

## الآية

### قال تعالى

( اللَّهُ لَا إِلَهَ إِلَّا هُوَ الْحَيُّ الْقَيُّومُ لَا تَأْخُذُهُ سِنَّةٌ وَلَا نَوْمٌ  
لَهُ مَا فِي السَّمَوَاتِ وَمَا فِي الْأَرْضِ مَنْ ذَا الَّذِي يَشْفَعُ عِنْدَهُ  
إِلَّا بِإِذْنِهِ يَعْلَمُ مَا بَيْنَ أَيْدِيهِمْ وَمَا خَلْفَهُمْ وَلَا يُحِيطُونَ  
بِشَيْءٍ مِّنْ عِلْمِهِ إِلَّا بِمَا شَاءَ وَسِعَ كُرْسِيُّهُ السَّمَوَاتِ  
وَالْأَرْضَ وَلَا يَئُودُهُ حِفْظُهُمَا وَهُوَ الْعَلِيُّ الْعَظِيمُ )

صدق الله العظيم

سورة البقرة

## **Dedication**

I would like to dedicate my study with full of happiness to my parents, wife, brothers, sisters, and friends.

And all our wonderful teachers without their love and support this study would not have been made possible.

## **Acknowledgement**

First of all, thank Allah for his grace and mercy, who gave me strength, and patience to finish this study.

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## **Abstract**

Voice Controlled Robot (VCR) is a mobile robot. The robot's action can be controlled by the user by giving a specific person's voice commands. The robot will receive the voice commands from the person through the microphone and processed by the voice recognition module. The voice recognition module converts these voice commands into digital values and transmits into the microcontroller. The microcontroller analyzes these values and takes appropriate actions.

The objective is to design a mobile robot which is controlled by voice commands. When voice commands are given on the transmitter side, the easy Voice Recognition (VR) module will take the voice commands and convert the voice commands into digital signals. Then microcontroller transmits these digital signals via Bluetooth module to the mobile robot. On the receiver side, the other microcontroller receives the commands from the transmitter side via the Bluetooth module and then performs the respective operations and drives the DC motors in a continuous loop. The hardware development board used here is ATmega 328 development board. The software part is done in the Arduino Integrated Development Environment (IDE) using Arduino C.

## المستخلص

روبوت متحكم الصوت (VCR) هو روبوت متحرك. يمكن التحكم في عمل الروبوت بواسطة المستخدم عن طريق إعطاء أوامر صوتية لشخص محدد. سوف يتلقى الروبوت الأوامر الصوتية من الشخص من خلال الميكروفون وتقوم بمعالجتها وحدة التعرف على الصوت. تقوم وحدة التعرف على الصوت بتحويل هذه الأوامر الصوتية إلى قيم رقمية وترسلها إلى وحدة التحكم الدقيق. يحلل المتحكم الدقيق تلك القيم ويتخذ الإجراءات المناسبة.

الهدف هو تصميم روبوت متحرك يتم التحكم فيه بواسطة الأوامر الصوتية. عندما يتم إعطاء الأوامر الصوتية على الجانب المرسل، ستقوم وحدة التعرف على الصوت بأخذ الأوامر الصوتية وتحويل الأوامر الصوتية إلى إشارات رقمية. ثم ينقل المتحكم الدقيق هذه الإشارات الرقمية عبر وحدة بلوتوث إلى الروبوت. على جانب المستقبل، يتلقى المتحكم الدقيق الأوامر من جانب المرسل عبر وحدة بلوتوث ثم يقوم بإجراء العمليات المعينة ويقود محركات التيار المستمر في حلقة مستمرة. إن لوحة تطوير الأجهزة المستخدمة هنا هي ATmega 328. يتم تنفيذ الجزء الخاص بالبرمجيات في بيئة التطوير المتكاملة (Arduino IDE) باستخدام Arduino C.

