Thesis Title

Optional Subtitle

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TUDelft
Delft
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Technology

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MASTER OF SCIENCE THESIS

For the degree of Master of Science in Systems and Control at Delft
University of Technology

J. Random Student

August 14, 2017

Faculty of Mechanical, Maritime and Materials Engineering (3mE) · Delft University of
Technology

Abstract

This is an abstract.

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Preface

According to WIKIPEDIA, a preface (pronounced "*preffus*") is an introduction to a book written by the author of the book. In this preface I can discuss the interesting story of how this thesis came into being.

This is document is a part of my Master of Science graduation thesis. The idea of doing my thesis on this subject came after a discussion with my good friends Tweedledum and Tweedledee...

Acknowledgements

I would like to thank my supervisor prof.dr.ir. M.Y. First Reader for his assistance during the writing of this thesis. . .

By the way, it might make sense to combine the Preface and the Acknowledgements. This is just a matter of taste, of course.

Delft, University of Technology   J. Random Student
August 14, 2017

"In the future, airplanes will be flown by a dog and a pilot. And the dog's job will be to make sure that if the pilot tries to touch any of the buttons, the dog bites him."

— *Scott Adams*

Chapter 1

Introduction

This is a LaTeX thesis and this is Chapter 1.

1-1 About LaTeX

LaTeX is a document preparation system for the TeX typesetting program. It offers programmable desktop publishing features and extensive facilities for automating most aspects of typesetting and desktop publishing, including numbering and cross-referencing, tables and figures, page layout, bibliographies, and much more.

LaTeX was originally written in 1984 by Leslie Lamport and has become the dominant method for using TeX; few people write in plain TeX anymore. The current version is LaTeX 2_ε.

If you want to know more about LaTeX you better read [**?**].

1-2 About Acronyms

This section contains an acronym of the Delft Center for Systems and Control (DCSC). The DCSC is our department within the faculty of Mechanical, Maritime and Materials Engineering (3mE) at Delft University of Technology (TU Delft).

Acronyms are automatically listed in the Glossary in the back of this thesis. You have to define acronyms in `glossary.tex` using `\acro{ACRONYM}{Full text}`. You print an acronym by using the command `\ac{...}`. You can always force a full, long or short printout by using `\acf{...}`, `\acl{...}` or `\acs{...}` respectively.

- `\acf{DCSC}`: Delft Center for Systems and Control (DCSC);
- `\acl{DCSC}`: Delft Center for Systems and Control;
- `\acs{DCSC}`: DCSC.

Table 1-1: Nomenclature codes

Code	Usage	Example	
\gsymb{}	Greek symbols	γ	
\lsymb{}	Letter symbols	$H(s)$	
\supers{}	Superscript symbols		*only printed in the List of Symbols*
\subs{}	Subscript symbols		*only printed in the List of Symbols*
\others{}	Other symbols		*only printed in the List of Symbols*

1-3   About the Nomenclature

When you use symbols in your thesis – as you probably will – you can put them into the nomenclature listing (List of Symbols) at the back of your thesis. Table 1-1 shows the LaTeX commands you need.

1-4   About \(re)newcommand

As you will (soon) know the LaTeX system makes use of commands in the form of `\command`. This can be used to make your life easier, since you can also define these commands yourself. Suppose that you often use an expression e^{it}. This would normally be written as `$e^{it}$`, or if already in math mode as `e^{it}`. Now you can define a command `\eit` as follows
`\newcommand{\eit}{e^{it}}`
This definition has to be placed in the so-called preamble, i.e. before the declaration
`\begin{document}`.
Now you can use this command in your text, so `\eit` replaces `e^{it}`.
Be aware that many commands are already in use by various packages. If you define an already existing command this will result in an error message. The best way to deal with this is to make sure your own command is unique, for instance by defining it as
`\newcommand{\MYeit}{e^{it}}`.
An alternative is to redefine the existing command by
`\renewcommand{\eit}{e^{it}}`,
but this is in general considered a tedious practice and should be avoided. See the LaTeX documentation for more details and possibilities. You can also use arguments.
Don't underestimate the power of this feature. Suppose that you frequently use the expectation operator $E(x)$ in your text which is created with `E(x)` (in math mode). Now your supervisor decides that he would prefer to see this as $\mathbf{E}(\mathbf{x})$. If you haven't defined your own command, you will have to go through the complete text, changing every instance. If you would have thought about it and would have defined originally
`\newcommand{\MyE{1}}{E(#1)}`,
using this in your text as `\MyE{x}`, `\MyE{y}` etc.,
then you can change this simply by adapting the definition to
`\newcommand{\MyE{1}}{\bf{E}(#1)}`.

