

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَإِذْ قَالَ رَبُّكَ لِلْمَلَائِكَةِ إِنِّي جَاعِلٌ فِي الْأَرْضِ خَلِيفَةً قَالُوا

أَتَجْعَلُ فِيهَا مَن يُفْسِدُ فِيهَا وَيَسْفِكُ الدِّمَاءَ وَنَحْنُ نُسَبِّحُ

بِحَمْدِكَ وَنُقَدِّسُ لَكَ قَالَ إِنِّي أَعْلَمُ مَا لَا تَعْلَمُونَ ﴿٣٠﴾

آدَمَ الْأَسْمَاءَ كُلَّهَا ثُمَّ عَرَضَهُمْ عَلَى الْمَلَائِكَةِ فَقَالَ أَنْبِئُونِي

بِأَسْمَاءِ هَؤُلَاءِ إِنْ كُنْتُمْ صَادِقِينَ ﴿٣١﴾ قَالُوا سُبْحَانَكَ لَا عِلْمَ

لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ ﴿٣٢﴾

صَدَقَ اللَّهُ الْعَظِيمُ

سورة البقرة

Dedication

To my mother with all the love,

and my Father with all the love,

Brothers, and sisters with my respect..

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*Foremost, I would like to express my
deep thanks and great appreciation to my
supervisor Dr. Awadalla Taifour for
his support , guidance throughout this
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my teachers.*

Abstract

The Stepper motor is an electromechanical engine converts digital electrical impulses into mechanical where its step relies on digital input to rise or decrease. Stepper motor is used in a wide range of industrial applications such as medical equipments and stationeries, cars and so on. It's used in many application simplicity and low cost, high reliability and most importantly, ease of control in the field of open-loop. The aim of this study is to design and implement a remote control system based on microcontroller to control speed, direction and step angle of stepper motor.

مستخلص

محرك الخطوه هو محرك كهروميكانيكى يحول النبضات الرقميه الى كهربييه حيث تعتمد خطوته على الدخل الرقمى بالزيادة او النقصان. يستخدم محرك الخطوه فى نطاق واسع من التطبيقات الصناعيه مثل المعدات الطبيه والادوات المكتبيه والسيارات وما الى ذلك . يستخدم فى كثير من التطبيقات لبساطته وانخفاض تكاليفه وموثوقيته العاليه والا هم من ذلك سهوله التحكم به فى مجال الحلقه المفتوحه. والهدف من هذه الدراسه هو تصميم نظام التحكم عن بعد يعتمد على متحكم دقيق للتحكم فى السرعه والاتجاه وزاويه الخطوه لمحرك الخطوه.

TABLE OF CONTENTS

الأية.....	i
Dedication.....	ii
Acknowledgements.....	iii
Abstract.....	iv
مستخلص.....	v
Table of Contents.....	vi
List of Figures.....	xi
List of Tables.....	xiii
Abbreviations.....	xiv

CHAPTER ONE: INTRODUCTION

1.1 General.....	1
1.2 Problem Statement	1
1.3 Objectives.....	1
1.4 Methodology	2
1.5 Layout	2

CHAPTER TWO: THEORETICAL BACKGROUND AND LITERATURE REVIEW

2.1 Introduction.....	3
2.1.1 Classical control.....	3
2.1.2 Modern control.....	5
2.1.3 Digital control system.....	5
2.2 General Microcontroller.....	6

2.2.1 Microcontroller structure.....	6
2.2.2 Microcontroller programming.....	8
2.2.2.1 Assembly language.....	8
2.2.2.2 C Programming language.....	9
2.2.2.3 Selection of programming language.....	9
2.3 Electrical Motors.....	9
2.3.1 AC Motor.....	11
2.3.1.1 Induction motor	11
2.3.1.2 Synchronous motor	11
2.3.2 DC motor.....	12
2.3.2.1 Servo motor	12
2.3.2.2 Stepper motor.....	13
2.3.3 Motor with load	13
2.3.3.1 Constant torque loads.....	13
2.3.3.2 Variable torque loads.....	14
2.3.3.3 Constant power loads.....	14
2.4 Remote Control	14
2.4.1 Types of remote control.....	14
2.4.2 Advantages of using remote controls.....	14
2.4.3 Disadvantages of using remote controls.....	15
2.4.4 Remote control (RF based Wireless Remote Control).....	15

