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Design and development of three-stage industrial car washing system

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Abstract -

Car wash systems allow for fully automated car wash in a short amount of time. Here we demonstrate a smart car wash system that allows for completely automated car washing process. The system consists of a 3-stage car wash system. The system consists of a small conveyor type belt that holds on to a car. The system switch to start the procedure. Once the switch pressed the belt movement using a motorized system and vehicle moves to the first stage and starts washing the car for some time and the conveyor starts moving again and in 2nd stage brushes are used to clean the cars in 3rd stage fan will ON and make the car dry and starts the conveyor belt so that the car went out of the cleaning place.

Keywords: Car washing, Automatic process, Three stage process

I.INTRODUCTION

With the rapid development of science and technology in today's society and the improvement of human living standards, the number of private cars and buses is increasing day by day. At the same time, car washing services also emerge. Due to the large number of cars, there may be some uncertainties such as waste of water, time-consuming, inefficient and so on in manual car washing, so the automatic car washing industry is becoming more and more popular and has gained a firm foothold in the fierce competition in the market tide. The development of automatic car washing control system can meet the needs of more people and improve the competitive advantage of our country in the automatic car washing industry. But by implementing this project we have tried to minimize it according to the device list which will be definitely helpful.

II.EXISTING SYSTEM

In existing we need to give the car in the car service area where the automation is not done. Here manual cleaning of water is happened where we need to leave the car in that place. In manual cleaning the wastage of water will be more and may not be cleaned or dry the car neatly.

III.PROPOSED SYSTEM

In this the conveyor belt will rotate continuously, here we are using a switch to start the three step process. When the car enters to the 1st stage then the conveyor belt moves and stops and starts washing the car for some time and the conveyor starts moving again and again sensor detects which means 2nd stage of washing car there the soft brushes are used to clean the cars for some time and after that again the belt moves and in 3rd stage fan will ON and make the car dry for some time and stops and starts the conveyor belt so that the car went out of the cleaning place. Likewise, car is cleaned so that it is easy to make a car to clean without human's and in less time.
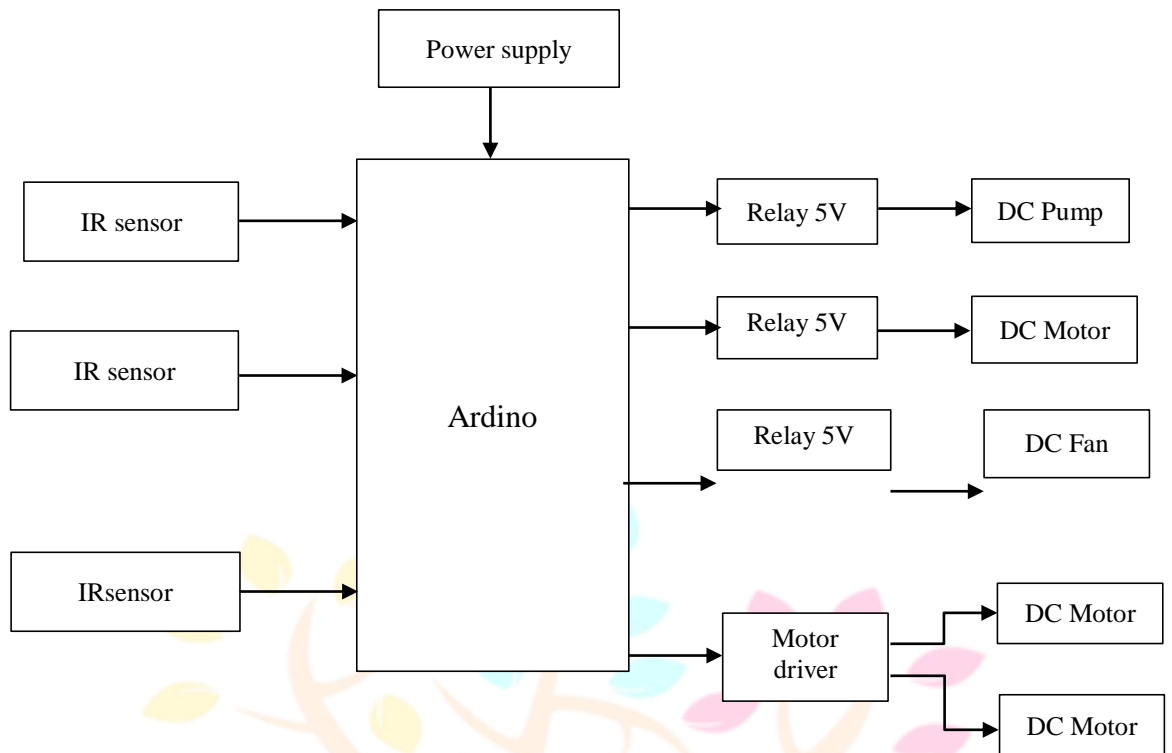
3.1 BLOCK DIAGRAM

