

Automatic Cloth Integument System

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ABSTRACT

Let's start with an example before the paper details. Now consider that you washed your clothes and hang for drying on your roof and goes to office. When you reaches to your office suddenly rain starts and the clothes put for drying on your roof wets again. Here the idea came and we tried to make a mechanism to prevent wetting of cloths from rain when you are outside from home.

So, This Paper is a small step to save our efforts and time in drying of cloths. In this paper we discuss about some tools and mechanism to achieve the goal.

Keyword: Driver Unit, Rain Sensor, Power Supply, Driver Circuit.

INTRODUCTION

India is country of different Seasons. Nowadays, it is very difficult to predict the season especially rains. In the rains it is very difficult to get sunlight and any time rain will starts due to which it is very difficult to wash and dry cloths.

As regards East Malaysia, between the months of November to February it gathers overwhelming rains Normal precipitation of mean annual cumulative rain in Malaysia is 2400mm–3200mm. From November to February is the crest month in Malaysia to become monsoon season, however on the west coast, August turns out to be the wettest month. In general, days are warm and nights are really cool in Malaysia. Furthermore its average climate is continually welcoming.

Hence, He we make an electro-mechanical device which continuously work on any DC power source and cover our cloths when rain starts.

Project Objective

The main objective of making this system of covering cloth automatically without any human effort are-

- I. This system will cover all the cloth when the weather condition changes from sunny day to rainy day. This all is done by electromechanical system.
- II. This system consumes less minimum area than any other conventional system present at this time.
- III. This system can be dissembled in to parts so that there will be no difficulty in carrying from one place to another place.

LITERATURE SURVEY

Survey play important role in any project. We study many of projects which are used for protecting clothes from the rain. We found many demerits in those projects, First is those are operated manually so problem is this if no person is available at home then the cloth can not be covered thus this project will be useless. Second if there is a disabled person in the house and rain started, that person will not be able to go fast and unhang the cloth result will the cloth will wet. Other demerit we found that those system will require more space such as the whole roof area that will not be available to those who lives in apartment in the cities so these will be the major problem.

Motivation

We decided to make such a system that will protect our clothes from being wet without any human effort. We choose this system because this is the basic problem of the region where heavy rain occurs frequently. This project will consist simple circuit to protect the cloth from.

Problem Statement

After studying all the previous models we find three major problems

- i. System should be automatic so that it can auto detect rain and cover the cloth.
- ii. System should require comparatively less space.
- iii. System can be dissembled from the point of transportability and the storage

COMPONANT

1. **Links:** A link is defined as a part of machine which moves relative to some other parts of machine. The system has one degree of freedom. In this work mechanism is modelled and simulated over several application specific requirement such as dynamics, position accuracy etc.
2. **Structure or Frame:** Frame is defined as rigid structure which supports the other component. It may be of two types: i) Horizontal ii) Vertical
3. **Motor:** An electric motor is an electrical machine which converts electrical energy into mechanical energy. The specification of motor is given as follows:

Rated Speed	100 RPM
Rated Load	60 Watts
Rated Torque	3 N-m
Mounting	M6 screw holes

4. **Shaft:** Shaft and ball screw is the component which converts rotational motion of shaft into translation motion of links. These ball screws give improved efficiency over conventional lead screw arrangements at a relatively low cost.
5. **Battery:** Battery is the source of energy to the whole system. It gives power to motor via electrical circuit. The specification of battery is given below:

Output voltage	12V
Initial Charging current	1.4A
Number of outlet plugs	2
Storage temperature	25 ⁰ C

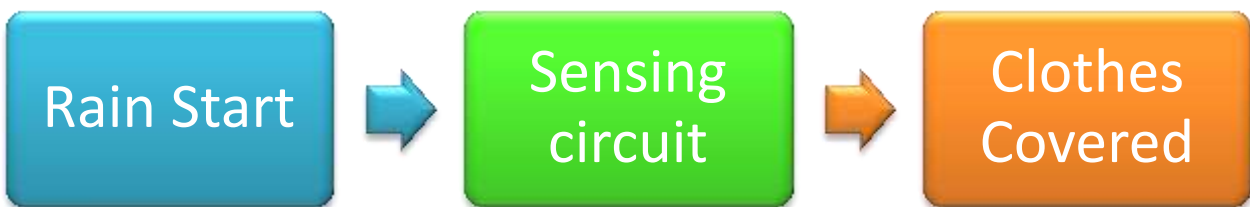
6. **Voltage Regulator:** A voltage regulator is an electronic circuit that provides a stable DC voltage independent of the load current, temperature and AC line voltage variations. A voltage regulator may use a simple feed-forward design or may include negative feedback. It may use an electromechanical mechanism, or electronic components.