CHAPTER THREE: SYSTEM COMPONENTS

3.1 Introduction	17
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3.2 Stepper Motor	17
3.2.1 Stepper motor advantages and disadvantages.....	18
3.2.1.1 Advantages.....	18
3.2.1.2 Disadvantage.....	18
3.2. 2 Stepper motor operation.....	18
3.2.3 Stepper motor types.....	21
3.2.3.1 Variable-reluctance (VR)	21
3.2.3.2 Permanent magnet (PM).....	22
3.2.3.3 Hybrid.....	23
3.2.4 Size for stepper motor.....	24
3.2.5 The rotating magnetic field.....	24
3.2.6 Torque generation.....	26
3.2.7 Phases, poles and stepping angles.....	26
3.2.8 Torque vs. angle characteristics.....	27
3.2.9 Torque vs. speed characteristics.....	29
3.2.10 Holding torque.....	30
3.2.11 Pull-in curve.....	30
3.2.12 Maximum start rate.....	30
3.2.13 Pull-out curve.....	30
3.2.14 Maximum slew rate.....	30
3.2.15 Single step response and resonance.....	31
3.3 PIC16F877A Microcontroller.....	31
3.3.1 Hardware of the PIC16F877.....	33

3.3.1.1 Power supply.....	34
3.3.1.2 Reset pin.....	36
3.3.1.3 The oscillator.....	37
3.4 Power Supply.....	39
3.5 Regulator.....	39
3.6 Keypad Board.....	40
3.6.1 Specifications	40
3.7 Liquid Crystal Display.....	40
3.7.1 Pin diagram.....	41
3.8 Encoder (HT12E).....	42
3.8.1 Features.....	42
3.9 KST-TX01C Transmitter.....	43
3.10 PTRX2-8 Receive.....	44
3.11 Decoder (HT12D).....	45
3.11.1 Features.....	45
3.12 Driven motors ULN2003AN.....	46
3.12.1 ULN2003AN features.....	46

CHAPTER FOUR : CIRCUIT DESIGN

4.1 Circuit Description.....	47
4.2 Software Programming.....	49
4.3 Simulations	50
4.4 Control Step For Stepper Motor Reading From Circuit.....	52
4.5 Chart Result.....	54

CHAPTER FIVE: CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion.....	55
5.2 Recommendations.....	55
References.....	56
Appendixes	57

List of Figures

2.1 Open-loop control system.....	4
2.2 Closed-loop control system.....	4
2.3 Block diagram of microcontroller structure.....	6
2.4 difference microcontroller & microprocessor	8
2.5 Basic principle of how electric motors work.....	10
2.6 Types of electric motors.....	10
2.7 AC motor.....	11
2.8 DC motor.....	12
2.9 Servo motor.....	13
2.10 Stepper motor.....	13
2.11 RF based wireless remote control.....	16
3.1 Show the motor works.....	19
3.2 How the motor works	20
3.3 Multi pole motor	20
3.4 The electrical equivalent of the stepper motor	21
3.5 Cross section of a typical V.R.....	22
3.6 Permanent magnet (PM).....	23
3.7 Cross-section of a hybrid stepper motor	24
3.8 Magnetic flux path through a two-pole stepper motor.....	25
3.9 Unipolar and bipolar wound stepper motors.....	25
3.10 Torque vs. rotor angular position.....	29
3.11 Torque vs. rotor angle position at different holding torque.....	29
3.12 Torque vs. speed characteristics of a stepper motor.....	30
3.13 Single step response Vs . time.....	31

3.14 Microcontroller PIC16F877A.....	32
3.15 Hardware pic16f877.....	33
3.16 Regulator.....	35
3.17 Connection rectifier.....	35
3.18 MCLR - master clear reset.....	36
3.19 Reset connect.....	37
3.20 Connect Oscillator.....	38
3.21 voltage Regulator LM7805.....	39
3.22 keypad board.....	40
3.23 Liquid Crystal Display	42
3.24 Encoder HT12E.....	42
3.25 KST-TX01C transmitter.....	43
3.26 KST-TX 1C transmitter (pin).....	43
3.27 PTRX2-8 receiver.....	44
3.28 PTRX2-8 (pin).....	44
3.29 HT12DPIN.....	45
3.30 ULN2003AN connect with stepper motor.....	46
4.1 Diagram of circuit component.....	48
4.2 System Flow chart.....	49
4.3 Circuit construction and assembly.....	50
4.4 Inter data.....	51
4.5 Forward stepper motor.....	51
4.6 Backward stepper motor.....	52
4.7 Angle and steps.....	54

List of tables

3.1 Power supply pin microcontroller.....	35
3.2 Reset pin microcontroller.....	36
3.3 PIC16F87XA oscillator	38
3.4 Liquid Crystal Display pin diagram.....	41
4.1 Steps and angle of stepper motor.....	52

Abbreviations

ADC	Analog-to-Digital Converter
DAC	Digital-to-Analog Converter
DMA	Direct Memory Access
LCD	Liquid Crystal Display
MCLR	Master Clear Reset
PM	Permanent Magnet
RF	Radio Frequency
UAVs	Unmanned Aerial Vehicles
VR	Variable-Reluctance

