

B.Sc.Eng. Thesis
Bachelor of Science in Engineering

 **DTU Compute**
Department of Applied Mathematics and Computer Science

Tether Control for Unmanned Aerial Vehicle

A nice thesis template

Peter Juhl Savnik (s113556)

Kongens Lyngby 2014



DTU Automation and Control
Department of Electrical Engineering
Technical University of Denmark

Elektrovej
Building 326
2800 Kongens Lyngby, Denmark
Phone +45 4525 3031
elektro@elektro.dtu.dk
www.elektro.dtu.dk

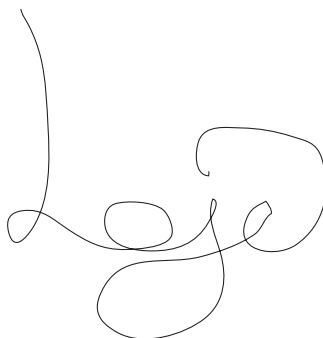
Summary

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Preface

This xxx thesis was prepared at the department of Applied Mathematics and Computer Science at the Technical University of Denmark in fulfillment of the requirements for acquiring a yyy degree in zzz.

Kongens Lyngby, September 26, 2014

A handwritten signature in black ink, consisting of a large, stylized 'P' followed by 'Juhl Savnik' in a cursive script.

Peter Juhl Savnik (s113556)

Acknowledgements

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Contents

Summary	i
Preface	iii
Acknowledgements	v
Contents	vii
Todo list	ix
1 Introduction	1
1.1 Problem formulation	1
1.2 Problem limitation	1
1.3 Eksempel	1
2 Analysis	3
2.1 Background	3
3 Long chapter title with π, very long title	5
4 Heading on Level 0 (chapter)	9
4.1 Heading on Level 1 (section)	9
4.2 Lists	10
5 Conclusion	13
A An Appendix	15
Bibliography	17

Todo list

■ 1.0 (1) Giv projektet et overordnet navn, midlertidigt navn: PTD-Platform for Tethert Drone	1
■ 1.0 (2) introducer UAV forkortelse	1
■ 1.3 (3) Kilder: Landbrug og Fødevarer	1

Introduction

UAV har længe kun været brugt til militære, forskning og hobby formål - men den seneste tid har en læng række industrielle applikationer set et potentiale i at bruge UAV's til industrielle formål. Flyvende droner er blevet implementeret i en lang række applikationer såsom, overvågning, fotografering/filmoptagelser, opmålinger af landskab og meget mere.

For et sådan system skal kunne være i drift i længere tid af gangen er der behov for en konstant strømforsyning via et kabel. Dette projekt handler om at udvikle en platform til håndteringen af UAV og kablet. En løsning skal ikke begrænses til at løse et enkelt problem men ses som en platform for implementering af tøjret droner i en bred række applikationer.

1.1 Problem formulation

Formålet med projektet er at udvikle en platform for tøjret UAV's samt at forslå en design løsning.

1.2 Problem limitation

- UAV skal være i stand til at holde sig operationel i længere tid af gang. Det skal ses i forhold til et batteridrevet alternativ.
- Forankringspunkter har en væsentlig større masse end UAV'en kan trække og vi derfor udelukker alle situationer hvor dronen trækker forankringspunktet.

1.3 Eksempel

I Danmark udgør landbrugets kornproduktion 35% af Danmarks samlede areal eller 1.495.000 ha til en værdi på 29,4 mia. kr. der produceres i stigende grad mere med mindre ressourcer. Organisationen Landbrug og Fødevarer sætter et stor fokus på at optimere produktionen gennem forskning og innovation.

Et velkendt problem i korn produktionen er når landmanden høster i skovbrynet, ligger der ofte ungt vildt og trygger sig i kornet. Deres naturlige instinkt på fare er at trygge sig endnu mere. Det vil sige at når landmanden høster sin mark, flytter

1.0 (1) Giv

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troducer
UAV
forkor-
telse

1.3 (3) Kild
Land-
brug og
Føde-
varer

dyret sig ikke for maskinen. Det resultere i et stort antal ung vildt som bliver påkørt af landmændene. Det har økonomiske konsekvenser for landmanden, i og med at det høstede korn bliver ødelagt, der kan ske materieller skader på udstyret, nede tid i driften og ikke mindst er det en ubehagelig oplevelse for landmanden.

En forsknings gruppe på DTU Automation har forslået en løsning med en drone der flyver foran køretøjet og med et vision-system kan detektere eventuelle forhindringer.

CHAPTER 2

Analysis

2.1 Background

Det ønskes at udvikle en platform for styring af tøjret droner - PTD Platform for Tethered Drones. En sådan platform kan have mange anvendelsesmuligheder i den industrielle verden - hvilket også sætter en række krav til pålidelighed og robust design.

