

Implementation of Smart Hospital Clothes Dryer With Proper Sanitization Powered By Solar Cell

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Abstract- *The idea of creating an automatic clothesline puller using an Arduino microcontroller and sensors is innovative and can potentially solve the problem of anxiety associated with drying clothes in the rainy season. When the sensor detects that the weather is hot and sunny, the tool will pull the clothesline to a place exposed to the sun, while when the sensor detects that it is raining, the tool will attract the clothesline to a place protected from rain. The idea of setting up a system with UV rays to The idea of creating an automatic clothesline puller using an Arduino microcontroller and sensors is innovative and can potentially solve the problem of anxiety associated with drying clothes in the rainy season. When the sensor detects that the weather is hot and sunny, the tool will pull the clothesline to a place exposed to the sun, while when the sensor detects that it is raining, the tool will attract the clothesline to a place protected from rain. The idea of setting up a system with UV rays to Hospital clothes are used by multiple patients, and it is crucial to ensure that they are clean and germ-free to prevent the spread of infection and we get all the notification about our cloths on mobile through bluetooth.*

Keywords- Arduino Uno, microcontroller, Rain sensor, LDR, Motor driver, UV rays, HC05

I. INTRODUCTION

The Smart Outdoor Clothes Hanging System is an innovative solution to the challenges of drying clothes in unpredictable weather conditions. With its automatic control system and various sensors, it ensures that clothes are protected from rain and are dried efficiently. The use of a microcontroller, Arduino UNO, for programming and control, makes it easy to manage the system and adjust its settings. The DC gearbox motor is a key component of the system that allows clothes to be moved to unexposed areas during rainy days or dark nights. The rain sensor is a clever design feature that activates the system when it detects rain, ensuring that clothes are not left out in the rain. The LDR sensors detect light, allowing the system to function even on dark or cloudy days. The moisture sensor is an important component of the system that detects when clothes are completely dry and triggers the retrieval of clothes from the metal plate. This

feature ensures that clothes are not left out for an extended period, which could potentially damage them. The Smart Outdoor Clothes Hanging System makes it easier for people who are busy or not at home to manage their laundry routine, as the system can operate automatically and collect clothes when they are moisture-free. Overall, this is a well-designed product that addresses a common problem in a practical and efficient manner.

It's a great idea to develop a system that uses UV rays to kill germs and viruses on hospital clothes. UV-C light, in particular, is known to be effective in killing bacteria and viruses. However, it's important to ensure that the UV light doesn't harm the fabric of the clothes, so the exposure time and intensity of the light will need to be carefully calibrated. Additionally, it might be necessary to ensure that the clothes are properly cleaned before exposing them to UV light, as any dirt or debris on the clothes could block the UV rays and reduce their effectiveness. Overall, developing a system that combines UV-C light with other disinfection techniques could be a promising approach to ensuring that hospital clothes are properly sanitized and don't contribute to the spread of germs and viruses. Because this project is important for both home and hospital, that's why the name of this project is kept as "Implementation of Smart Hospital Clothes Dryer with Proper Sanitization by Solar Cel

II. LANGUAGE USED

The ArduinoIDE used in this project. All the programing files were created in Arduino IDE and all the necessary packages were easily installable in this IDE. For this project following modules and libraries were used i.e., Speech Recognition, Bluetooth connection, etc. We have created a live GUI for interacting with the Assistant as it gives a design and interesting look while having the conversation.

Arduino IDE :-

ArduinoIDE, also commonly referred to

as Arduino programing , is a code editor made by used by in Arduino programing it contain text editor for

writing code a message area of text console tool bar with button for common function as series menus. It connects to the Arduino hardware to upload program to commutate with them

Proteus Design Suite 8.10 Proteus Design suite 8.10The Proteus Design Suite is a proprietary software tool suite used primarily for electronic design automation. The software is used mainly by electronic design engineers and technicians to create schematics and electronic prints for manufacturing printed circuit boards.

III. LITERATURE REVIEW

Prabhakar Hegade, Sunil Nayak, Parashuram Alagundi , Kiran M R”Automatic Protection of Clothes from Rain” (2016) The concept behind this design is to combine both software and hardware. Software being the Keil micro vision and Hardware is microcontroller based sensor unit. In software part we have developed code for microcontroller for controlling moving tray. Sensor circuit, DC Relays ULN 2803 driver are to be added in hardware part. Below is the description of each module used.

Miss.Panase Kajal Kishor, Miss.JadhavSayaliSanjay ,Miss.ManePrajakta Suresh, Prof. Mrs.Patil.G.A”Automatic Clothes Dryer ”2017.

This cloth dryer based on Arduino Uno board to install all programs that will give instructions 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 operating of rack totally depends on RF module also the on- off control of Fan and light is depends on RF Module. 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.

