Guidelines for Student Theses

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Methods in Multi-Layer Usable Security Research
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1. REGISTRATION

The registration is based on forms provided by the administration. The registration determines the title of your thesis, your starting and ending date, as well as your first and second examiners. We provide the registration form and then send it to the administration.

2. PRESENTATIONS

Respect the given template.

2.1. Introductory Talk

It is given within the first four weeks of your thesis (not graded). The objective is to check that: (1) you have understood what you will do in the next months and (2) your plan is realistic. Duration: 10 min. Number of slides: max. 10. Typical structure: (1) introduction, (2) goals of the thesis, (3) planned steps, and (4) timeline.

2.2. Mid-term Presentation for MSc Students

Presentation given after 3 months (not graded). Duration: 20 min+10 min for questions. The objective is to check what you have done and what remains to be done.

2.3. Final Presentation

Presentation given after having handed your thesis. Duration: 20 min+10 min for questions. Focus on your results. For all presentations, remember that members of the audience may not be expert in the field and may not have attended your previous talks. Attending presentations from other students is highly recommended.

3. WRITTEN DOCUMENTS

3.1. Expos

A short document (max. 2 pages) handed on the first day that serves as thesis proposal. It should include: (1) motivations, (2) related work, (3) question(s) addressed and goals, (4) existing previous work if available, and (5) planned timeline.

3.2. Thesis

Respect the given latex template. The number of pages depends on your writing style. Rules of thumb: 30-50 pages for a BSc thesis, 50-100 pages for a MSc thesis. You can print your thesis in black and white or colors. In the case of black and white printing, especially check that differences in colors in your figures are still visible. The best is to choose a transparent cover, blue back, and a heat adhesive blue band. Print 1 exemplar for the administration office, 2 for your examiners, and 1 for your advisor (for Uni Bonn students). A typical structure is as follows. Note that key words in titles need to be capitalized.

1) *Abstracts:* one in English, one in German. Half a page. It summarizes what you have done and should give the reader the envy to read your thesis. A good structure according to [1]) is: (1) state the problem, (2) say why it is an interesting problem, (3) say what your solution achieves, and (4) say what follows from your solution.
2) *Introduction:*
   a) *Motivation:* Develop more than in the abstract why the problem you tackle in your thesis is important.
   b) *Contributions:* Summarizes what you have done in your thesis.
   c) *Structure:* Announce the chapters of your thesis.
3) *Backgrounds:* (optional) At the beginning of each chapter, briefly announce the included sections and how they are related. Define the context and terminologies that are supposed to be unknown by the reader and are used in the remaining of the thesis.
4) *Related Work:* Briefly summarizes what has be done in previously published work. Do not simply reformulate the original text, but understand and analyze it. Emphasize the similarities and differences with your thesis. A table may complete your description to visualize them.
5) *Design:* Explain your solution, how you have come to it and why it is the better/different than existing solutions.
6) *Implementation:* Provide details about the technologies used in your thesis and how your solutions is

implemented. UML diagrams may be useful. Code extracts should be avoided or kept to the minimum.

7) *Evaluation:* Detail your evaluation settings and your results. Use the same formatting (i.e., size, font,...) for all your figures. Do not forget legends. Do not add titles in the figures themselves, but use the command caption. Verify that the text in your figures is readable when printed. Comment on your results: why are they like that? was it expected? etc.
8) *Conclusions and Future Work:* Summarizes what your thesis has shown and indicate what still need to be done.

3.3. General Advices

Writing takes usually more time than expected. Trained writers usually write 1-3 pages in this template a day. So, do not wait the last week to start writing. Write in parallel of other tasks. For example, allocate 1-2 hours each day to your thesis, before working on other tasks, such as implementation, etc. Before writing pages of text, start with the structure in sections and then, make a rapid list in form of bullet points of what you want to write in each paragraph. This allows you to easily reorganize your ideas if you notice that you have forgotten something or another structure would be more appropriate. When writing, try to imagine that you are explaining to a friend what you have done in your thesis. Define all terms that you did not know before the thesis since your reader may be in the same case. If you have taken design decisions, explain what were the different options and detail why do you have made this particular choice. Justifying decisions is very important. Try to make short sentences in the active voice (e.g., starting with we or I). Avoid using contracted forms, such as dont. Rather use do not. Establish a link between your ideas and sections, so that you have a red path across your thesis. To this end, use references to previous sections (using label and ref commands). Present tense usually dominates your thesis except when referring to, e.g., your simulations or future work. For example, say We present related work in this section, before highlighting the differences to our work.

4. SIMULATIONS

Start by testing selected values (e.g., min, max, median) to see how your mechanism is behaving, before starting a finegrained exploration. This may save you time if, e.g., you detect errors in your implementation or the values are constant.

