

MASTER OF SCIENCE THESIS

Title

Subtitle

N.N. Vo

January 17, 2017



DCSC

Delft Center for Systems and Control

TUDelft

Delft University of Technology

Title

Subtitle

MASTER OF SCIENCE THESIS

For obtaining the degree of Master of Science in Mechanical
Engineering at Delft University of Technology

N.N. Vo

January 17, 2017

The work in this literature survey was supported by Alten. Their cooperation is hereby gratefully acknowledged.



Delft University of Technology

Copyright © Delft Center for Systems and Control
All rights reserved.

DELFT UNIVERSITY OF TECHNOLOGY
DELFT CENTER FOR SYSTEMS AND CONTROL

The undersigned hereby certify that they have read and recommend to the Faculty of Mechanical, Maritime and Materials Engineering for acceptance a thesis entitled “**Title**” by **N.N. Vo** in partial fulfillment of the requirements for the degree of **Master of Science**.

Dated: January 17, 2017

Supervisor:

dr.ir. T. Keviczky

Readers:

ir. P. Ritzen

Abstract

This is an abstract

Acknowledgements

I would like to thank my supervisors dr.ir. T. Keviczky from DCSC and ir. P. Ritzen from Alten Nederland B.V. for their assistance during the writing of this thesis. I would also ...

Delft, University of Technology
January 17, 2017

N.N. Vo

Table of Contents

Abstract	v
Acknowledgements	vii
1 Introduction	1
2 System Modeling	5
3 Control Design	7
4 Experimental Setup and Results	9
5 Conclusions and Future Work	11
I First Part	13
6 First Real Chapter	15
6-1 First section	15
6-1-1 The first subsection	15
Subsection Short Title	15
II Second part	17
7 Second part chapter	19
8 TEMP second part chapter this is a very long line to test if the table of figures will wrap the line or will continue to go over the border of the page	21

9	Second second part chapter	23
9-1	Section	23
9-2	Main equations	23
A	The back of the thesis	25
A-1	An appendix section	25
A-1-1	An appendix subsection with C++ Listing	25
A-1-2	A MATLABListing	25
B	Yet another appendix	27
B-1	Test section (again?)	27
	Bibliography	29
	Acronyms	33

List of Figures

7-1	this is a very long line to test if the table of figures will wrap the line or will continue to go over the border of the page	19
-----	--	----

List of Tables

Chapter 1

Introduction

This is a L^AT_EXthesis and this is Chapter [1](#). If you want to know more about L^AT_EXyou better read [\[?\]](#). It contains an acronym of the Delft University of Technology ([DUT](#)). The [DUT](#) is our University.

Aim and Motivation

State of the art methods

Research and Engineering goals

Organization of the report

Chapter 2

System Modeling

QR Model
System Identification
Model Validation?
Conclusion

Chapter 3

Control Design

Control Schemes

State Estimation

Benchmark with Linear Control

Nonlinear Geometric Control. Error functions. Tracking controllers.

Trajectory Generation by minimizing Snap Trajectory. QP.

Conclusion

Experimental Setup and Results

Software

Hardware

Results

Conclusion

Chapter 5

Conclusions and Future Work

Summary

Conclusions

Thesis Contribution

Recommendations

Future work *****

Part I

First Part

Chapter 6

First Real Chapter

superscripts can be put in the nomenclature list. Other things can also be added to the nomenclature list of Delft University of Technology ([DUT](#))

6-1 First section

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

$$H(s) = \frac{1}{s+2} \quad (6-1)$$

You see? Refer to equations like this Eq. ([6-1](#)).

6-1-1 The first subsection

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

Nice, ain't it?

A paragraph.

Part II

Second part

Chapter 7

Second part chapter

Figure 7-1: this is a very long line to test if the table of figures will wrap the line or will continue to go over the border of the page

Chapter 8

**TEMP second part chapter this is a
very long line to test if the table of
figures will wrap the line or will
continue to go over the border of the
page**

New chapter gives a full acronym Delft University of Technology ([DUT](#)).

$$1 = 2 \tag{8-1}$$

$$x = 5 \tag{8-2}$$

$$y = \theta \tag{8-3}$$

TEMP second part chapter this is a very long line to test if the table of figures
22 will wrap the line or will continue to go over the border of the page

Chapter 9

Second second part chapter

9-1 Section

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

a_f , b_f , c_f and d_f

a_b

9-2 Main equations

$$a = \frac{N}{A} \tag{9-1}$$

The equation $\sigma = ma$ follows easily.

Appendix A

The back of the thesis

A-1 An appendix section

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

```
// 1
// C++ Listing Test
//
#include <stdio.h>
for(int i=0;i<10;i++)
{
    cout << "Ok\n";
}
6
```

A-1-2 A MatlabListing

```
%
% Comment
%
n=10;
for i=1:n
    disp('Ok');
end
5
```

Appendix B

Yet another appendix

B-1 Test section (again?)

Ok, all is well.

Bibliography

Index

LaTeX, 1

Nice, 15
nomenclature, 15

Nomenclature

σ	The total mass of angels per unit area
A	The area of the needle point
a	The number of angels per unit area
m	The mass of one angel
N	The number of angels per needle point
$A(s)$	Answer function
a_b	Another variable
a_f, b_f, c_f and d_f	The variables I am trying to group

Acronyms

DUT Delft University of Technology