Master's thesis
Master's Programme in Data Science

# Template for Master's thesis

Firstname Lastname

September 20, 2024

Supervisor(s): Professor X or Dr. Y

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| Tiedekunta — Fakultet — Faculty | Koulutusohjelma — Utbildningsprogram — Degree programme |
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| Työn laji — Arbetets art — Level | Aika — Datum — Month and year | Sivumäärä — Sidantal — Number of pages |
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Tiivistelmä — Referat — Abstract

Summary of the main contents of the work: topic, methodology and results.

Topics are classified according to the ACM Computing Classification System (CCS): check command `\classification{}`. A small set of paths (1-3) should be used, starting from any top nodes referred to bu the root term CCS leading to the leaf nodes. The elements in the path are separated by right arrow, and emphasis of each element individually can be indicated by the use of bold face for high importance or italics for intermediate level. The combination of individual boldface terms may give the reader additional insight.

ACM Computing Classification System (CCS):
General and reference → Document types → Surveys and overviews
Applied computing → Document management and text processing → Document management → Text editing

Avainsanat — Nyckelord — Keywords

layout, summary, list of references

Säilytyspaikka — Förvaringsställe — Where deposited

Muita tietoja — Övriga uppgifter — Additional information

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# 1. Introduction

The thesis should have an introduction chapter. Other chapters can be named according to the topic. In the end, some summary chapter is needed; see Chapter 5 for an example.

# 2. Figures and Tables

## 2.1 Figures

Figure 2.1 gives an example how to add figures to the document. Remember always to cite the figure in the main text. There are many ways to cite, for example: University of Helsinki has a nice logo (see Fig. 2.1).

**Figure 2.1:** University of Helsinki flame-logo for Faculty of Science.

## 2.2 Tables

Table 2.1 gives an example how to report experimental results. Remember always to cite the table in the main text. There are many ways to cite, for example: The results are as expected (see Table 2.1).

**Table 2.1:** Experimental results.

| Koe | 1 | 2 | 3 |
|---|---|---|---|
| $A$ | 2.5 | 4.7 | -11 |
| $B$ | 8.0 | -3.7 | 12.6 |
| $A + B$ | 10.5 | 1.0 | 1.6 |

# 3. Citations

## 3.1 Citations to literature

References are listed in a separate .bib-file. In this case it is named `bibliography.bib` with the following content:

```
@article{einstein,
    author =       "Albert Einstein",
    title =        "{Zur Elektrodynamik bewegter K{\"o}rper}. ({German})
        [{On} the electrodynamics of moving bodies]",
    journal =      "Annalen der Physik",
    volume =       "322",
    number =       "10",
    pages =        "891--921",
    year =         "1905",
    DOI =          "http://dx.doi.org/10.1002/andp.19053221004"
}

@book{latexcompanion,
    author    = "Michel Goossens and Frank Mittelbach and Alexander Samarin",
    title     = "The \LaTeX\ Companion",
    year      = "1993",
    publisher = "Addison-Wesley",
    address   = "Reading, Massachusetts"
}

@misc{knuthwebsite,
    author    = "Donald Knuth",
    title     = "Knuth: Computers and Typesetting",
    url       = "http://www-cs-faculty.stanford.edu/%7Eknuth/abcde.html"
}
```

In the last reference url field the code `%7E` will translate into ~ once clicked in the final pdf.

References are created using command `\cite{einstein}`, showing as [1]. Other examples: [2, 3].

Citations should be arranged in alphabetical order by author, using the default style `abbrv`.

## 3.2 Crossreferences

Appendix A on page 13 contains a code example.

# 4. From tex to pdf

In Linux, run `pdflatex filename.tex` and `bibtex filename` repeatedly until no more warnings are shown. You should use `pdflatex` when compiling your document.

# 5. Conclusions

It is good to conclude with some insightful discussion.

# Bibliography

[1] A. Einstein. Zur Elektrodynamik bewegter Körper. (German) [On the electrodynamics of moving bodies]. *Annalen der Physik*, 322(10):891–921, 1905.

[2] M. Goossens, F. Mittelbach, and A. Samarin. *The LaTeX Companion*. Addison-Wesley, Reading, Massachusetts, 1993.

[3] D. Knuth. Knuth: Computers and typesetting, circa 2000. http://www-cs-faculty.stanford.edu/%7Eknuth/abcde.html, Accessed on 6th March 2018.

## Appendix A. Code example

Program code can be added as appendix:

```
#!/bin/bash
text="Hello World!"
echo $text
```