5. IMPLEMENTATION AND CD-ROM

Document your code in a way that you would like to receive it (e.g., if you would be a new student and would need to continue your work). Use GitLab to manage your code and share it with us [**?**]. At the end of your thesis, you must provide a CD-ROM including: (1) latex source code of your thesis, (2) implementation, (3) presentations, and (4) results in an excel file.

6. LITERATURE

Literature study might not be the most exciting part of your thesis but it is a key part. It allows you to know and understand existing solutions. Inventing the wheel a second time is useless! Moreover, you want to improve the current state-of-the-art, so you need to know it.

6.1. Search

Google scholar is a good starting point as it compiles papers published by IEEE, ACM, Elsevier, etc. You can also check the following sources: ACM digital library[1], IEEE online publications[2], Springer online publications[3], and Science Direct online publications[4]. I usually first collect all papers I find interesting based on different criteria: (1) the title, (2) the abstract, (3) the number of citations, and (4) where they have been published. About (4), this requires experience in the field but globally IEEE and ACM conferences are better than workshops. Note that technical reports have usually not been reviewed by external reviewers, but published online by the authors themselves. If you are doubtful, do not hesitate to send us a list of papers and where they have been published. Therefore, try different combination of synonyms to cover most papers. Do not read all papers in details but put them in a folder for further processing. You can use a software to manage them and your references, such as zotero [**?**], JabRef [**?**] and Mendeley [**?**]. Note that recent papers may not have many citations but can still be of high quality. Indeed, it takes time between a paper is published (i.e., accessible to the public) and a new one (citing it) is submitted, accepted, presented and published at another conference. Papers can be directly accessible or will need a registration. In the second case, try to connect from the university or using VPN. If this is not working, you can either contact us or send an email to the authors gently asking if they could send you a copy of their work for your thesis. Once you have collected the first bunch of papers, process them by reading the abstract, the conclusion, and overflying the content. Do not read them in details yet. Sort them depending on their relevance. Once you have sorted them, start with the most relevant and read it once without trying to understand all formulas. If interesting, look in the references for previously published papers of interest and also check if you can find papers that have cited this paper (see results in Google scholars). You can also check work from the same authors by looking at their personal website. Start the process again until you have found all papers of interest. Then, read them carefully and try to understand all details.

1. http://dl.acm.org/dl.cfm
2. http://ieeexplore.ieee.org/Xplore/home.jsp
3. http://link.springer.de/search/
4. http://www.sciencedirect.com

6.2. Report

Now that you have read all the papers, you would like to refer to them in your thesis. DO NOT simply COPY SENTENCES from these references. This is plagiarism = scientific misconduct = punishable. If you like to cite a sentence, use citation marks, e.g., the sentence to be cited and provide the reference of the paper using the cite command. If you reformulate the ideas with your own words, provide the reference as well. Usually, plagiarism is identified based on differences in writing styles, sentences/argumentation that we have already read somewhere, or specialized software. Note that we will check this point more than carefully. Take care of the formatting of your references. This is a good indicator of the quality of your work. Do not manually enter the bibliographic details of each paper but use the offered option to get the reference already formatted. I recommend modifying the citing key and replacing it by the name of the author and the publishing year, such as christin15. This will save you time if you need to often cite it. Moreover, you will need to check the provided information. Key words in titles are capitalized (i.e., use fg around the title and add majuscules where needed). Check that the name of the publishing venue is not inverted (e.g., Proceedings of the IEEE Xth Conference on Name). Remove the year in the name of the conference/workshop since there is a specific field for it. If you cite online references, indicate the url and the date at which you have accessed it. See the following examples for a journal paper [**?**], conference paper [**?**], workshop paper [**?**], and an online reference [**?**]. Check the homogeneity of your references!

7. GRADING

We are using different criteria to grade you.

7.1. Working style

- Autonomy (e.g., do not need help, look for own solutions in case of difficulties)
- Understanding (e.g., understand complex systems without help)
- Creativity (e.g., develop own solution)
- Assiduity (e.g., work continuously, results follow in short intervals)
- Collaboration (e.g., apply given recommendations)
- Systematic and accurate planning and completion (e.g., respect timeline, methodical implementation)

7.2. Results

- Quantity and delivery speed (e.g., many results in given time)
- Quality
- Completeness and usefulness
- Degree of achievement based on given objectives

7.3. Thesis

- Structure (e.g., clear structure, logical links)
- Form (e.g., respected layout, references correctly cited)
- Language
- Scientific methods (e.g., literature discussion, critical analysis of the results, discussion of alternatives, etc.)
- Validity of the results
- Completeness (e.g., definition of background terminology)

7.4. Presentation

- Content
- Presentation style
- Quality of slides
- Discussion

8. POST-MEETING

After having handed your thesis and given your presentation, we will have a meeting to comment on your result and eventually provide you advice how to further improve your skills.