WALL PAINTING ROBOT

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Abstract - The main motive is to develop an autonomous wall painting robot which will help to achieve low cost painting tools. Along with multiple advantages of robotics the wall painting robot came into a real world. The chemical present in the paint ace fatal to human labours. chemicals can affect the eyes, respiratory organs. Chemicals can lead to death and dangerous to asthmatics patients also. The painting strategy is boring, repetitive as well as time & efforts consuming. The robot offers opportunity to reduce human- exposure to difficult & harmful to environment which will help to solve most of problems. related to safety when many activities occur at a same time. Motivation that we get is typically safety of human.

*Keywords***: Autonomous, robotics, fatal.**

I. INTRODUCTION

Painting work done for commerical or residential dwellings is physically quite hard requires consistent vigilance and get boring because of repeating actions of painting methods. The actions work can be uncomfortable of unsettling because of harmful chemicals present in paint or other thinner which can cause respiratory diseases to workers. With different advantages such as repeatability, & so on. automation Include reduced labor prices. This factor helps to develop concept of wall paint robot. Robot is designed using few aluminum rod, sprayer , wheels & master control unit to control entire operation of robot. The robot is designed such that there is less paint wastage.

II. MOTIVATION FOR THE WORK

Painting a wall by hand can be a time-consuming process, especially if the surface area is large. A wall painting robot can complete the job faster than a human painter, saving time and increasing productivity. A wall painting robot can be programmed to apply paint with precise and consistent strokes, ensuring a smooth and even finish. This can be challenging for human painters, who may tire over time or struggle with a steady hand. Painting walls can be hazardous, especially when working on tall buildings or in tight spaces. A wall painting robot eliminates the need for human painters to climb ladders or work in dangerous positions, reducing the risk of accidents. Using a wall painting robot can be more cost-effective than hiring a team of human painters. The robot can work around the clock and does not require breaks or overtime pay. The use of wall painting robots represents a new frontier in the construction industry, showcasing the latest technological advancements and helping building owners to stay competitive

III. LITERATURE SURVEY

The use of technology for enhancing quality and safety for painting labor is a growing area of research. in recent year there has been a growing body of literature on the use of robot method in day to day life.

one notable study by M. Sorour in 2015 which is entitled as " A Detailed robot design for interior wall painting" This article represents a robot design called Robo painter which is designed for interior wall painting .The main objective of design were to improve quality of work,increase efficiency reduce human effort and enhance precision

Automated wall painting robot in year 2017

describes that robot system is design to paint large surface area in more efficient and precise way. The system consist of a mobile platform equipped with paint sprayer and a computer vision system that can trck surface area to be painted.

PROPOSED SYSTEM

Proposed system for wall painting robot classification , detection using ESP8266 with other components Proposed system for wall painting robot classification , detection using ESP8266 with other components

Data Collection: Firstly we studied the method of robot nature i.e, we studied the locomotion and   adhesion.

1.   Model Architecture: An ESP8266 is used as controller for robot movement.
2.   Robot movement : A robot is used to move in upward, downward, right and left direction.
3.   correction suggestion: Each and every component is tested before implementing it in a project.
4.   Evaluation: Proposed system is evaluated using a variety of components including accuracy precision etc. The result showed that system was able to paint the wall and provide the ability to work.

In summary, the proposed system leverage the power of robotics to enhanced the quality and safety to labor by providing real time work and painting suggested on wall.

IV. METHODLOGY

The methodology used in this work can be divided into following steps:

Data collection: we studied method for movement of robot that is locomotion and adhesion. Locomotion means movement and

adhesion means ability to stick.

Model Development: ESP8266 is used as a main controller. ESP8266 works on wi-fi model. The model was optimized using a motor driver and relay to achieve the best performance.

Robot movement: When ESP8266 gets powered on the motor driver gets the power up and start to move. according to blynk IOT Application.

Correction Suggestion: To set in correct direction the blynk app is used to move according to the direction.

Evaluation: The proposed system was evaluated using a variety of components including specifications and features . The result were compare according to it. The proposed was able to achieve high accuracy and effective ness in painting the   wall.

In summary, the methodology used in this work leveraged a combination of mechanism of components to develop a system for painting a wall.

