

[YOUR TITLE]

[Master] Thesis Proposal at Computational Network Science
RWTH Aachen University

[YOUR NAME]

March 23, 2023

1 Introduction

This proposal template exists as a guideline to create your proposal. While it contains good practices and a solid structure, it is not carved in stone and designed to be applicable to all thesis proposals written at our research group. If you think a change in structure or focus better reflects the requirements of your specific thesis topic, don't hesitate to implement said change.

In the introduction, you should explain the background for your thesis, your goal, and the (scientific) motivation for said goal. This may include basic concepts, real-world events and trends, trends in scientific literature and issues or new challenges that arise from this.

The introduction should normally be about one page or less.

2 Related Work

Look at articles that do similar things to what you want to accomplish in your thesis. Describe the articles in a way that the information relevant for understanding your thesis is contained in this chapter. While you should cite where appropriate in all chapters, here is a demo citation [1]. In particular, you should look at:

- Related Work that is a basis for your thesis
- Other approaches that exist to your problem (or related problems)
- Approaches that are similar to your work, but applied to different problems
- Articles that support assumptions or hypotheses you need for your thesis

If related work can be sensibly divided into different categories, feel free to create sections accordingly.

2.1 Discussion

Discuss trends and how your proposed thesis compares to the related work. Be sure to also highlight a research gap, i.e., what hasn't been considered yet. Depending on your thesis, this may be a logical next step, a method that is less computationally expensive, the incorporation of more data, requiring less data, or something else.

The related work chapter should normally be 1–2 pages long.

3 Thesis Objectives

Describe the main objectives for your thesis. It is often useful to divide your goal into research questions and derive objectives from the research questions.

The objectives chapter is typically about one page long.

4 Implementation / Approach

What do you need to do to reach your objectives? Typical contents of this chapter include:

- Datasets for your evaluation (real-world or how to construct synthetic ones)
- Preprocessing for the data sets
- Special programming paradigms if required
- Central software libraries
- What work has to be done by you, what can be taken from previous or related projects?

The implementation (or approach) chapter is typically 1–3 pages long

5 Evaluation

How do you plan on evaluating the work you did in the thesis? You should have a plan to answer each of the research questions from earlier. Furthermore, you should think about:

- What metrics will you use to measure and compare results? Why?
- If you have different parameters: which configurations do you want to try?
- Also think about compute resources you may need.

The evaluation chapter is typically 1–2 pages long.

6 Initial Time Plan

Detail how long tasks will take in your opinion and when you want to do them. Make sure to plan time for writing your thesis and include a buffer.

You may use the template provided in table 1 to design your time plan. Of course, your thesis will take longer than 8 weeks since it is more complex than baking pancakes.

References

- [1] D. H. Ackley, G. E. Hinton, and T. J. Sejnowski, “A learning algorithm for boltzmann machines,” *Cognitive Science*, vol. 9, no. 1, pp. 147 – 169, 1985.

Table 1 | Time plan for baking pancakes

Week	1	2	3	4	5	6	7	8
Buy ingredients								
Crack open eggs								
Open milk bottle								
Mix eggs, milk, and flour								
Heat oil in pan								
Bake pancakes								
Put sirup on pancakes								
Serve soggy pancakes								
Serve fresh pancakes								