Chapter 2

First Real Chapter

This is real chapter for Delft Center for Systems and Control (DCSC), ok? We will use it as a demo for the different headings you can use to structure your text.

2-1   First Section

This is the section. Referring to equations, figures and tables can easily be done by the commands \eqnref{}, \figref{} and \tabref{}.

$$H(s) = \frac{1}{s+2} \tag{2-1}$$

You see? Refer to equations like this Eq. (2-1).

2-1-1   The first subsection

Subsections are the last type of sectioning that is numbered.

The first sub-subsection with a very very very long title, but in the Table of Contents one can only see the short title

Quick! Check the Table of Contents! Nice, ain't it?

A paragraph title   Subdividing your text in sections and paragraphs automatically makes it nice and structured.

Chapter 3

Some Basics

This chapter will cover figures and math.

3-1 Figures

Figures are constructed using the `figure` environment:

```
\begin{figure}
\centering
\includegraphics[options]{imagefile_location}
\caption{Captions}
\label{fig:dummy}
\end{figure}
```

LaTeX automatically decides the best placement of the Figure in your document. This will usually be at the top or bottom of the current page, or at the top of the next page. This system gives good results most of the time, but it can get confused when you have a large number of figures. The command `\clearpage` creates an empty page where any 'lost' figures will be printed.

You can refer to a Figure by its label: `\figref{label}`. See for instance Figure 3-1.

Figure 3-1: The DCSC logo. Pretty nice, eh?

3-2   Math: $e^{j\pi} = 0$

I put some fancy math in the section title. Usually this generates complaints from the `hyperref` package, because the bookmarks you see on the left can only handle 'regular text'. Fortunately, this problem can be solved by using a special command that inserts 'regular text' whenever this is necessary during compilation of your thesis: `\texorpdfstring{math}{text}`.

For further information about math in LaTeX, I recommend looking at the Short Math Guide found at the website of the American Mathematical Society (AMS).

$$
\begin{aligned}
1 &= 2 & \text{(3-1)} \\
x &= 5 & \text{(3-2)} \\
y &= \theta & \text{(3-3)}
\end{aligned}
$$

3-3   More About Acronyms

After the start of a new chapter all acronyms are reset and are printed as a full acronym the first time it is used again, e.g. Delft Center for Systems and Control (DCSC). After the first use, only the short acronym is printed again: DCSC.

3-4   More About Nomenclature

This is a test for nomenclature $A(s)$

Appendix A

The Back of the Thesis

Appendices are found in the back.

A-1 An Appendix Section

A-1-1 An appendix subsection with C++ Listing

```cpp
1  //
2  // C++ Listing Test
3  //
4
5  #include <stdio.h>
6
7  for(int i=0;i<10;i++)
8  {
9      cout << "Ok\n";
10 }
```

A-1-2 A MATLAB listing

```matlab
1  %
2  % Comment
3  %
4  n=10;
5  for i=1:n
6      disp('Ok');
7  end
```

Appendix B

Yet Another Appendix

B-1   Test Section (Again?)

Ok, all is well.

Glossary

List of Acronyms

3mE   Mechanical, Maritime and Materials Engineering

AMS   American Mathematical Society

DCSC   Delft Center for Systems and Control

TU Delft Delft University of Technology