V. SYSTEM ARCHITECTURE

we studied the movement of robot like adhesion and locomotion. Adhesion means ability of stickiness and locomotion means movement like walk, climb etc. Node MCU or ESP8266 is main controller. Motor driver has ability to control the robot movement direction. Relay is used as switch for a paint sprayer. when relay gets on the stepper motor start working. It moves up and down then wall gets paint using paint sprayer. Blynk IoT application is used to control the movement of robot. This app is also used for relay which is used as switch for a paint sprayer.

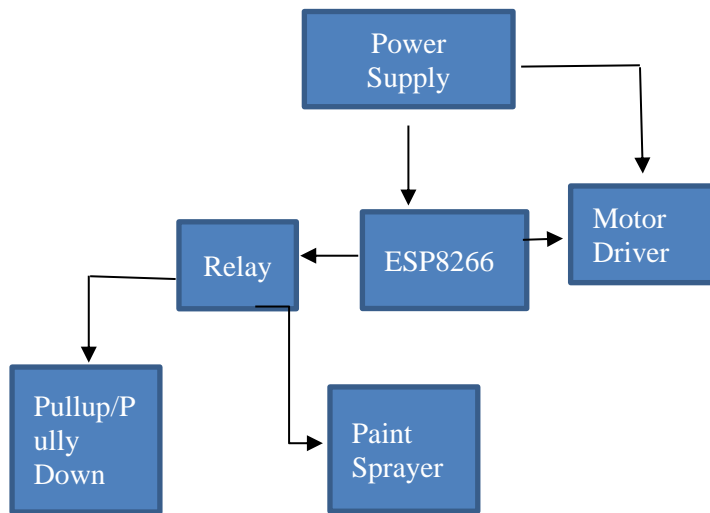| Sr. No	Component Name	Quality
1)	ESP8266	1
2)	Motor Driver	1
3)	DC motor	5
4)	Paint Pump	1
5)	Relay	1

fig ESP8266

Node MCU is an open-source Lua based firmware and development board specially targeted for IoT based Applications. It includes firmware that runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.
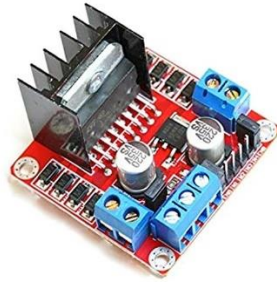
Fig Motor driver

L298N Motor Driver Module is a high power motor driver module for driving DC and Stepper Motors. This module consists of an L298 motor driver IC and a 78M05 5V regulator. L298N Module can control up to4 DC motors, or 2 DC motors with directional and speed control.
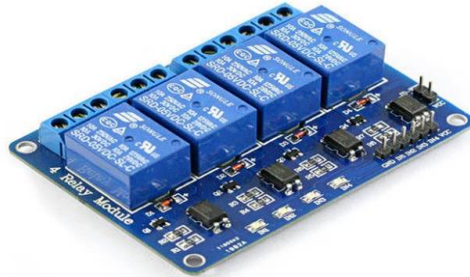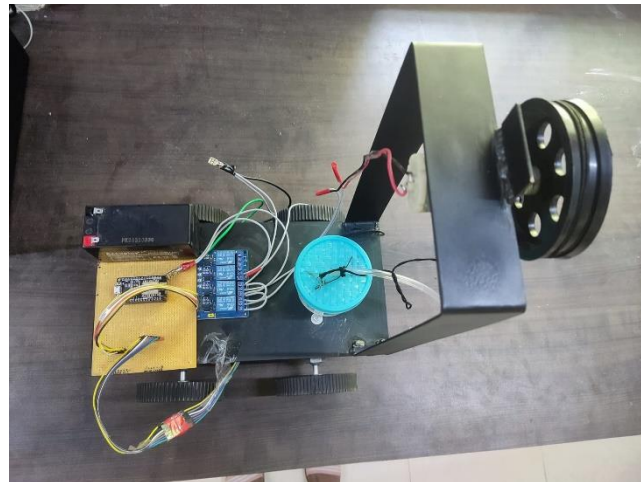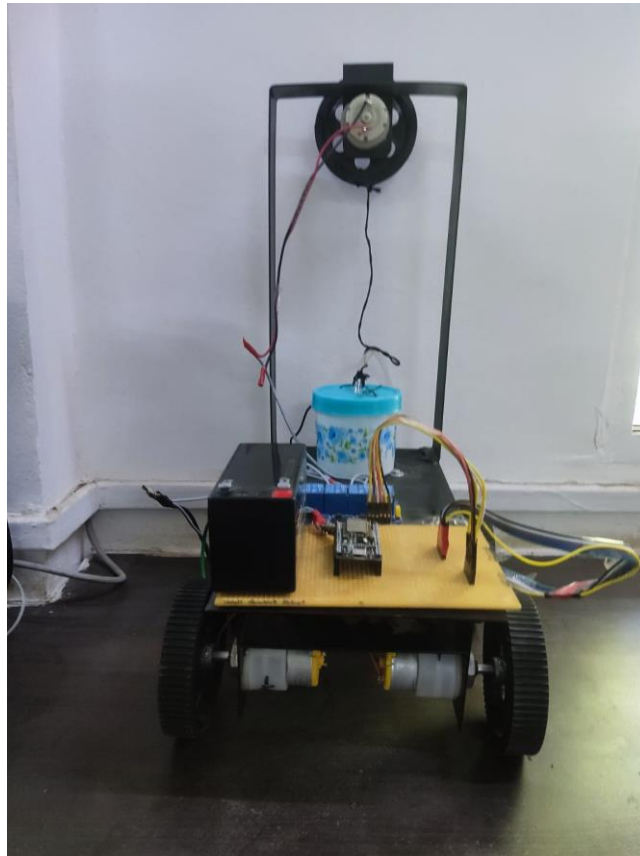