Fig3.1 Block Diagram of proposed System

3.2 ADVANTAGES:

1. Reduces Man Power
2. Proper Utilization of Water and Foam
3. It Reduces the Time of Washing Process
4. Less Area Required
5. Pollution Free
6. Standard Parts and Components are Easily Available

3.3 APPLICATIONS:

1. Car Washing Centres
2. Bike Washing Centres

IV.COMPONENT DESCRIPTION:

4.1: HARDWARE COMPONENTS REQUIRED:

4.1.1: ARDUINO UNO

A microcontroller board based on the ATmega328 is called the Uno with Cable. It contains 6 analogue inputs, a 16 MHz ceramic resonator, 14 digital input/output pins (six of which can be used as PWM outputs), a USB port, a power jack, an ICSP header, and a reset button. It comes with everything needed to support the microcontroller; to get started, just plug in a USB cable, an AC-to-DC adapter, or a battery.

Fig 4.1.1: ARDUINO UNO BOARD

4.1.2: IR SENSOR

An obstacle detector's infrared sensor sends out an infrared signal, which is then picked up by an infrared receiver after the signal bounces off an object's surface.

Fig 4.1.2: IR SENSOR

4.1.3 RELAY

Relays are electromagnetic switches that are used when multiple circuits need to be controlled by a single signal or when a low power signal is needed to turn on and off a circuit.

Fig 4.1.3 RELAY

4.1.4: DC PUMP

A water pump's operation relies mostly on the positive displacement principle and kinetic energy to move the water. While other pumps can be powered by different types of drivers like petrol engines or diesel, these pumps utilise AC power or DC electricity to energize the water pump's motor.

Fig 4.1.4: DC PUMP

4.1.5: LCD

LCD (Liquid Crystal Display) is the innovation utilized in scratch pad shows and other littler PCs. Like innovation for light-producing diode (LED) and gas-plasma, LCDs permit presentations to be a lot more slender than innovation for cathode beam tube (CRT). LCDs expend considerably less power than LED shows and gas shows since they work as opposed to emanating it on the guideline of blocking light.
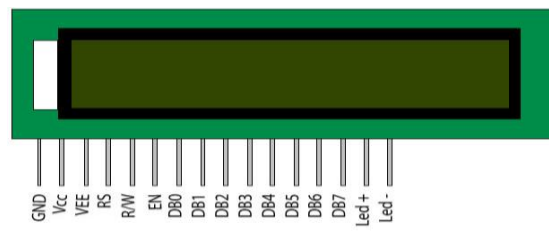

Fig 4.1.5: LCD

Motor Driver:

A motor driver is an integrated circuit chip which is usually used to control motors in autonomous robots. Motor driver act as an interface between Arduino and the motors. The most commonly used motor driver IC's are from the L293 series such as L293D, L293NE, etc. These ICs are designed to control 2 DC motors simultaneously. L293D consist of two H-bridge. H-bridge is the simplest circuit for controlling a low current rated motor. We will be referring the motor driver IC as L293D only. L293D has 16 pins.

4.2: SOFTWARE REQUIRED:

4.2.1: EMBEDDED C

The extension of the C programming language is known as embedded C. It is generally used to develop microcontroller-based applications. Talking about the extension it is I/O fixed-point arithmetic operations, hardware addressing, accessing address spaces, and more.

