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Guideline for Students writing a Bachelor or Master's Thesis

Chair of Artificial Intelligence and Machine Learning (AIML)
Institute of Informatics, LMU Munich

Prerequisites

Students interested in writing a thesis in our group should have a background in our main research topics. Normally, we assume that you attended (and successfully passed) some of our lectures. Exceptions to this rule are possible but need to be justified. In any case, students should send a transcript of records when contacting one of the members of the AIML group for a thesis topic.

General procedure, steps, and milestones

Writing a thesis in our group will involve the following main activities and milestones (to be explained in further detail below):

- *Thesis request:* Students interested in writing a thesis in our group are supposed to fill an online thesis request form: <https://www.kiml.ifi.lmu.de/studies-teaching/Thesis-Requests/index.html>
Based on the information provided there, as well as other aspects (such as capacity, availability of resources, etc.), the request will be accepted or declined, and the student will be informed by email. Acceptance at this stage does not yet mean that a thesis topic will be offered, but only that the process will continue.
- *Finding a thesis topic:* In the request form, you indicate preferences for specific themes and research directions. Depending on these preferences, you will be invited to one of our research focus groups, where you can meet and talk to doctoral students and research assistants. They will propose a topic and also make suggestions regarding a possible co-supervision. Of course, you are also invited to make proposals yourself, and actively participate in the discussion.
- *Writing a proposal:* Once the topic has been fixed, a plan/proposal for the thesis must be prepared. This step includes familiarization with the topic and normally requires about 2–4 weeks. The idea of a proposal is to explore the thesis topic thoroughly enough, so that a detailed plan for the work on the thesis topic can be created. This proposal is supposed to provide a motivation of the topic, to elaborate on the state of the art and prior work, and

to explicate the goals of the thesis. The goals should be defined carefully, as they provide the basis for the final assessment of the thesis. The proposal must also contain a preliminary structure of the thesis and a schedule (Gantt chart). Note that the preparation of an acceptable proposal—with appropriate assistance and in due course—is a first valuable contribution for the thesis. It is also a prerequisite for the final approval of supervision.

- *Registration:* After a topic has been agreed upon and the proposal has been approved, the work is registered by the official supervisor (usually Prof. Hüllermeier) in uni2work. For this purpose, the following information is needed: the email address of your uni2work account, your degree programme, title of the thesis (in English and German), date of registration (official start of the thesis) and the language of the thesis (German or English for a Bachelor's thesis, only English for a Master's thesis). The registration must be confirmed both by the student and then again by the supervisor.
- *Starter talk:* Shortly after the start of the thesis, it is common to give a short presentation in the aforementioned research focus group. The talk is meant to explain the topic and the goals of the thesis, and to sketch some first ideas of how to tackle these goals, so that the members of the group can give comments and provide feedback. Ask your (co-)supervisor about the possibility (and the need) for a starter talk. In any case, the duration of the starter talk should not exceed 15 minutes.
- *Working on the thesis:* In order to accomplish and successfully complete your thesis, you need to organize your time between reading relevant literature and related work, solving your own tasks, developing and implementing your solutions, and writing the thesis. As a research group, we offer you support through regular meetings with the (co-)supervisor, our students seminar, a suitable working environment, and proofreading before the official submission of the thesis.
- *Submitting the thesis:* At this stage, you are required to submit the written thesis as a PDF via uni2work. If applicable, you should also send (or share) your source code and experimental results to (with) your supervisor.
- *Oral defense:* The defense will take place after the formal submission. Defending the thesis prior to the formal submission is only possible under specific circumstances and in agreement with the supervisors.

Supervision and co-supervision

Prof. Hüllermeier will be the official reviewer and the main supervisor for all theses written in the AIML group. Additionally, you will be assigned one of the research assistants as a co-supervisor and primary contact person. Please make sure that you meet and/or communicate with the co-supervisor on a regular basis, so as to keep her or him informed about the progress as well as any kind of difficulties that may arise. As a rough guideline, you should get in touch with the co-supervisor at least every two weeks. Students are encouraged to organize their work and share it with the supervisor using the university's GitLab¹ service; in this way, sending emails with large attachments can also be avoided.

¹<https://gitlab.lrz.de/>

Template

The thesis should be written in LaTeX and adhere to our template². As for the length of a thesis, there are no strict constraints, but as a rough guideline, you can assume 30–50 pages for a Bachelor theses and 50–80 pages for a Master's thesis.

Proofreading

The co-supervisor will normally offer you to proofread a draft of your thesis, either as a whole or in parts (e.g., single chapters). The goal of proofreading is to provide general feedback and give hints for possible improvements (but not to make detailed corrections). Please note that proofreading will be offered only once for each part of the thesis; therefore, you should make sure that your draft is sufficiently mature. Moreover, please take into consideration that feedback cannot be expected on a very short notice; typically, it will take about two weeks.

Working environment

We can support you in acquiring a virtual machine from the LRZ³, or to get access to HPC resources (including GPUs). For reasons of space, we can only offer a place in our premises in rare cases.

Oral defense

The thesis will end with an oral defence in the form of a seminar. The seminar will start with a presentation of the topic and main results of the thesis, followed by an informal discussion in which the audience can ask questions. The presentation should not exceed 20 minutes in the case of Bachelor and 25 minutes in the case of Master's theses. There is no time limit for discussion.

Evaluation of the thesis

The final assessment of the thesis will be based on the following criteria:

- *Working attitude*: Familiarization with the topic; independency, autonomy; commitment and engagement; utilization of resources (tools, computer infrastructure, etc.).
- *Contents and results*: Documentation of related work; solution of the tasks and compliance with objectives; quality of the solutions; documentation and reproducibility.
- *Written thesis*: Structure and readability of the thesis; length of the thesis, balance between breadth and depth; formal presentation and correctness; linguistic quality (grammar, or-

²<https://gitlab.lrz.de/kiml/latex-thesis-template>

³<https://doku.lrz.de/display/PUBLIC/Create+a+VM>

thography, typos, etc.); extent and quality of illustrations, figures, tables, etc.; citation and list of references (coverage, correctness, etc.).

- *Defense of the thesis*: Quality of presentation; quality of slides; response to questions; compliance with time limit.

Further information

Some helpful links:

- Blog post on academic writing
- Book about “Research Methodology and Scientific Writing”
- How to read a scientific paper?
- How to read a paper? (available via Uni-Net/VPN)
- How to give a great research talk?
- How to write a great report?
- Scientific writing in English