

Conducting the research for your MSc and PhD thesis

NB: the only difference between M and P is that the P makes a contribution to the field of Computer Science and an M demonstrates mastery of applying research method(s) and reporting accordingly. The P just takes it “Next Level Beats” (Die Antwoord).

The end goal is to be able to describe to the examiners what you have learned over the course of answering your research question.

Your understanding of the research question will change over time, as will the methods used to answer it.

You will likely go through several cycles of revising the research question and the methods use to answer it. Each of those cycles could also contain nested cycles of system software development - to create software to help you answer the research questions.

As you go through this process, keep notes & drawings in a journal. Later, you will use these notes and pictures as section titles and figures/diagrams/tables. Don't bother digitizing them until you actually begin the write-up process after the experimental design has been carried out.

Don't despair that frequently during the 1st or 2nd draft that one finds a rework of the research question, methods, experimental design and system software is needed. This is a good thing because the preliminary work has prepared you to make informed decisions regarding these issues. If you recall from software design in general, the first prototype typically takes the longest to build, and subsequent prototypes happen very quickly because you are familiar with the programming language, APIs and operating system. A similar thing happens for the overall research process. You can treat the initial experiments as a pilot, or prototype (including the -actual- software prototype used to test something or as the test itself). Subsequent versions go very quickly. Maybe even a week or two for what initially took 1-2 months.

Try to not get caught in the trap of the infinite loop fixing bugs in code. Rather concentrate to get the code good enough to conduct the experiments and get them done.

The most important parts of this stage of the MSc are to:

- a) understand how to generate/collect data to answer the research question
- b) understand what the data means - analysis!
- c) be able to describe to others what you learned from analyzing the data