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Report submitted in partial fulfilment of the requirements of the module Project (E) 448 for the degree Baccalaureus in Engineering in the Department of Electrical and Electronic Engineering at the University of Stellenbosch

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November 2018

# Acknowledgements

Lorem ipsum

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12345678

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Name Surname

3 November 2018

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Voorletters en van / *Initials and surname*

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Datum / *Date*

# Skripsie Title

Author Name

## Abstract

Lorem ipsum dolor...

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# Nomenclature

## List of Abbreviations

BBB Bla Bla Bla

## List of Symbols

$\alpha$  the angle between mass ang gravity vector



# Chapter 1

## Introduction

### 1.1 Background

Bla Bla Bla (BBB)

### 1.2 Project Objectives

The aim of the project is ....

1. Item 1
2. Item 2

### 1.3 Literature Review

Someone else did something else [1].

### 1.4 Methodology

### 1.5 Report Outline

# Chapter 2

## Vehicle and System Modelling

In this chapter...

### 2.1 2D System

Figure 2.1 shows a image. The graph shows the angle between mass ang gravity vector ( $\alpha$ ).

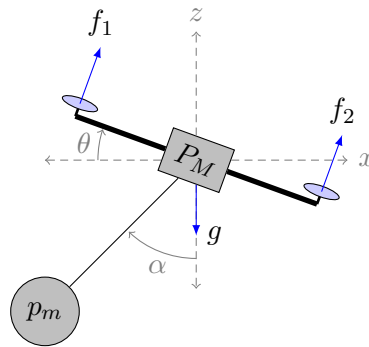


Figure 2.1: Two-dimensional Model of a Quadrotr with a Suspended Payload

# Bibliography

- [1] M. M. Nicotra, E. Garone, R. Naldi, and L. Marconi, “Nested saturation control of an UAV carrying a suspended load,” *Proceedings of the American Control Conference*, pp. 3585–3590, 2014.

# Appendix A

## Project Planning Schedule

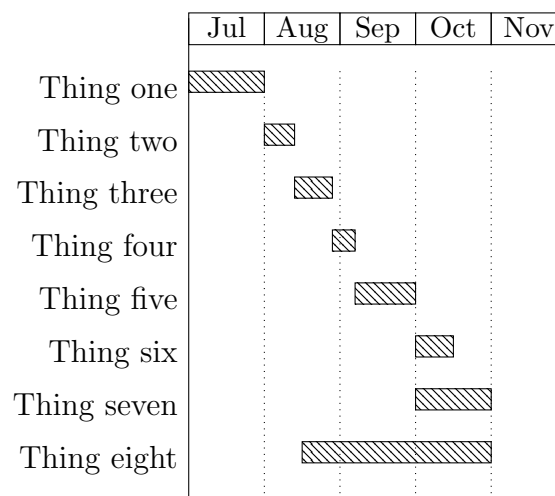


Figure A.1: Project Time Line

# Appendix B

## Outcomes Compliance

# Appendix C

## Parameters Used

This appendix serves as a reference to the parameters used for the simulated quadrotor and load system.

Table C.1: Specifications of Quadrotor Payload System

Parameter	Value
M	1 kg
m	0.5 kg
L	0.5 m
Max $\theta$	45 degrees
Max total thrust	40 N
$\rho$	$1.225kg/m^3$
$C_D$	1
$b_\alpha$	0.0001
$S_z$	$0.2m^2$
$S_x$	$0.2m^2$