7. **Relay:** A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal.
8. **Integrated Circuit:** An integrated circuit or monolithic integrated circuit (also referred to as an IC, a chip, or a microchip) is a set of electronic circuits on one small flat piece (or "chip") of semiconductor material, normally silicon. The integration of large numbers of tiny transistors into a small chip results in circuits that are orders of magnitude smaller, cheaper, and faster than those constructed of discrete electronic components.
9. **Transistor:** A transistor is a semiconductor device used to amplify or switch electrical signals. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit.
10. **Capacitor:** A capacitor is a passive two terminal electrical components that stores potential energy in an electric field. The effect of a capacitor is known as capacitance.
11. **Diode:** A diode is a two-terminal electronic component that conducts current primarily in one direction (asymmetric conductance); it has low (ideally zero) resistance in one direction, and high (ideally infinite) resistance in the other.
12. **Resistor:** A resistor is a passive two terminal electrical component that implements electrical resistance as a circuit element. The behavior of an ideal resistor is dictated by the relationship specified by Ohm's law: $V=I \cdot R$.
13. **Rain Sensor:** To detect the rain we have made a system which will work like rain sensor. We have break a Copper strip in two part and we stick these part at a distance. When the rain start and the drops begin these parts are attached by the water and the current is supplied. Thus the circuit is completed.
14. **Cover:** This is simply a cloth which is used to protect the cloth from the rain. Thus the cloth that are hunger to be dry, will not be wet. Cover is made of Nylon. Also it can be made from Polyester.
15. **Variable Resistor:** A variable resistor is a resistor of which the electric resistance value can be adjusted. A variable resistor is in essence an electro-mechanical transducer and normally works by sliding a contact (wiper) over a resistive element.

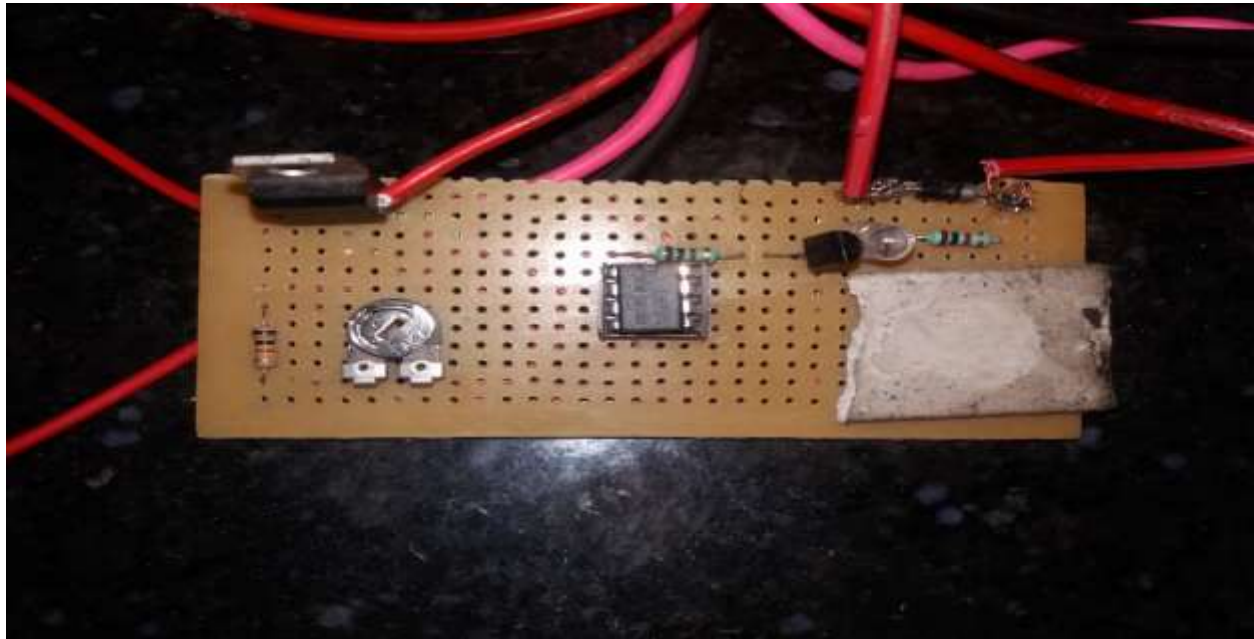
WORKING

When there is no rain the resistance between the wire is very high as there will be no conduction between the plates in the sensor.

If there is the rain the water drops will fall on plate which will create a conductive path between the plates that will create the voltage difference across the pins of variable resistance that will give output to IC. This ic will give signal to the transistor that will amplify the output. This output is given to motor via switch.



When we want to uncover the system the output is given by switch the diode does not allow the current to pass in this condition thus only backward output is available at the motor and the system is uncovered by motor.



RESULT

In this section we have found that the system is working according to our requirement that is to cover the cloth when the rain started without any human effort. This device is not much expensive so a common person can afford this type of system for their use.

Above figure is the circuit of the system in which sensor sense the rain and give signal according to which our circuit will give the command to move forward and the motor started and cover the clothes.

CONCLUSION & FUTURE WORK

At the end of the project we have found the system which is able to protect the cloth from being wet when the rain starts. If a person wash cloth in washing machine and hang them to be dry but due to rain they will be dry. On wearing such cloth may the cause of infection on the body so this all problem is eliminated by our system. This system is so simple that it can be operated by any kind of user.

In future we can make it fully automatic by the use of electronic systems. We also can attached it to the solar panel so that the battery can be charged any no consumption of electricity can be reduced.

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