

Automatic Clothes Dryer

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ABSTRACT

Clothes are basic need of human. People often to forget to lift the suspension of clothing during day rain .for people who working ,they do not have to worry about their clothes that have been dried outside. People do not have time to manage their routine. This project develop for working couple, it is hard to find time to have laundry day where the cloths is dried through whole day because the weather can change from sunny to rainy days. Cleanliness is most important in clothing. for maintaining health and preventing disease. In world same areas cloths are still wet for few days. after it washed to avoid this trouble .automatic cloth dryer is best option to dry the cloth in few hours. also people are in their daily work .therefore people doesn't have that much time to pickup their clothes which hanging outside the house. If their does not pick their clothes, they will be lost their clothes and clothes color will be damage due to sunrays. When people use cloth dryer they feel happy life.

Keywords: Arduino Uno, RF Module, Automatic clothes drying rack, AC motor.

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I. INTRODUCTION

In home automation system we are using electrical and electronics devices like as home security system, air conditioning system. Clothes dryer is easy to access. It also required less time. Whole system is operated on the remote, so because of this it required less human efforts. Also handling of system is very comfortable. No of clothes dryer are available in a market like as washing machine. but when we use washing machine for drying clothes clothes are rotate inside so it make wrinkles on clothes because of this we does not wear that clothes without ironing. To solve this type of difficulties the automatic clothes are used.

This cloth dryer based on Arduino Uno board to install all programs that will give intructions to operate system properly. The other applications are handle by the remote, temp sensor that use in this project can measure current temperature in sunny or rainy days. We create the project that help to users and hanging in the house. It reduces difficulties which the clothes hanging outside the house. The up down movement of rack is controlled by using remote controlled gadget.AC motor control the movement of rack. The oprating of rack totally depends on RF module also the on- off control of Fan and light is depends on RF Module.

II. LITERATURE REVIEW

Shi Yao et al[1]discussed about as science continues to progress, humancivilization has ever entered into a new realm. Household electrification has become a symbolof progress .In southern China and some humid regions in foreign countries, clothes are stillwet even several days after washing. People deeply are finding inconvenience it.

Sushmita zimal et al[2]discussed about Automation is a fast growing technologyaround the world. It not only focuses on improving industries performance but also daily lifestyle. Development of this project to design the model of the project and use of automationequipment will give large advantage in increasing comfort ability.

PI.Ayyoub.M.Momen et al[3]discussed about The objective of this project is todevelop a clothes dryer prototype using piezoelectric transducers to mechanically extract waterand achieve an Energy Factor.

3.Method

III. BLOCK DIAGRAM

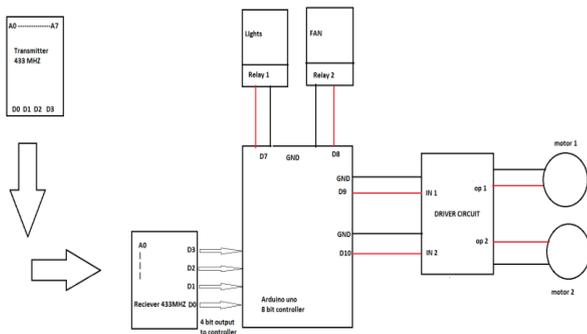


Figure 3.1: Block diagram

Initially rack at close position means hanging at upper position. when we will press the on button of remote then rack will be come at lower position when rack at lower position we will hang the cloth on rack. Then we will press button and rack will be go to the upward direction. after that humidity sensor and temperature sensor sense the humidity and temperature respectively. depends on output of sensor fan and light will be on.

If someone will be busy then we will be on or off fan with the help of remote. we will manually operate fan and light.

3.1.1 Arduino:

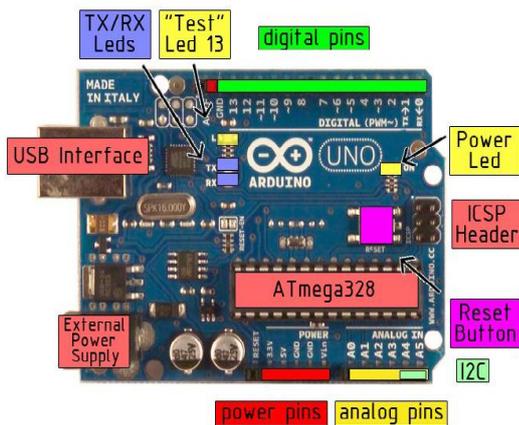


Figure 3.1.1: Arduino Board

This is the major component of our project. The Arduino Uno can be powered via the USB connection or with an external power supply. The power source is selected automatically. External (non-USB) power can come either from an AC-to-DC adapter or battery. The board can operate on an external supply of 6 to 20 volts. If supplied with less than 7V, however, the 5V pin may supply less than five volts and the board may be unstable. If using more than 12V, the voltage regulator may overheat and damage the board. The recommended range is 7 to 12 volts. VIN-The input voltage to the Arduino board when it's using an external power source

Input and output:

•Serial: 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the corresponding pins of the ATmega8U2 USB-to-TTL Serial chip.