PTD - Platform for Tethered Drones

Præsentation over-all-system

Design krav/kravspecifikation

Løsningsforslag

CHAPTER 3

Long chapter title with π , very long title

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Sans serif testing:

- π
-
- π
- *italic*
- ***bold italic***
- **bold**
- teletype

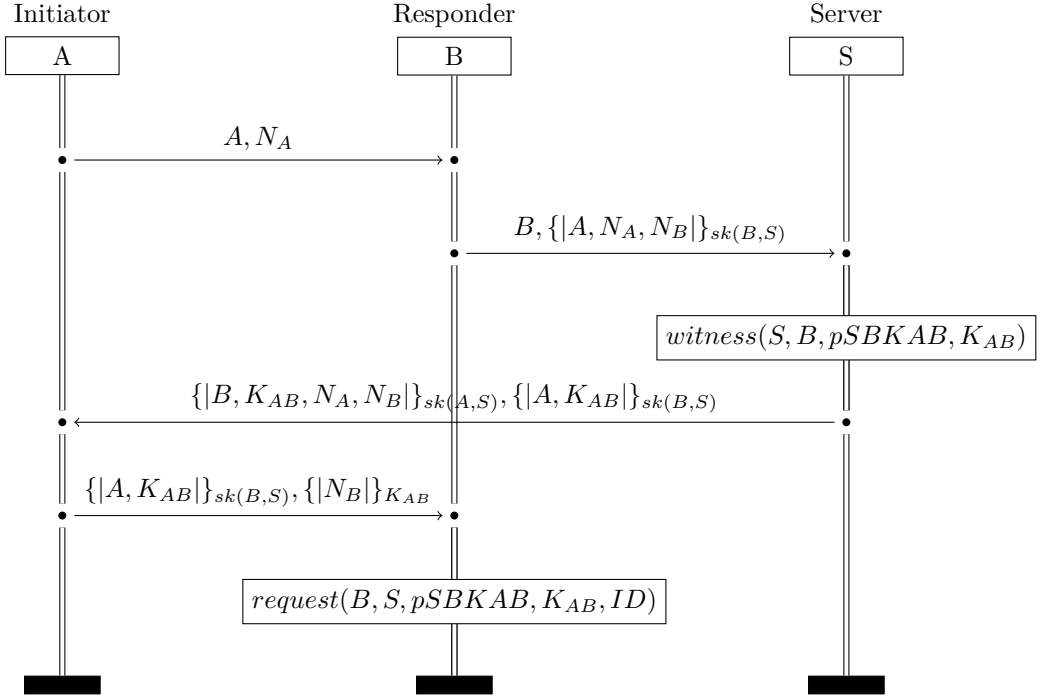


Figure 3.1: Attack against the goal “ B weakly authenticates S on K_{AB} ”.

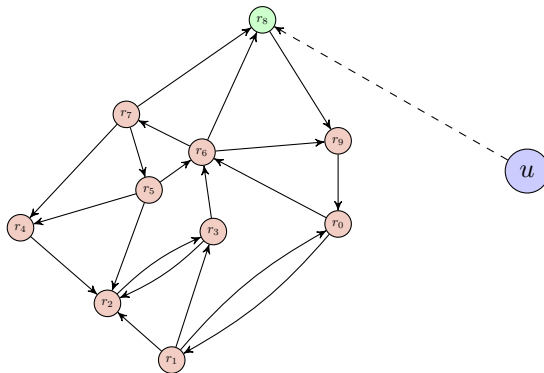


Figure 3.2: Initial topology of sensor network. r_n is a regular node, u is the user. Edges represent how the nodes know each other.

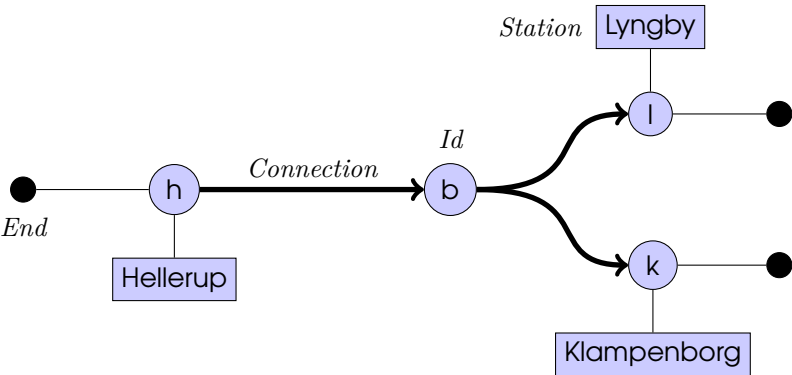


Figure 3.3: Objects in the intermediate network graph.

CHAPTER 4

Heading on Level 0 (chapter)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

4.1 Heading on Level 1 (section)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 2 (subsection)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 3 (subsubsection)

Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

Heading on Level 4 (paragraph) Hello, here is some text without a meaning. This text should show what a printed text will look like at this place. If you read this text, you will get no information. Really? Is there no information? Is there a difference between this text and some nonsense like “Huardest gefburn”? Kjift – not at all! A blind text like this gives you information about the selected font, how the letters are written and an impression of the look. This text should contain all letters of the alphabet and it should be written in of the original language. There is no need for special content, but the length of words should match the language.

4.2 Lists

Example for list (itemize)

- First item in a list
- Second item in a list
- Third item in a list
- Fourth item in a list
- Fifth item in a list

Example for list (4*itemize)

- First item in a list
 - First item in a list
 - * First item in a list
 - First item in a list
 - Second item in a list
 - * Second item in a list
 - Second item in a list
- Second item in a list

Example for list (enumerate)

1. First item in a list
2. Second item in a list
3. Third item in a list
4. Fourth item in a list
5. Fifth item in a list

Example for list (4*enumerate)

1. First item in a list
 - a) First item in a list
 - i. First item in a list
 - A. First item in a list
 - B. Second item in a list
 - ii. Second item in a list
 - b) Second item in a list
2. Second item in a list

Example for list (description)

First item in a list

Second item in a list

Third item in a list

Fourth item in a list

Fifth item in a list

Example for list (4*description)

First item in a list

First item in a list

First item in a list

First item in a list

Second item in a list

Second item in a list

Second item in a list

Second item in a list

CHAPTER 5

Conclusion

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APPENDIX A

An Appendix

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Bibliography