4.2.2: ARDUINO IDE

The Arduino Integrated Development Environment (IDE) is a cross-platform application (for Windows, macOS, Linux) that is written in functions from C and C++. It is used to write and upload programs to Arduino compatible boards, but also, with the help of third-party cores, other vendor development boards.
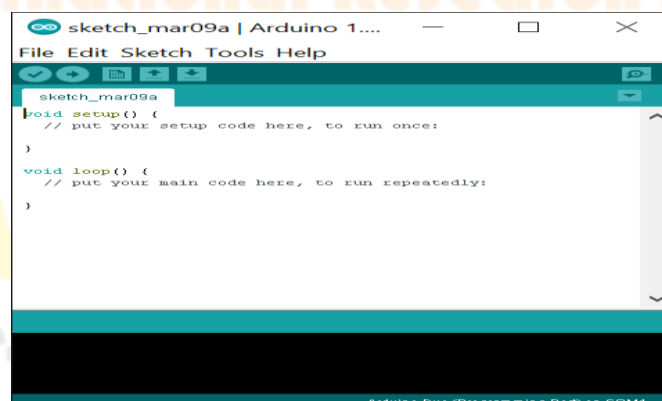

Fig 4.2.2: ARDUINO IDE

V.RESULTS AND DISCUSSION:

The proposed system developed blood leakage monitoring device during hemodialysis is an independent system. Sensors are smaller in size, light weight, low cost and an easy to install. With the help of BMP180 sensor we can monitor the pressure. The main purpose is to detect blood leakages during hemodialysis, very small amount of blood leak detected with in seconds and alert through message with GSM is an advantage. When alert messages received, the healthcare or technician take immediate and appropriate action and prevent patient from any major problem and hopes the quality of healthcare is enhancing during hemodialysis therapy.
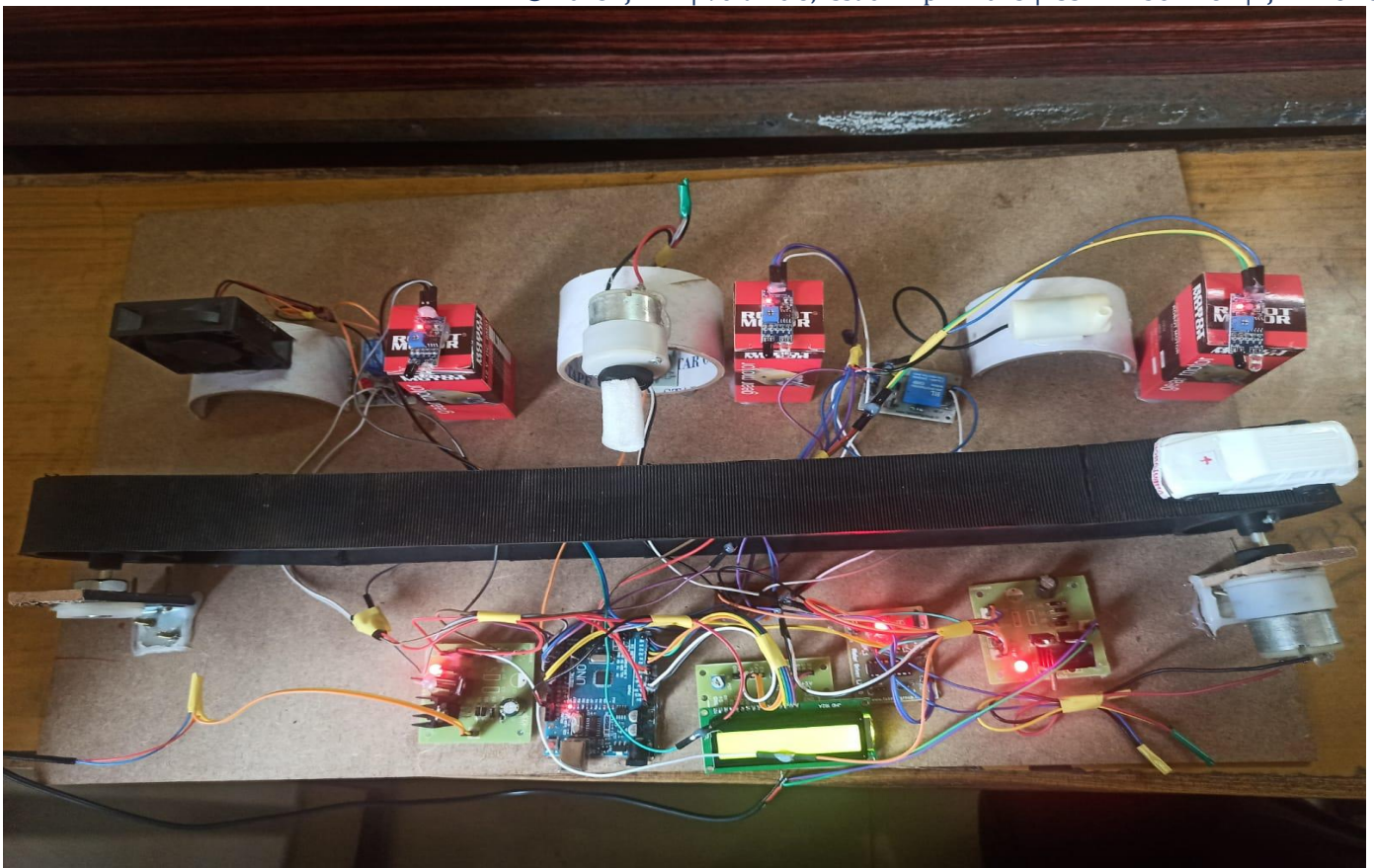
Fig 5.1: WORKING MODEL OF PROPOSED SYSTEM

