

AUTOMATIC CAR WASHING SYSTEM WITH IR MODULE USING CONVEYOR BELT

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Abstract: Automatic car washing system is often in developed countries. An automatic car wash is provided which includes an enclosure for the car. A water sprinkler is mounted on a roof in the enclosure so that water can be dispensed to the surfaces of a stationary car situated within the enclosure. The water sprinkler is driven by a drive motor back and forth about the car while water is dispensed to the car. From the instructions given by the microcontroller, the water pump sprinkler sprays a soap/water mixture under relatively low pressure and then rinse water under relatively high pressure to clean the car. The brushes are provided which enhances the removal of dirt from the car and the cleaning of the car without the use of abrasive cleansers. A spot free water rinse is applied to the car to further clean the car. Then the car is moved to drying section where car is dried by using fans of high speed. In this project we are using AT mega 16 Microcontroller, motor drivers IC's and relay motor drivers to drive the DC motors with the regulated power supply to run the respective motors to fulfill the output requirement.

Keywords— IR sensor, Atmega16, motor drivers

1.INTRODUCTION

Automatic car washing consists of artificial tunnel like passage through which car enters into the washing area. Automatic car washing system consists of four levels of cleaning. When the car enters the first level then the soap water is sprinkled on the car through nozzles, in the second level brushes are used on both the sides to clean the dirt, in the third level clean water is used to clean the car, in the fourth level which is drying section where car is dried with the help of fans. Other automatic car washing system consume more water and replacing the parts are difficult. But this problem is overruled by our project which uses less water consumption and all the instructions are carried out through micro controller ATmega16 which is less cost.

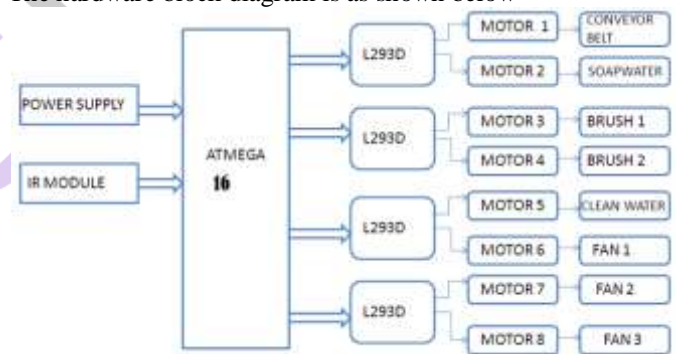
2. RELATED LITERATURE

Now days, due to the advancement in the technology had reduced the chance of occurrence of manual errors. Mainly no man power is needed for automatic car washing system. In this project the car can be detected with the help of sensor and that sensor gives input to the micro controller then micro controller starts giving instructions to other devices. The main objective of our project is to provide less time consumption in

washing of car. A design of ATmega 16 controller-based embedded input and output interface is presented.

2.1 HARDWARE BLOCK DIAGRAM:

The hardware block diagram is as shown below



The hardware essentially consists of the above components which are discussed in the below context.

2.1.1 IR MODULE

IR Sensors work by detecting a light wavelength in the Infra-Red (IR) spectrum. When an object is close to the sensor, the light from the LED bounces off the object and into the light sensor. This results in a large jump in the intensity, by which we can detect the object.

2.1.2 DC MOTOR

A dc motor uses electrical energy to produce mechanical energy by which the robot moves, very typically through the interaction of magnetic fields and current-carrying conductors. The input of a DC motor is current/voltage and its output is torque (speed) that results in movement.

The DC motor has two basic parts: the rotating part that is called the armature and the stationary part that includes some coils of wire which are called as field coils. The stationary part is called as stator.

Four DC motors are used in this project, which are used for rotating the wheels in the required direction.

2.1.3 ATMEGA 16 MICROCONTROLLER

The microcontroller used here is a 40 pin microcontroller.

The features of this controller are very accurate and also advantageous. Software entire coding part is dumped in this microcontroller which gives instructions to the motors.

2.1.4. RELAY:

Relay is a electronic switch which is used to produce delays at regular intervals by which water can be sprinkled whenever we want.

2.1.5. MOTOR DRIVER (L293D IC):

L293D is an motor drive IC which can be used for bi-directional rotation of two DC motors. It is capable of handling motor of 600ma load. By applying different control signals , we can perform desired operations to rotate motor in desired directions.

3.WORKING

- An Infrared sensor is used to sense presence of car at the entry level of the system.
- Once the car is detected then an input signal is given to micro controller and it starts executing .
- First the conveyor belt moves whenever it is detected by IR sensor1 then the conveyor belt stops at the washing station and the water motor starts spraying soap water on the car by fixing a timer for few sec.
- Water is sprayed for few sec and nozzle is closed After that, water motor stops and conveyor belt starts moving.
- We have chosen spraying water, Brushing and finally drying for cleaning the car.
- Each activity is carried out for a certain time period.
- Then IR sensor2 detects the car and two brushes starts rotating for few sec and stops so that the dirt gets cleaned.
- Now the conveyor starts moving to next stage where the same process continues as in first stage but here we use clean water for cleaning purpose.
- And finally it comes to drying section when the car comes it is detected by the IR sensor4 the conveyor stops and fan motor gets activated for drying.
- Two fans are used for drying the car up to few sec. Then the conveyor carrying car moves to the exit level.
- Again an IR sensor senses the car and sends an input signal to Microcontroller.

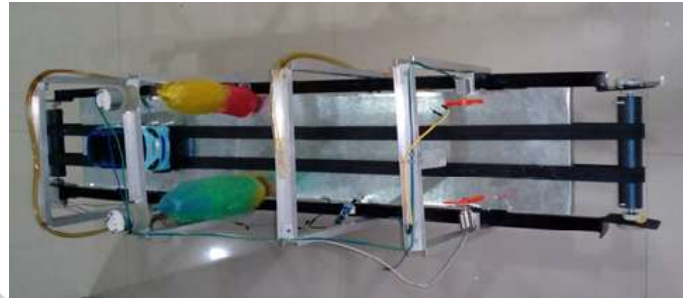
4.SEQUENCE OF CODING PROCESS



6.RESULT

Our project Automation car washing system is instrumental in saving the time of operation. It also reduces consumption of water for washing which has the recycling process.

PROTOTYPE OF AUTOMATIC CAR WASHING SYSTEM USING IR MODULE WITH CONVEYOR BELT



7.CONCLUSION

Automation system are quite beneficial and saves the time of operation. It also reduces man power and helps in Improving the economy of the system in the future. Such type of system will have more demand.

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