Bachelor/Master thesis guidelines

(Lehrstuhl – I13, 1.1.2020)

Research proposal

The research proposal defines the scope of the thesis. The goal is to give you and your advisor confidence that the goals are achievable. It also shows that the student is familiar with the topic and knows what challenges she is up to. The extent of the proposal should be around 2 pages.

The proposal contains a short introduction, motivation, overview of nearest related work, a sketch of your approach and how you intend to evaluate the approach what the expected outcome is. Sure, things are expected to change since it's research and sometimes your new approach turns out to be worse than the state-of-the-art. The grade is given based on the criteria if the student made an independent scientific contribution. Hence, also finding out that an approach doesn't work as expected falls under that criteria.

Resources: Furthermore, you should clarify what kind of infrastructure is needed for a reasonable evaluation, e.g., a budget of 20 cores and 200GB of RAM over two months, 1 week access to server with NVIDIA GPU, 2 weeks access to 112 core machine, etc... Be reasonable with the demands and your implementation should be 90% finished before consuming resources. Demanding the reservation of 3000 cores and 4TB of RAM can be fine if the approach is published at a significant conference and you can create/delete the evaluation using scripts within a short time frame, but is a bit excessive for a prototype you don't even know how to deploy on that scale. Bear in mind that everybody always likes to use as many resources exclusively as possible, hence priority is given to the project which has the earliest deadline at an important conference. The better your tooling is, e.g., creating and deploying 1k VMs within 15min, running the experiment, collecting the results and deleting the VMs, the more resources are possible.

External thesis

The thesis is evaluated using the grading rubric. Your company advisor should attend the kick-off meeting and the final thesis presentation and also give an evaluation and grading suggestion based on the grading rubric. A research proposal is also needed to scope the thesis to an achievable portion.

Your university advisor helps you regarding scientific standards, e.g., a sound evaluation. Your company advisor helps you regarding the approach, technical details and so on. Each thesis needs an evaluation, hence sole implementation projects are not possible.

Unless other agreed, we cannot sign NDAs and cannot provide any infrastructure (Gitlab, CPU/RAM budget, special infrastructure) for evaluation. Further we cannot comment or provide insight on any company related issues. That said, several thousand cores and terabytes of RAM, access to GPU resources, etc. can be provided for experiments when an agreement is formed.

Registration

Supervisor: Gives the final grade, Prof. Dr. Ruben Mayer
Advisor: Member of the chair who agrees the research proposal, gives feedback throughout the thesis project and finally gives a grade recommendation to the supervisor.

Thesis template and Editor

We highly recommend using the online LaTeX editor hosted by LRZ, https://sharelatex.tum.de.
When creating a new project, there is a template that is commonly used in computer science at TUM. In case you want to use another editor, it can be also found here (https://github.com/fwalch/tum-thesis-latex).
Depending on your study program, you have to fulfil certain formal requirements for your thesis. You are
You are responsible for checking these guidelines and for sticking to them. The template might differ from the requirements of your study program, so be sure to check the template for deviations. The formal requirements are checked at the info-point, where you will hand in your final thesis.

Supervision

The main goal of a thesis is to make an independent scientific contribution. Your advisor helps you in that regard. Communication is agreed individual with the advisor, e.g., every Tuesday during the first month, then once a month. This depends on the topic and how much the advisor is involved in the topic. Do not expect that the advisor is responsible for proofreading your thesis or teach you coding in Python. The advisor is only there to help you regarding related work, methodology, evaluation … and so on. Tell the advisor what you want to discuss in the meeting upfront so the advisor can also prepare. Take notes to avoid repetition.

A mandatory meeting is 1 month before final thesis submission. The thesis at that point should contain introduction and motivation, define your contribution, almost finished chapter about your approach and preliminary results.

Grading

The grading criteria is shared upfront with the student. Your advisor will give a grade recommendation to the supervisor.

Plagiarism and Copyright

Please refer to the Student Code of Conduct for details! Student Code of Conduct
Any kind of plagiarism is not tolerated! The authorship of all material must be completely documented and traceable.

Unless you have the written permission by the copyright owner (e.g. author, publisher, …) you are not allowed to copy figures from publications/webpages/.. into your thesis. You need to adapt and reproduce the figure by yourself and cite the original creator of the figure in your thesis. Breaching the first rule violates copyright and may have legal consequences, while breaching the later rule is plagiarism.

Thesis Submission

You need to submit your thesis according to the guidelines of your study program, at the info-point for students. In addition to the print-outs for the info-point, you need to submit one exemplar of your thesis at the chair to your advisor.

Publishing

We encourage the publication of the results. 6 months is a tight time frame for a full paper, but often the results are enough for a poster or demo paper. Another option would be, if the topic is related to the research of the advisor, to come up with an additional approach or comparative evaluation, which extends an already planned publication in a full paper.

First author: The one in-charge “federführend” of the paper gets the first authorship.

Example 1: Student comes up with the topic, comes up with the evaluation, writes the poster/demo/paper, minor corrections by the advisor. Student is first author and your advisor is second author.
Example 2: Your advisor proposes the topic, guides the evaluation of the approach which is implemented by the student, gives significant input to the paper (structure, writing, red-line ...), your advisor is the first author and the student is second.

Deadline Extension

If you can not stick to the submission deadline for your thesis due to some unforeseen, extraordinary reasons talk to your advisor as soon as possible. Prepare a description of the problems you have, because this will be used to apply for an extension. There is no guarantee to get the extension accepted, so ensure you apply for it as early as possible.

Thesis Title Changes

If you need to change the title of your thesis, talk to your advisor and prepare a letter that states the old and the new title and relevant information about you (Martikelnummer, Name, …).

Datasets provided from the chair

Data owned by the chair and given to the students for experiments is not allowed to be shared with 3rd parties and has to be handled confidential.

Source code provided from the chair

Often the students builds/extends/modifies code provided from the advisor. All source code provided and extended by the student cannot be shared with 3rd parties. Future handling, e.g., open-sourcing, etc. has to be agreed in written form.

Final presentation

Depending on your curriculum, the final presentation is graded or not. Nevertheless, you should prepare a good presentation, make several dry-runs at home or with friends before presenting in our colloquium.

Outline and structure: You should follow the typical outline, introduction/motivation, contribution, related work, your approach, evaluation, results and conclusion, hence no outline slide is needed. Since schedule is tight, you are supposed to pick the most interesting results and pack the rest into backup slides. At least ⅓ of your presentation should be about your approach and ⅓ about evaluation/results on a total of 15 slides + additional ~20 backup slides which show corner cases, drill down into more results, details of the implementation and so on.

No outline slides! Do not waste time by telling everybody 2 minutes that you first show the motivation, then the related work, then the approach discuss the benchmark and evaluation and finally show the results and future work … the audience might have heard this with minor deviations at least a thousand times.

Timeline: 15 min presentation, 15 min discussion (here you should use your backup slides)

Presentation date: The colloquium is scheduled every between Friday 11:00 - 12:00. Your presentation slot is agreed with your advisor. You are responsible for contacting your advisor and schedule a date for the presentation with him.