Rajalakshmi, Sangeetha, Yaswini, Mathivathanaoivyapavai T” Cloths Hanging System ” (2020). When the rainy season the majority of people dry their clothes on the terrace of the house, this is done to Avoid drying clothes exposed to rain when the owner is left doing

outdoor activities house. From the description of the problem above, the author found the idea to make a towing device clothesline that can work automatically. The tool uses an Arduino microcontroller The Uno is coupled with a rain sensor and a Light Dependent Resistor sensor. The way this tool works is detects the surrounding weather through the rain sensor and LDR sensor, when the sensor does not receive light then the tool will translate it will rain, so the tool will attract clothesline in a place protected from rain. When the sensor detects sunlight the tool will translate that the weather around is hot, so the tool will pull the clothesline a place exposed to the sun. While the rain sensor detects droplets from the water rain. Hopefully with the creation of an automatic clothesline puller can help people reduce anxiety when drying clothes in the rainy season.

Nurul Najwa Ishak , Nor Shahidah Mohd Shah1, Mohd Shamian Zainal , Mahathir Mohamad, MunirahAb.Rahman PP “Automatic Retractable Cloth Drying System” An automatic retractable cloth drying system, to lighten the issues in the laundry for household usage, is developed. The retractable clothes drying system can move automatically during rain to help people when they hang clothes outdoors. The clothes drying rack can move forward and backward automatically using DC power window motors and a microcontroller as the main function to control components. The rack moves backward when raining or dark days. The rain sensor functions as a connecting circuit. LDR sensor is used to detect light. When the weather is getting dark, clotheslines will move to a place that is not exposed to rain.

IV. BLOCK DIAGRAM

A smart hospital cloth dryer prototype was developed using solar cell, battery, moisture sensor, rain sensor, moisture sensor, HC05, L293D(motor driver), Arduino uno, motor, ldr sensor, relay, uv rays.

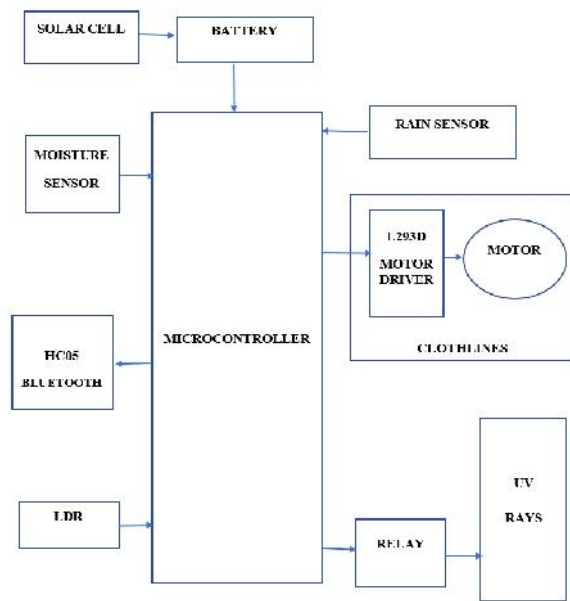


Figure 2 - Block diagram of proposed idea

V. PROPOSED METHODOLOGY

The aim of this project is to implement a towing device clothesline that can work automatically (if the rain comes, the cloths goes automatically in the shade and after the rain it comes outside for drying purpose).

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This setup we will especially build up for the hospital because in this we will going to set thesystem with UV rays that will help to properly kill the germs from the clothes.And we get the notified about cloth condition on mobile screen using HC05(Bluetooth).

VI. CONSLUSION

The smart hospital clothes dryer with proper sanitization is a significant innovation in the field of hospital equipment. This device utilizes state-of-the-art technology to

ensure that hospital and home clothes are not only dried effectively but also sanitized to prevent the spread of infection.

The system's use of ultraviolet-C radiation, which is known for its germicidal properties, ensures that even the most stubborn bacteria and viruses are eliminated, leaving clothes free from contamination. The development of a smart hospital clothes dryer with proper sanitization has the potential to greatly improve the hygiene and safety standards of hospitals. This dryer can effectively eliminate bacteria, viruses, and other harmful microorganisms from hospital garments, reducing the risk of cross-contamination and infection transmission. Overall,the smart hospital clothes dryer with proper sanitization is a game-changer in the healthcare industry, providing a more efficient and effective way of sanitizing hospital clothes this project showcases the potential of combining technological advancements with healthcare needs to create innovative solutions that can greatly benefit patients, staff, and the healthcare system as a whole.

VII. ADVANTAGES

- We can go out and leave our clothes in the open without worrying.
- This system could automate the drying and sanitization process.
- This system is powered by solar cell which is a renewable source of energy.
- We get notified about cloth drying condition on mobile.
- Useful for maintaining the quality of clothes.

VIII. APPLICATION

Implementation Of Smart Hospital Clothes Dryer With Proper Sanitization powered by Solar Cell is used in

- Home
- Hospitals
- Commercial laundromats
- Hotels

IX. LIMITATIONS

1. The system is efficiency may be affected by geographic location.
2. The dryer's capacity may be limited, which could lead to increased waiting times for staff and patients to dry their clothes.

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