

## Final Project

# Mini-research Project Reports

**Deadline: Mon, 31.03.2024, 16:00** Ask questions on Discord

In the final project you will execute one of the research proposals you submitted in exercise 05. Please consider the feedback you received on these proposals carefully and revise your plan accordingly. The project (including writing the final report) should take no longer than three weeks, which you can freely allocate between now and the deadline. For a good grade, it is especially important that you set yourself realistic goals that can be achieved in this time frame and with the available resources. The project report should explicitly include your planning of the different project phases, including setting subgoals and comparing between the estimated (before) and actual (after) effort put into achieving each subgoal. Moreover, it is crucial that you develop/demonstrate your teamwork skills and report about how working together was more profitable than working in isolation.

**The project report should be uploaded in PDF format and consist of about (number of team members)\*4000 words plus diagrams. Mark each chapter or section with its main author, so that we can grade each team member's work individually – this is important for legal reasons. Do not forget to join the MaMPF submission before the deadline.**

It is important that your report achieves both formal precision (use mathematical formula, tables, and diagrams) and intuitive understanding (what do these formula, tables, diagrams mean and why are they relevant?). Make sure to be concise and clear. To judge your own writing, imagine that other students would like to replicate your results – your report should give them the information to do so in a form they can understand. Your report should follow the established structure of scientific reports:

### Front page

- Title
- Authors (including matriculation numbers)
- Link to a repository with your code
- Lecture name
- Date

Do *not* use the logo of the university or its institutions.

### 1. Table of contents (automatically generated by LaTeX)

### 2. Abstract

- Give an executive summary of your goals (including motivation and justification), your work in this study, the results, and your contributions to the field.

### 3. Introduction

- Describe the context of the research project: To which general subfield does your project belong? What are the overarching goals of this subfield? Which application is addressed?
- What are your research questions? Why are these questions interesting/relevant? Why are they hard to answer? Here you justify your research/replication effort.
- Define the objectives and state possible limitations of your study design explicitly.

#### 4. Background

- Explain the basics of the application addressed by your method.
- Describe the data you are going to work with. Explain briefly how these data were measured/collected and curated/annotated. Substantiate why these data are suitable to answer your research questions.
- Introduce the necessary theory and general methodology your research is based on (e.g. the basic architecture of the networks to be used, the loss functions and learning algorithms that are relevant for you).
- Summarize related work from the literature. Discuss the pros and cons of alternative/-competing methods and justify your own approach.

#### 5. Methods

- How did you specialize the general theory and methodology from section 4 to your specific setting? Which variants of the basic design are you going to implement and compare? Which ideas of your own did you add?
- How do you define success? Which metrics, algorithms, and data do you use to measure it?
- How did you plan the project, allocated resources, and organized the teamwork? How did the project actually work out, if different from the original plan?
- Which difficulties did you encounter on the way and how did you overcome them?

#### 6. Experiments and Results

- How did you set up and conduct your experiments? It is especially important to plan and conduct the experiments systematically and justify why these experiments answer the research questions.
- What were the results? Results should first be reported purely objectively and impartially. Use figures effectively – get your points across with a few convincing diagrams, rather than many figures that report every detail.
- Discussion: What do these results mean in relation to the research questions and goal? (this can also go to a section of its own)

#### 7. Conclusions and Outlook

- Were you able to answer your research questions? If yes, what is the take home message? If not, what should be done differently?
- What conclusions do you draw from the outcomes?
- What should be done next?

#### 8. References

## 1 Regulations

The project report should be uploaded in PDF format and consist of about (number of team members)\*4000 words plus diagrams. For legal reasons, indicate after the headings who is the main author of each chapter or section. Zip all files into a single archive **final-project-report.zip** and upload this file to MaMPF before the given deadline.

Moreover, please set your **Anzeigename/display name** and **Name in Übungsgruppen/name in tutorials** in MaMPF to your real name, which should be identical to your name in **muesli** and make sure you **join the submission** of your team via the invitation code before the submission deadline. Check out <https://mampf.blog/handing-in-homework-assignments> for instructions.

You are allowed to switch groups between the homework assignments and this final project. Please organize yourself, e.g. via **#homework-team-finding**, and **announce your teams and topics** at <http://tinyurl.com/gnn-final-project-teams>.