

# Table of contents

Abstract	I
Table of contents	II
List of Acronym	VI
List of figures	VII
List of tables	IX
Chapter One	
1. Introduction	1
1.1 Unknown Domains	1
1.2 Contemporary projects	2
1.3 Methodology	2
1.4 Control System	3
1.4.1 Examples of control system	5
1.4.2 Classification of Control Systems	7
1.4.3 Feedback	8
1.4.4 Characteristics of feedback	9
1.4.5 The Control Systems Engineering Problem	9
1.4.6 Representation of the problem: The model	10
1.4.7 Control Systems Science	11

1.4.8 Generalized Feedback Control System	12
1.4.9 Supplementary Terminology	14
1.4.10 Servo Mechanisms	15
Chapter Two	
2.1 Microcontroller	17
2.1.1 Introduction	17
2.1.2 Overall View Of a Computer System	17
2.1.3 Computer System Inputs	18
2.1.4 Computer System Outputs	19
2.1.5 Central Processor Unit	20
2.1.6 Clock	21
2.1.7 Computer Memory	21
2.1.8 Computer Program	22
2.1.9 Characteristics of Microcontroller	23
2.1.10 Types Of Microcontroller	24
2.1.11 Review	24
2.1.12 Computer Memory Units	26
2.1.13 Kinds of Memory	26
2.2 Robotics	29
2.2.1 History Of Robotics	29

2.2.2 Background	30
2.2.3 The word robot and its definition	31
2.2.4 Parts of Robot	32
2.2.5 Robot Programming Languages	37
2.2.6 Robot Intelligence	38
2.2.7 Robotics Today and Future	38
Chapter Three	
3.1 Introduction	41
3.2 The body (The frame or chassis)	41
3.3 Nuts and Bolts	42
3.4 Motors for locomotion	43
3.4.1 Controlling our motor	44
3.4.2 Motor controller	45
3.4.2.1 H-bridge	46
3.5 Measuring distance traveled	49
3.6 Encoder	50
3.7 Microcontroller	52
3.7.1 Definition	52
3.8 Features of our Robot	56
3.9 Controller board circuit analysis	59
3.10 Light Detector	63

Chapter Four	
4.1 Motion planning	65
4.2 Configuration space	65
4.3 Path planning	65
4.4 Search space for motion planning	66
4.5 Grid	68
4.6 Search space formulation	68
Chapter Five	
5.1 Conclusion	
88	
5.2 Results	
88	
5.3 Future Trends	
89	
References	
Appendix	

