



Jomo Kenyatta University of Agriculture and Technology

College of Engineering and Technology

School of Mechanical, Materials, and Manufacturing Engineering

Department of Mechatronic Engineering

Designing a wall-climbing robot.....

Final year project (FYP 13-11)

Theodore Kamau (EN292-2025/2012)

Lisa Kimondo (EN292-2020/2012)

November 19, 2021

Declaration

We hereby declare that the work contained in this report is original; researched and documented by the undersigned students. It has not been used or presented elsewhere in any form for award of any academic qualification or otherwise. Any material obtained from other parties have been duly acknowledged. We have ensured that no violation of copyright or intellectual property rights have been committed.

1. Theodore Kamau

Signature.....Date.....

2. Lisa Kimondo

Signature.....Date.....

Approved by supervisors:

1. Dr.-Ing. Jackson G. Njiri

Signature.....Date.....

2. Prof. George N. Nyakoe

Signature.....Date.....

3. Ms. Lucy W. Kariuki

Signature.....Date.....

Contents

Declaration	I
Table of Contents	III
List of Figures	III
List of Tables	IV
List of Abbreviations	V
Abstract	V
1 Introduction	1
1.1 Background	1
1.2 Problem statement	1
1.3 Objectives	1
1.4 Justification of the study	1
2 Literature Review	2
2.1 Name of a subsection	3
2.2 Another subsection	3
3 Methodology...	4
4 Expected Outcomes	5
References	6

List of Figures

List of Tables

Figure 2.1 To appear in the list of tables	3
--	---

Abstract

This project

1 Introduction

1.1 Background

(Insert your content)

gghjbbnmmm

1.2 Problem statement

(Insert your content)

1.3 Objectives

(Insert your content)

1.4 Justification of the study

(Insert your content)

2 Literature Review

Itemization

- Item 1.
- Item 2.
- ...

$$\dot{x} = Ax + Bu + B_d w \tag{2.1}$$

Referring a chapter in the main text. For instance Chapter 2

$$E = 210000 \frac{\text{N}}{\text{mm}^2}$$

$$\rho = 7,85 \frac{\text{g}}{\text{cm}^3} = 7850 \frac{\text{kg}}{\text{m}^3}.$$

$$\Delta \boldsymbol{r}_k = \boldsymbol{r}_{\text{GBE}_k} - \boldsymbol{r}_{\text{C}_k} = (x_{\text{GBE}_k} - x_{\text{C}_k}, y_{\text{GBE}_k} - y_{\text{C}_k})^T = (\Delta x_k, \Delta y_k)^T \tag{2.2}$$

$$k = 2 \dots n$$

$$||\boldsymbol{r}_{\text{GBE}_k} - \boldsymbol{r}_{\text{C}_k}|| \leq r_{kj}, \tag{2.3}$$

$$k \ j$$

[To appear in the list of tables]Caption for the table should be at the top of the table

	First column	Second column	Third column
It can also overflow to next line	1	2	4
	4	6	23
	34	2	0

rank \mathbf{Q}_B = rank

$$\begin{bmatrix} \mathbf{C} \\ \mathbf{CA} \\ \mathbf{CA}^2 \\ \vdots \\ \mathbf{CA}^{n-1} \end{bmatrix}$$

= n .

(2.4)

K_φ = 3.64 $\frac{\text{V}}{\text{rad}}$ and

(2.5)

K_x = 28.32 $\frac{\text{V}}{\text{m}}$.

(2.6)

2.1 Name of a subsection

q_1, q_2 and q_3 (see Fig. ??).

2.2 Another subsection

3 Methodology...

This is

4 Expected Outcomes

References

- [1] J. Njiri and D. Söffker, “State-of-the-art in wind turbine control: Trends and challenges,” *Renewable and Sustainable Energy Reviews*, vol. 60, pp. 377–393, 2016.
- [2] T. Kane and D. Levinson, *Dynamics: Theory and Applications*. McGraw-Hill Book Company, New York, 1985.