

Bachelor and Master Thesis Guidelines

Chair of Practical Computer Science I: Data Analytics
University of Mannheim, Germany

March 1, 2019

1 Application

- To *apply* for a thesis, contact Prof. Gemulla and provide your CV, transcripts, and a filled-out copy of the [Master Candidate Profile form](#) (only CV and transcripts for Bachelor thesis).
- We discuss potential *thesis topics* with us after your application. Generally, we will suggest one or more suitable topics to you, based the interests expressed in your application (and, of course, our interests). You may also suggest your own topic or work on an external topic.
- If you want to write your thesis in cooperation *with a company*, please send the name and contact details of your contact in the company with your application. Make sure that the company can provide you with all required resources (e.g., datasets, compute servers, ...). Before starting your thesis, the company needs to agree (i.e., sign) a [supervision agreement](#).

2 Topic Proposal

- Before you can start your thesis, you need to provide a *convincing* topic proposal, in which you describe the scope and goals of your planned thesis.
- Writing the proposal may take some time and effort. It is an important part in the preparation of your thesis. Take it seriously.
- The proposal must be *2 pages* long (excluding references). Information about structure and content is provided below.
- You may (or should) discuss the focus and scope of your thesis with your advisor and/or professor.
- Hand in the proposal only if you think it is ready.
- You may receive revision requests for your proposal. If so, address these requests and hand-in the proposal again.

Your proposal should be divided into three subsections: “Introduction”, “Background”, and “Goals and Work Plan”. Make sure to include your *name* and a *preliminary title* of your topic into the proposal.

Introduction. A short sketch (1 paragraph) of the topic. It may be easier to write this at the very end, when the other parts are finished.

Background. A compact description of the relevant concepts as well as a chain of arguments that clearly leads to the “what and why” of the proposal. Your arguments should be scientific; e.g., clearly follow from the discussion so far, or be derived from cited work, or be considered common knowledge. Do not speculate. To write this part well, you already have to attain some understanding of the relevant literature. Unless you are already very familiar with the topic, you might find yourself rewriting this part a few times or re-reading the literature. Introduction and background together should not take more than one page.

Goals and Work Plan. This is the largest and most important part of your proposal. It expresses and motivates the tasks, goals, and research questions that you want to address, as well as how you want to proceed to answer these questions. Don’t over-do it: You are not expected to come up with intricate solutions already, but rather to demonstrate that you have a clear understanding of the scope of your thesis

and the entailed tasks and challenges (e.g., possible approaches, possible outcomes, evaluation, planned time). Also here: stay scientific and reasonable! Make statements such as "I will do ...to investigate whether X can improve Y" instead of "I will improve Y with X". Structure this section by the main research questions or tasks, include rough time estimates and milestones, and mark must-have and nice-to-have items as appropriate. As a hint, the very first task or goal usually is that you attain a solid understanding of related work (literature, software tools, ...).

Note that technical details (formulas, algorithms, long lists of names, etc.) are not part of the proposal. Prefer high-level and intuitive descriptions, and be only as technical as you absolutely need to be.

After reading these guidelines, you may feel that writing a proposal is a lot of work, almost like writing a thesis by itself. You are right! By accomplishing this step, you already completed the first milestone of your thesis: Having a clear understanding of what is coming next and what to do in the following next three/six months. You are now ready to start!

3 Registration

- Once your proposal has been accepted, register your thesis with our secretary right away. At this time, your topic, advisor, and starting date are fixed.

4 Supervision

- You are responsible to schedule all meetings.
- Schedule regular meetings with your advisor to discuss your progress.
- Schedule milestone meetings with the professor around every second month. These meetings should consists of a short presentation with well-prepared slides, as well as meaningful results which show progress.
- It may be helpful to create short presentations for the milestone meetings. Send these presentations to the professor beforehand.
- The advisors will generally neither read drafts of your thesis, nor write or review your code.

5 Writing the Report

- Your report is the main document describing what you did in your thesis, and it is the main input for grading.
- Your report must be written in English using the provided L^AT_EX [template](#).
- Start writing early.
- Keep notes throughout.
- Discuss the thesis outline with your advisor.
- Include an abstract.
- The target audience for your report are people with a similar background in computer science. Do not repeat basic textbook material (e.g., material from BSc-level courses in an MSc thesis).
- Stay concise and to the point. As a guideline, write ≈ 60 pages excluding references for a Master's thesis and ≈ 30 pages for Bachelor thesis.
- Avoid low-level details (e.g., long code listings). Make use of an appendix for relevant additional material.
- It is recommended to read the relevant parts of "Writing for Computer Science" by Justin Zobel.
- Use examples and figures throughout.

6 Submitting

- Hand in your thesis in the secretary's office. Make an appointment upfront.
- Hand in two copies of your report along with source code, data, and instructions for installing and running your code.

7 Final presentation

- If you want, you can present your thesis to the group.
- Whether or not you chose to present, as well as the content of your presentation, does not affect grading.
- We recommend a presentation before you hand-in so that you can incorporate any feedback that you may get.