- External Interrupts: 2 and 3. These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attach Interrupt() function for details.
- PWM: 3, 5, 6, 9, 10, and 11. Provide 8-bit PWM output with the analog Write() function.
- SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK). These pins support SPI communication, which, although provided by the underlying hardware, is not currently included in the Arduino language.
- LED: 13. There is a built-in LED connected to digital pin 13. When the pin is HIGH value, the LED is on, when the pin is LOW, it's off

3.1.2 Temperature Sensor:

The LM35 series are precision integrated-circuit temperature devices with an output voltage linearly proportional to the Centigrade temperature. The LM35 device does not require any external calibration or trimming to provide typical accuracies of $\pm 1/4^\circ\text{C}$ at room temperature and $\pm 3/4^\circ\text{C}$ over a full -55°C to 150°C temperature range.

3.1.3 LCD Display:

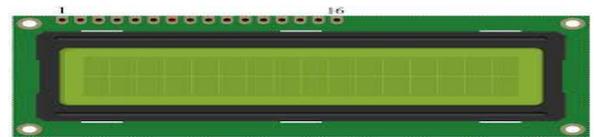


Figure 3.1.3: LCD display

A Liquid Crystal Display commonly abbreviated as LCD is basically a display unit built using Liquid Crystal technology. When we build real life/real world electronics based projects, we need a medium/device to display output values. Out of all available LCD modules in market, the most commonly used one is 16x2 LCD Module which can display 32 ASCII characters in 2 lines (16 characters in 1 line). Other commonly used LCD displays are 20x4 Character LCD, Nokia 5110 LCD module, 128x64 Graphical LCD Display and 2.4 inch TFT Touch screen LCD display.

3.1.4 RF Module:

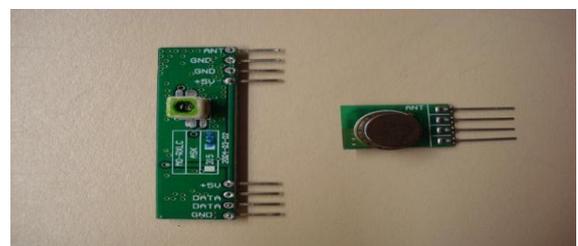


Figure 3.1.4: RF Module

The RF module, as the name suggests, operates at Radio Frequency. In this RF system, the digital data is represented as variations in the amplitude of carrier wave. Transmission through RF is better than IR (infrared) because of many reasons. Firstly, signals through RF can travel through larger distances making it suitable for long range applications. Also, while IR mostly operates in line-of-sight mode, RF signals can travel even when there is an obstruction between transmitter & receiver. Next, RF

transmission is more strong and reliable than IR transmission.. This RF module comprises of an RF Transmitter and an RF Receiver. The transmitter/receiver (Tx/Rx) pair operates at a frequency of 434 MHz. An RF transmitter receives serial data and transmits it wirelessly through RF through its antenna connected..The transmitted data is received by an RF receiver operating at the same frequency as that of the transmitter.

3.1.5 Motor Driver:

Motors require more current than the microcontroller pin can typically generate, therefore some type of a switch is needed, which can accept a small current, amplify it and generate a larger current, which further drives a motor. This entire process is done by a motor driver. There are many different kinds of motor drivers.

3.1.6 AC Motor:-

An AC motor is an electric motor driven by an alternating current (AC). The rotor magnetic field may be produced by permanent magnets, reluctance saliency, or DC or AC electrical windings less commonly, linear AC motors operate on similar principles as rotating motors but have their stationary and moving parts arranged in a straight line configuration, producing linear motion instead of rotation.

3.1.7 Relay:

It is an electrical switch that uses an electromagnet to turn the switch from off to on position instead of a person moving the switch it takes small amount of power to turn on relay but the relay can control the something that draws much more power. In our project the relay are used to control the fan and light which is the main application of the project. The relay come in different configuration the most common are single pole single throw (SPST), single pole double throw (SPDT) etc.

IV. RESULTS

We selected this project for maintaining health and preventing disease due to the wet cloths. In some areas of the world which are more humid as compare to other areas the clothes are still wet 3 or 4 days after washing there for the people acute from it. We automatically retrieve the clothes when it is sunny day and when it is in rainy day.

The system is verified in real time application the working of system as follows .

- 1.the whole process use RF application.
- 2.the RF module are connected to the arduino controller once the RF connection established the RF control the whole machine.
- 3.the up and down buttons are used for movement of clothes drying rack. In this system we use fan and light these are can on/off by the users. For the quick drying the fan and light are used.
- 4.fig shows the cloths drying rack.



Figure.4: Clothes dryer rack

V. DISCUSSION

1. Whole system is controlled by the arduino uno board or embedded process.
2. The clothes dryer rack are initially in upward direction when we press the button on the remote it will come in downwardside for the hanging the cloths on the bars of rack if it done then the rack moved in upward direction.
3. If u want to dry the cloths immediately then fan and light arrangement are provided.
4. Temperature sensor are provided for measuring the current temperature. If the room temperature is not enough to dry the clothes for this situation fans are provided.
5. It consumes the less time.
6. The system or applications controlled by the RF module or remote.
7. It also reduces the human efforts

VI. CONCLUSION

Clothes are basic need of human. People often to forget to lift the suspension of clothing during day rain .for people who working, they do not have to worry about their clothes that have been dried outside. Cleanliness is most important in clothing for maintaining health and preventing disease. It is also improve the life style of people who are living in the congested areas. The system is also portable clothes drying device. These system is occupying the less area of the house.

It is conclude that this system is increases the human life style or living style. The whole system operated on the remote therefore it required less human efforts and in family any member can easily operate the system. This system are used in home automation as well as laundry application.

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