

## الآية

قال تعالى:

وَلَسَوْفَ يُعْطِيْكَ رَبُّكَ فَتَرْضَىٰ )

صدق الله العظيم

سورة الضحى

رقم الآية 5

## **Dedication**

I dedicate my simple effort to:

My Parents

The greatest pyramids in my life, the candles which burning to light my life, the warm hands which making me comfortable and happy all the time. God preserves you.

My brothers and sister

Who truly helped my

## **Acknowledgement**

First and foremost, I would like to express my gratitude to the most Gracious and Most Merciful ALLAH S.W.T for helping me to complete this project.

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## Abstract

The remote control has a significant impact on the ease of life, it is a device that has the ability to control devices from a distance using the signals, but all remote control is used to control only one device, leading to the difficulty of using a number of them at the same time, especially for people with disabilities physical and limited mobility. Therefore this research aims to design a remote control a low-cost and easy to use to control the number of electrical appliances.

The machine consists of two circuits which are the sender circuit and receiver circuit. Electromechanical sensor was used to measure the acceleration to convert hand tilt to signals. This signal is received by the microcontroller to translate it and then send commands through encoder to the transmission circuit. After that the command is sent to the receiver circuit for decoding it to a command to control the desired device. Practical results obtained demonstrated the efficiency of the system.

## مستخلص

جهاز التحكم عن بعد له الأثر الكبير في تسهيل الحياة، هو جهاز له القدرة على التحكم في الأجهزة من مسافة بإستخدام الإشارات ، ولكن كل جهاز تحكم عن بعد يستخدم للتحكم في جهاز واحد فقط مما يؤدي لصعوبة إستخدام عدد منها في نفس الوقت خصوصاً للأشخاص ذوي الإعاقة الجسدية و محدودي الحركة. لذلك يهدف هذا البحث لتصميم جهاز تحكم عن بعد منخفض التكلفة و سهل الإستعمال للتحكم في عدد من الأجهزة الكهربائية.

يتكون الجهاز من دائرتين أساسيتين هما دائرة المرسل و دائرة المستقبل. تم إستخدام محساس كهروميكانيكي لقياس التسارع لتحويل ميلان اليد إلى إشارات. هذه الإشارة يتم إستقبالها بواسطة المعالج الدقيق لمعالجتها ثم إرسال الأوامر عن طريق مشفر البيانات إلى دائرة الإرسال. بعد ذلك يتم إرسال الأوامر إلى دائرة الإستقبال ليحولها فاك الشفرة إلى أوامر للتحكم في الجهاز المطلوب. النتائج العملية المتحصل عليها برهنت كفاءة النظام.

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## List of Abbreviations

PDA      Personal Digital Assistants

|       |   |
|-------|---|
| URC   | Universal Remote Control                    |
| RF    | Radio Frequency                             |
| 3D    | Three Dimensional                           |
| 2D    | Two Dimensional                             |
| A/C   | Air Condition                               |
| MEMS  | Micro Electro Mechanical System             |
| IR    | Infrared Radiation                          |
| GSM   | Global System Mobile                        |
| HACS  | Automation Control System                   |
| TV    | Television                                  |
| HMI   | Human Machine Interaction                   |
| HCI   | Human Computer Interaction                  |
| TX    | Transmitter                                 |
| RX    | Receiver                                    |
| LED   | Light Emitting Diode                        |
| CPU   | Central Processing Unit                     |
| RAM   | Random Access Memory                        |
| ROM   | Read Only Memory                            |
| EPROM | Erasable Programmable Read Only Memory      |
| UV    | Ultra Violet                                |
| OTP   | One Time Programmable                       |
| I/O   | Input Output                                |
| ADC   | Analog to Digital Converter                 |
| DAC   | Digital to Analog Converter                 |
| UART  | Universal Asynchronous Receiver/Transmitter |
| USART | Universal Synchronous Asynchronous Receiver |

|        |   |
|--------|---|
|        | Transmitter                                       |
| ALU    | Arithmetic and Logic Unit                         |
| AVR    | Avon Valley Railway                               |
| RISC   | Reduced Instruction Set Computer                  |
| EEPROM | Electrical Erasable Programmable Read Only Memory |
| PIC    | Programmable Interrupt Controller                 |
| M      | Mega  |
| Hz     | Hertz   |
| MIPS   | Millions of Instructions Per Second               |
| LCD    | Liquid Crystal Display                            |
| USB    | Universal Serial Bus                              |
| K      | Kilo  |
| V      | Volt  |
| ASK    | Amplitude Shift Keying                            |
| Bps    | Byte per second                                   |
| PC     | Personal Computer                                 |
| IC     | Integrated Circuit                                |
| I2C    | Inter Integrated Circuit                          |
| AMR    | Anisotropic Magneto Resistive                     |
| ASIC   | Application Specific Integrated Circuit           |
| LCC    | Leadless Chip Carrier                             |
| μ      | Micro   |
| A      | Ampere  |
| AC     | Alternating Current                               |
| DC     | Direct Current                                    |
| mm     | milli meter                                       |

|     |                                |
|-----|--------------------------------|
| DVD | Dissociated Vertical Deviation |
| MCU | Micro Controller Unit          |
| GCC | GNU Compiler Connection        |
| PWM | Pulse Width Modulator          |