, and find drawbacks of their methods, and/or propose improvements. For example, explain why you believe their findings won’t translate to a different domain. Or explain why a theoretical result won’t hold in the real world. Or explain how a particular method could be improved to get better results.
- When *proposing a research idea* make this idea as precise as possible, and explain how it is different from what already exists in the research literature. Ideally, you make the research problem *formal*, i.e., you write a formal problem statement (which may not be possible). When you propose a solution or a solution path, be as precise as possible. Vague statements like “one could do x” or “we could try y” are not very helpful. Even for a solution path, you need to explain why you expect each step to work.
- Your paper should have a structure similar to the sections outlined in Table 1.

6 How to Format a Seminar Paper

The standard typesetting tool for scientific papers in computer science and economics is \LaTeX (in fact, it is the de facto standard in mathematics and the natural sciences). It is highly recommended to use \LaTeX for your seminar paper because

- it will make the paper look a lot more professional.
- it allows the use of mathematical formulas and expressions with greater ease.
- you will have to use \LaTeX at some point (at least if you want to write your BSc or MSc thesis with the Economics and Computation Research Group). Thus, it is worth to invest a little

bit of extra time to get it set up and familiarize yourself with it, as you will benefit from this for a long time.

6.1 Using L^AT_EX

If you use L^AT_EX, you can use the following simple template ([link](#)) to get started, which will automatically set the correct font size, margins, etc. The L^AT_EX-package `hyperref` allows you to include clickable links in your PDF-file.

6.2 Using Other Software

If you plan on using a software different from L^AT_EX, please ensure that you are using a font with serifs (e.g., Times New Roman) in 11pt size and ensure margins of no less than 2.5cm on each side, 3.5cm at the top, and 5.0cm at the bottom. To create clickable links in your PDF-files, you can use PDFCreator³. PDFCreator installs a PDF-printer that you can use from any software (e.g., MS Word).

6.3 Number of Pages

The page limit for your paper is 12-15 pages (excluding the word of honor). Anything within these limits is ok, as long as it is well-written. If you manage to say everything that is important within 12 pages, that's better than blowing it up to 15 pages. However, if you are leaving out too many details and being imprecise using 12 pages, then it might be better to add more details and go up to 15 pages. Remember that *a good paper is not determined by the number of pages*. Please pay particular attention to:

- the correct structure of a scientific research article.
- the right use of figures, tables, and formulas.
- the correct citation of the works of others.

6.4 Citations and Avoiding Plagiarism

Plagiarism in scientific work has received a lot of (negative) attention in recent years. Scandals have cost numerous persons their academic titles and research institutions their reputation. For this reason alone it is essential that you learn how to handle citations and quotations appropriately, and a seminar paper is the perfect opportunity to do this. If you write something that is not your own idea (and not common knowledge) then you need to cite or quote a source. Otherwise this is *plagiarism*. This is not only an ethical violation, but the University also has very strict guidelines and penalties for plagiarism.

Citations: Essentially, anything you write is implicitly considered your own contribution *unless you cite a source* to which this contribution is attributed. This in turn means that when you use a specific piece of knowledge from some other paper, you must cite it.

Of course, some things are common knowledge, and you will hardly want to cite some ancient Babylonian mathematician every time you use multiplication. When to start citing requires

³Available at <http://sourceforge.net/projects/pdfcreator/>

judgment. The best way to develop this judgment is to read other work from the same field of research. To help you get started, you can use the following rules of thumb:

- If you read the fact/idea/concept in someone else’s paper, you should cite that paper the first time you use the fact/idea/concept.
- If the papers you read present the fact/idea/concept with a citation, you probably want to cite the same or a similar source. However, you must ensure that the source actually says what you think it does; do not rely on the fact that someone else used it as a source, but go and check yourself.
- If in doubt, be on the safe side by finding an appropriate source and citing it.

You can either refer to the authors of a paper or the paper itself, e.g., “As [Abdulkadiroğlu and Sönmez \(1998\)](#) have shown, ...” (L^AT_EX-tag `\citet{...}`) or “...as is widely known ([Abdulkadiroğlu and Sönmez, 1998](#)).” (L^AT_EX-tag `\citep{...}`).

Quotation: If you use not only the content, but exact formulations from another paper (except when using technical terms etc.), you must indicate this by *quoting* the other paper. You can use quotes (“...”) when including snippets from another text in your sentences, e.g., *This research is motivated by the fact that “it is important to deal with the model where there are more agents than houses” ([Abdulkadiroğlu and Sönmez, 1998](#)).*

6.5 Word of Honor

At the end of your paper you should include a word of honor on a separate page, which you sign. It is sufficient if you paste a scan of your signature at the appropriate place. If this is too time consuming, you can also print the page, sign it, and deliver the paper-copy (of just the word of honor, not of your whole seminar paper) to the teaching staff. You can use the following text:

I, [first and last name], hereby declare that I have produced this work independently and have used no other than the listed tools and sources.

