

AUTOMATIC WALL PAINTING ROBOT

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ABSTRACT

This study paper includes design of arduino based Automatic Wall painting robot achieve low cost painting. Now days for painting purpose we required more labours m so those painting work get costly. This automatic painting system will reduce human exposure to difficult and hazardous environment which will solve most of problems connected with safety.

INTRODUCTION

Building and construction is one of the most major industry which gain growing rapidly but the labours in this industry is not sufficient also with help of task of painting is risky and time consuming. To overcome those problems importance of Automatic Wall Painting Robot has been realized and is grown rapidly. To make this work easy, safe and also eliminates human efforts. Automation in painting is introduced this automatic robot. It is not designed using complicated components. This robot is simple and cheap. It is made with the help of dome metal materials, spray gun unit, controller unit and some other electronic component. It is having small weight and portable.

SYSTEM REPRESENTATION

The arduino in it is used to control the DC motor and the moment of spray gun fitted on the slider. Arduino unit is provided with SV signal. When supply is ON, LCD is initialised. Arduino controls the motion of whole robot and also spray unit; by controlling the rotation of DC motors on the basis of how much distance to be given, when Dc motor which used on slider it receives from arduino then its moves on required direction and spray gun going to ON condition. The relays in the system are used to control the direction of motors in forward and backward motion.

Before going the start the robot we have to place the robot where the actual work to be done then we have to start the power supply. Arduino required 5v DC supply. We have used PROTIUS software and to create program and this program is burnt into control unit to display our project name and which controls the motion of the motors.

To give the dimensions (Vertically & Horizontally) we have to create the program in system.

COMPONENT DESCRIPTIONS

1. CONTROLLER

For controlling whole system arduino is used. The arduino board is specially designed to create the program. We have used ATMEGA328P arduino in this system which is having 40 inputs pins speed execution of instruction. It has 32kb flash memory and easy USB interface. There is LCD is which is connected to arduino to display operation status of system. It controls total six motors by which whole system gets controlled.

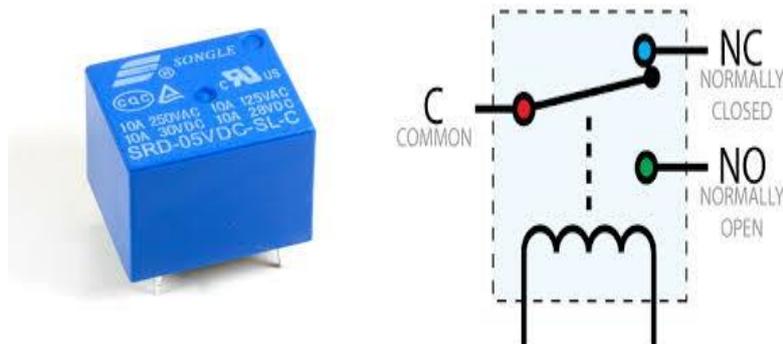


2. TRANSFORMER

It is general chassis mounting main transformer. This transformer has 24 volt primary winding and central tap secondary winding. Transformer act as step down transformer to reduce 40V to 9V. In our project two transformers are used.



RELAY: Relay is electrically operated switch in this project we have used single pole double throw switch. There are six motors used and for each motor 2 relays used to control the motor. Usually relays are used to control the circuit by low power signal.



3. DC MOTOR

The permanent magnetic moving coil motors are used in this project Motors are used to control the movement of four wheels in forward and backward direction. The one wiper motor is used for the upward and downward movement. There are totally six motors used in the project.



4. 16*2 LCD

LCD indicates different mode setting and set point adjustment. Here we have used 16 character by 2 line display and 16 character in both lines are equally divided to indicate command. In this system LCD is interfaced with the port 0 (D0-D7) pin Rss is connected to pin 11 of controller. And one more pin EN is directly connected to Pin 40. In other R/W of LCD is connected to ground.



5. SPRAY GUN

It has nozzle to control the speed of colour while painting. Spray painting is technique where is spray gun is used to paint through the air on the surface of the wall. The spray gun unit include the compressor internally. The compressor we have used air only. Spray gun is used to cover large surface with coating of liquid .



CONCLUSION

Automatic wall painting machine has been designed and implemented in that the arduino unit is used as a control unit which controls the moment of DC motors. This machine reduces the human efforts as well as the time consumption. It prevents the hazardous to human painter. The painting work is accurate and reliable.

FUTURE SCOPE

In future we can implement the image processing unit so that it can scan and capture the image of object of the painting work. It keeps the image of painting work in memory for accuracy and calibration purpose.

RESULT

The arduino unit is used as a control unit. It requires 12 V supply. When supply is given then LCD is ON and it shows the name of the project that is “Automatic wall painting robot”.

The LCD unit is used to show the operation status performed that is forward and reverse movement as well as up and down movement.

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