# Table of Contents

	Page
الآيه	i
Dedication	ii
Acknowledgement	iii
Abstract	iv
مستخلص	v
Table of Contents	vi
List of Figures	ix
List of Abbreviations	xi
<b>Chapter One: Introduction</b>	
1.1 General Concepts	2
1.2 Problem Statement	3
1.3 Objectives	3
1.4 Methodology	3
1.5 Thesis Organization	3
<b>Chapter Two: Background and Literature Review</b>	
2.1 Introduction	6
2.2 Previous Works	6
2.3 Robots	8
2.3.1 Degrees of freedom	8
2.3.2 Types of robots	10
2.3.3 End effectors	13
2.4 Speech Recognition	13
2.4.1 The difference between speech and voice recognition	15
2.4.2 Types of speech recognition	15
2.4.3 Voice recognition advantages and disadvantages	16

<b>Chapter Three: System Structure</b>	
3.1 Introduction	18
3.2 The main components	18
3.2.1 Microphone	18
3.2.2 Voice recognition module	19
3.2.3 Arduino Uno	20
3.2.4 HC-05 Bluetooth module	21
3.2.5 OWI-535 robotic arm edge kit	22
3.2.6 L293D driver	23
3.2.7 DC motor	24
<b>Chapter Four: Simulation, Results, Discussion, and System Implementation</b>	
4.1 System Description	27
4.1.1 Transmitter section	28
4.1.2 Receiver section	28
4.1.3 Algorithm	29
4.2 Simulation Results	29
4.2.1 First state	29
4.2.2 Second state	32
4.2.3 Third state	32
4.3 Hardware Implementation	32
4.3.1 Recording stage	32
4.3.2 Recognition stage	36
<b>Chapter Five: Conclusion and Recommendations</b>	
5.1 Conclusion	42
5.2 Recommendations	42
<b>References</b>	45
<b>Appendix A: Simulation Code for Transmitter</b>	A1
<b>Appendix B: Simulation Code for Receiver</b>	B1

<b>Appendix C: Arduino Code for Transmitter</b>	<b>C1</b>
<b>Appendix D: Arduino Code for Receiver</b>	<b>D1</b>



## List of Figures

Figure	Title	Page
2.1	Three degrees of freedom	8
2.2	Types of robotic joints	9
2.3	Work envelope of cylindrical robot	10
2.4	Cartesian robot	10
2.5	Cylindrical robot	11
2.6	Spherical robot	12
2.7	SCARA robot	12
2.8	Articulated robot	13
2.9	Voice recognition process	14
3.1	The system structure	19
3.2	Voice recognition module VR2	19
3.3	Arduino Uno board	20
3.4	HC-05 Bluetooth module	21
3.5	OWI-535 robotic arm	22
3.6	L293D driver	23
3.7	DC motor physical construction	24
4.1	Transmitter side	28
4.2	Receiver side	29
4.3	System process flow chart	30
4.4	Circuit diagram of transmitter and receiver	31
4.5	Execute the command forward-group one	31
4.6	Execute the command right-group two	32
4.7	Execute the command pick-group three	33
4.8	Transmitter circuit	33
4.9	Receiver circuit	34
4.10	The setting of Access Port	34

4.11	The recording stage for the first group	35
4.12	The recording stage for the second group	35
4.13	The recording stage for the third group	35
4.14	Import group one	36
4.15	Turn the car Right	37
4.16	Turn the base right	38
4.17	Move the Joint Down	38
4.18	Pick	39
4.19	Place	40

## List of Abbreviations

VCR	Voice Controlled Robot
DC	Direct Current
VR	Voice Recognition
IDE	Integrated Development Environment
ISO	International Standard Organization
RS	Serial Port
DOF	Degrees Of Freedom
CNC	Computer Numerical Control
3D	Three-Dimensional
SCARA	Selective Compliance Assembly Robot Arm
ASR	Automatic Speech Recognition
STT	Speech To Text
ADC	Analog Digital Converter
PC	Personal Computer
TTL	Transistor–Transistor Logic
UART	Universal Asynchronous Receiver Transmitter
PWM	Pulse-Width Modulation
USB	Universal Serial Bus
AC	Alternating Current
DC	Direct Current
I/O	Input/Output
SRAM	Static Random-Access Memory
EEPROM	Electrically Erasable Programmable Read-Only Memory
RAM	Random Access Memory
TX	Transmit connect

RX	Receive connect
SPP	Serial Port Protocol