This page does not count towards your page limit.

7 How to Peer-review a Seminar Paper

In addition to carefully reading papers of others and writing a paper yourself, you may also be asked to review papers written by fellow students. When doing so, please be *polite and professional* in your reviews. Point out what is good, what is bad, what is confusing, and what should be elaborated on. Provide *constructive* criticism. And never insult the author!

Your review should address the following points:

- *Summary:* at the beginning, start by briefly summarizing the paper and the research question in 2-3 sentences.
- *Readability and organization:* Is the paper well-written? Are things well-explained? How is the quality of presentation? How is the language? Is the author precise and clear? How could the presentation be improved?
- *Technical quality and soundness:* are all assertions and arguments correct or are there mistakes in the paper?

- *Originality/novelty*: how original or novel is the research question the author poses?
- *Significance*: How significant is the research question that the author poses?

Your review should be at least 1 page long. There is no upper limit (but be reasonable, more than 3 pages is probably excessive).

8 How to Give a Seminar Presentation

This section gives instructions and advice on how to prepare and give a good seminar presentation. In addition to the suggestions given here, you may read the useful write-up by [Chen and Ruberry \(2012\)](#).

8.1 Format, Dos, and Don'ts

- You will have 20 minutes for your presentations, so please time accordingly. Afterward, you will lead a 10-minute discussion on the topic of your presentation.
- Your presentation should roughly follow the same structure as your paper. Here is a sample outline (with approximate timing suggestions):
 1. Motivate the topic: why is this interesting and relevant? [3min]
 2. Explain the key concepts necessary to talk about this topic. [3min]
 3. Review some of the most important work on this area (not everything you have read and not every paper that is cited in your paper). [7min]
 4. Pose your research question (if you worked on one) and/or the open problems you identified. Explain why it is important/significant. [3min]
 5. Explain your path to solution (only applicable if you chose to do some research on your own). [3min]
 6. Conclude. [1min]
- Keep in mind that most people in the audience have not read your paper and will be unfamiliar with the topic.
- Use examples and/or figures to explain the content when useful.
- Put enough effort into preparing your slides. Do not use too much text on your slides, avoiding full sentences in favor of key words. When presenting, do not just “read your presentation” to the audience, but explain everything talking “freely.” Practice this. Your slides should complement what you say.
- There will be a projector/beamer available for you to use. Thus, please use PowerPoint or something similar to prepare your presentations electronically. Test your equipment beforehand to be sure you know how to connect your laptop to the projector. In addition, please copy your presentation onto a USB stick such that we can use a different laptop in case there is a problem with yours.
- For the discussion, be open and ready to answer questions from the audience. Also, prepare some interesting questions for the audience to discuss.

8.2 Evaluation of the Seminar Presentation

For the evaluation of your presentation, both the *content quality* as well as the *presentation quality* are important.

- High *content quality* means that you are talking about the right kind of stuff, everything is technically correct, you are explaining important terms correctly, you can answer questions well, and, if applicable, you have an interesting research problem and a good idea for a solution path.
- High *presentation quality* means that your talk is structured well, that your talk is easy to follow and you explain everything nicely, your slides are well-designed (not too much and not too little text), you are using examples and perhaps figures or tables to illustrate your points, you are giving an engaging talk, you end on time, and lead a good discussion afterward.

8.3 References in the Seminar Presentation

When explaining key technical terms, you don't need to give references for those. If you are using a figure or a table from a paper then put a small reference on the slide. When you are talking about a particular paper (the survey part), then put a reference at the beginning of the slide. You do *not* need a slide with all references at the end of the talk.

8.4 Conclusion, or the *Last Slide Problem*

Think about, what the last slide of your talk should accomplish. You will use this slide to end our talk. But this slide may also be up during the 10 min discussion. Thus, a slide that simply says "Questions?" or "Thank you!" or "That's it" is really useless. Instead, consider the following:

- Start your last slide with a brief summary of your topic, and perhaps remind the audience of the main concepts.
- Then repeat the main ideas/findings from the papers that you have surveyed.
- Then state your research question (if applicable).
- Then briefly state some key words related to your solution path (if applicable).
- Perhaps put an interesting discussion/open question at the end.

Thus, the last slide may have a little more text/bullet points, than is common for the other slides. However, you should still be succinct and brief.

References

- Abdulkadiroğlu, Atila, and Tayfun Sönmez.** 1998. "Random Serial Dictatorship and the Core from Random Endowments in House Allocation Problems." *Econometrica*, 66(3): 689–702.
- Chen, Yiling, and Mike Ruberry.** 2012. "CS 286r Presentation Notes." Online: <http://www.eecs.harvard.edu/cs286r/courses/fall12/PresentationStyle.pdf>.
- Mitzenmacher, Michael.** 2010. "How to Read a Research Paper." Online: <http://www.eecs.harvard.edu/~michaelm/postscripts/ReadPaper.pdf>.