Fig: Relay Module

The four-channel relay module contains four 5V relays and the associated switching and isolating components, which makes interfacing with a microcontroller or sensor easy with minimum components and connections. The contacts on each relay are specified for 250VAC and 30VDC and 10A in each case, as marked on the body of the relays.

Robot Specification:
Size: 20cm*15cm
Height: 50cm
Weight: 2Kg

VII. RESULT ANALYSIS

Every paint attract human eye but the heart is stolen by some kind of patterns We have studied different types of painting techniques such as Zigzag pattern, irregular patterns, etc .Zigzag pattern follows a specific pattern of painting. While irregular pattern of paint is a way which is unpredictable. Irregular pattern represent themselves us to when our minds are faced with interpreting a pattern that does not seem to follow through on is initial promised perfect state. This can be understood as witnessing a man made pattern like a checkerboard dissipate or transform into tiny specks.

In our project zigzag pattern is used Zigzag pattern consist of a series of small corners set at variable angle tracing a path between a parallel lines. It is used to give a sense of dynamism and rhythm in visual composition and often attributed to qualities like chaos.
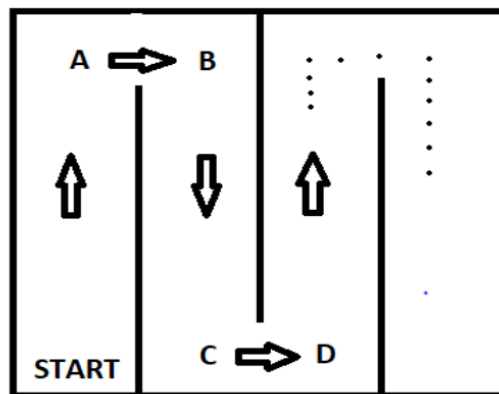

Fig: Paint Pattern

Blynk IoT App
It is platform for android smartphones that is used to control arduino, Node MCU via internet. this application is used to create a graphical interface by compiling and providing the correct address on available widgets.

Discussion:
The Discussion in this work focuses on result of proposed system for wall painting robot and its implementation for field of painting.
Advantages:
Reducing cost:
worker takes more payment than robot. This investment time.
Time saving:
Worker takes more time but robot does it very fast.
low physical efforts:
workers need to climb the platform which is dangerous.

IX.CONCLUSION

The design, implementation analysis and testing of an autonomous wall painting robot which is used for painting a wall. The robot uses a sprayer attached with tank filled with paint. the technique for system design outlined and the prototype was implemented and tested however there is a much scope for system improvement in future to increasing painting method and simplify to system design nature.

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