Fig 5.2: STAGE 1 : WHEN CAR IS WENT TO STAGE 1 WATERING IS ON
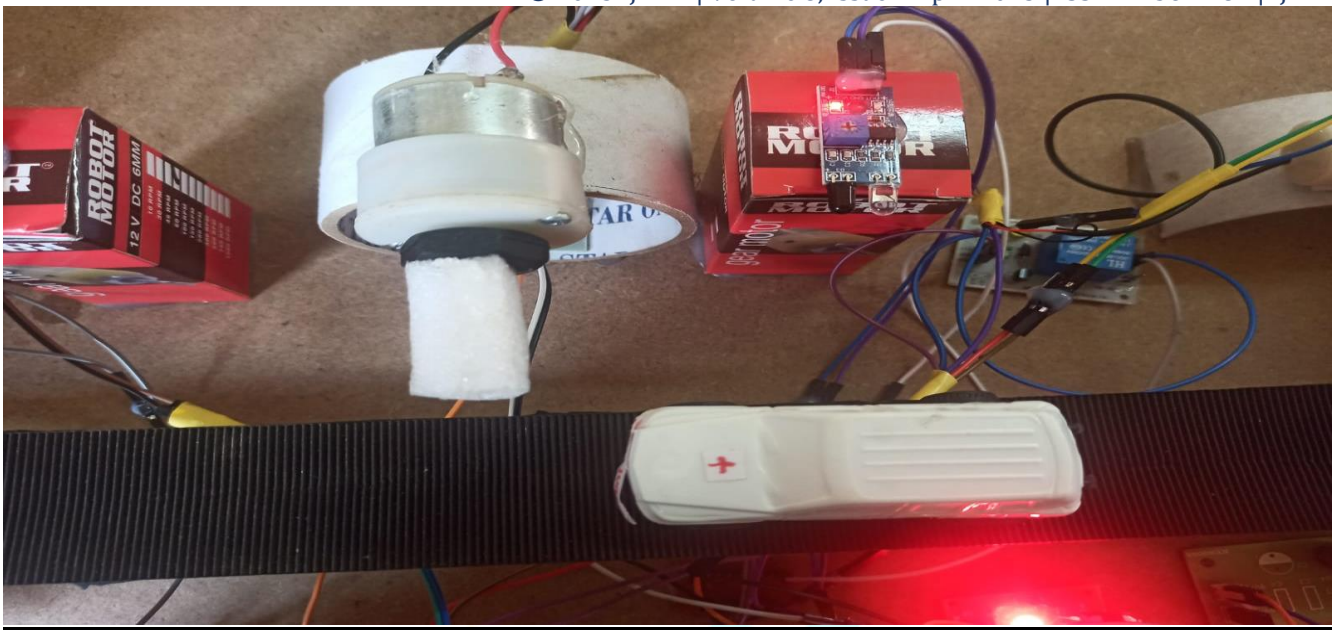
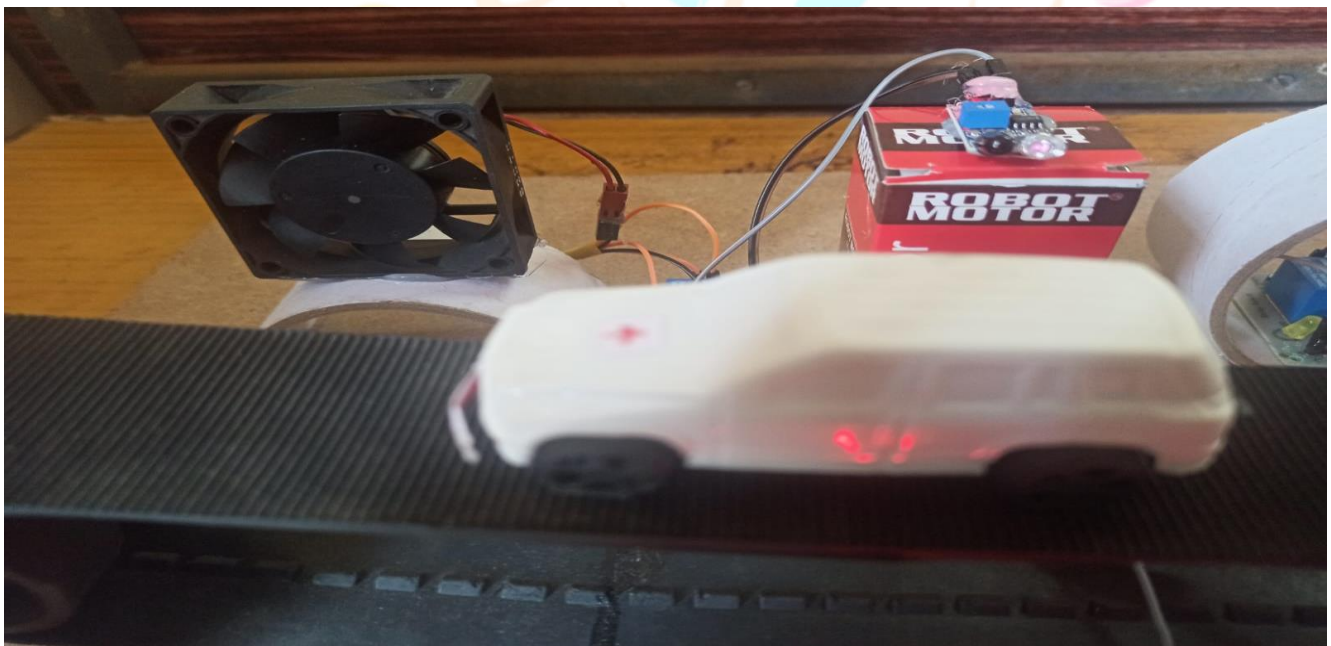Fig 5.3: STAGE 2: WHEN CAR IS WENT TO STAGE 2 BRUSH IS ON FOR BRUSHING

Fig 5.4: STAGE 3: WHEN CAR IS WENT TO STAGE 3 FAN IS ON FOR DRYING

V.CONCLUSION

Putting all discussions together, one can conclude that the proposed method for controlling automatic car washing removes restrictions that exist on common systems and introduces a unique way to create error- free and high efficient project. This prototype will help to perform car washing automatically and results in high quality end product. It requires less man power, time and no pollution.

REFERENCES:

[1] Mr. Bambare Tejas, Ms. Bondre Varsha, Mr. Kapse Manoj, Mr. Khairnar Ketan, Mr. Kotkar,2017, Automatic car washing and drying system Vol. 5, Issue 02, 2017

[2] Zeenal Lalluwadia ,Nidhi Bhatia, Jayana Rana, Automatic car washing system using PLC, Vol.4 ,Issue April,2016

[3] Prof. Mhaske ,D.A. Bhavthankar, R.G. Darade D.J., PLC Based Car Washing System, Vol.4 ,Issue April 2016

[4] Vivek Kumar Yadav, Suryansh Tyagi, Gulshan Kumar, Nishant Kumar, Swapnil Namekar, Automatic Car Washing using, PLC ,Vol 6, Issue 2016

[5] Seyyed M. M. Sabet, Design of a Drying System for a Rollover Carwash Machine using CFD, Vol.3 ,Issue 04 october,2016

[6] Pranoti Utekar , Sayali Naik, Monika Wadekar and S.G. Watve, Implementation of Auto car washing system using two robotic arm, Vol 3, Issue2015

[7] Mr. Bambare Tejas, Ms. Bondre Varsha, Mr. Kapse Manoj, Mr. Khairnar Ketan, Mr. Kotkar,2017, Automatic car washing and drying system Vol. 5, Issue 02, 2017

[8] Zeenal Lalluwadia ,Nidhi Bhatia, Jayana Rana, Automatic car washing system using PLC, Vol.4 ,Issue April,2016