



REVIEW ON IOT BASED SMART ROBOT USING ESP32-CAM

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ABSTRACT:- Corona virus has not recently added to the generally substantial responsibility of medical care proficient all over the planet, it has likewise made the extra worry of clinical specialists getting tainted because of direct contact with patient. The savvy robot, which will be depicted in this paper, is an undertaking to diminish the risk of sicknesses. The robot is truly obliged by using cell/PC through Wi-Fi. The robot will be use to view and discover the certified video using ESP32-CAM. It moreover use for cleansing for that Ultrasonic sensor is communicated with water siphon, aside from this it likewise use in different social spots like railroad stations for reconnaissance purpose. It additionally use for patients strolling into the office have their temperature looked at by the machines, which are outfitted with warm weapon.

Keywords: - Smart Robot, Wi-Fi, ESP32-CAM, Ultrasonic sensor, Thermal gun.

I. INTRODUCTION

The research work is carried out here provided an insight into the development of IOT system. The research area of the IOT in a recent year has experienced in an interdisciplinary manner. IOT is considered as a network of physical, devices, object, vehicle, buildings and other items which are embedded with electronics, software, sensors and network connectivity which enable all these objects to collect and exchange data.

This robot is constrained by utilizing ESP32-CAM Board through Wi-Fi, It additionally has in form camera which gives the live spilling of the robot encompassing region.

1.1. FEATURES

The designed robot can follow instruction given from mobile/computer and move 360 degree by the signal which is transmitted from mobile/computer. The system is less expensive as compare to arduino based system. After sending instruction from mobile/computer wirelessly to ESP32-CAM board it operate according to instruction. Following the instruction, the robot can move backward, forward, left and right direction and this movement is controlled by the motor driver. The robot can go to the virus affected

people and help them in various manner like providing necessary medicine and it also sanitize or get their temperature patient hand when patient place his/her hand in front of ultrasonic sensor.

II. ALGORITHM

The system follows this algorithm:

- Step 1: check all the connection according to circuit diagram.
- Step 2: Start the robot and controlling device.
- Step 3: Upload the program to ESP32 Board using arduino IDE
- Step 3: check whether controlling device is connected to controlled device i.e. ESP32-CAM Board via Wi-Fi.
- Step 4: open Application and check everything is connected properly.
- Step 5: Start giving instruction like move robot in forward, backward etc.
- Step 6: Check sanitization system or thermal gun is working properly, by placing hand in front of ultrasonic sensor.

III. DESIGN

A. MECHANICAL DESIGN OF ROBOT

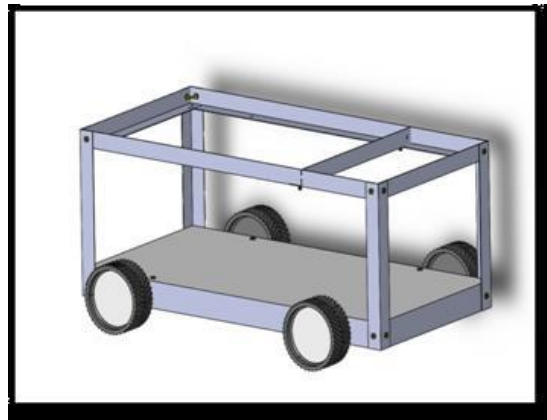


Fig.1 The Mechanical Design of Robot

The mechanical design and analysis of robot chassis is done in solid work software. The width, length and height of it is 30, 25, 60 cm respectively where as distance between front wheel and back wheel is 40 cm.

B. ALGORITHM

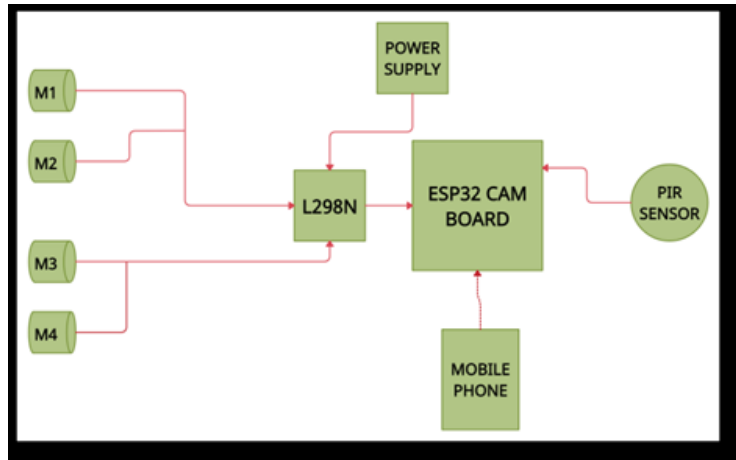


Fig.2 The System Block Diagram following the Algorithm

The system works as the mentioned algorithm by following block diagram in (Fig.2).

IV. CIRCUIT DIAGRAM

ESP32-CAM doesn't have a USB connector, so you need an FTDI board to upload the code into ESP32-CAM. VCC and GND pin of ESP32 is connected with the VCC and GND pin of the FTDI board. Tx of and Rx of ESP32 is connected with Rx and Tx of the FTDI board. Two DC motors are connected to ESP32 through the L293D module. Module pins are connected to IO4, IO2, IO14, and IO15 pins of ESP32.

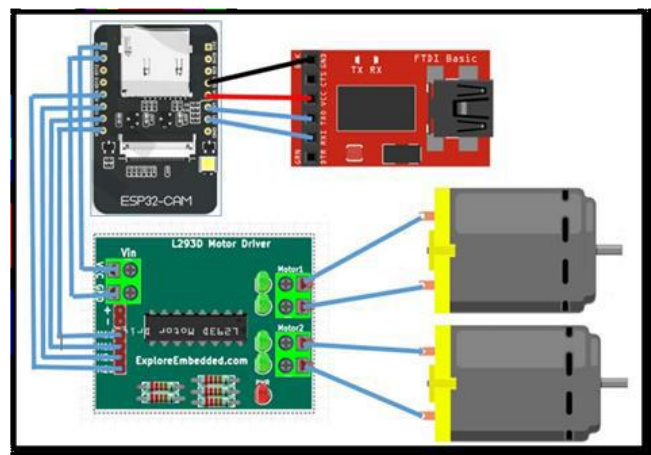


Fig.3 The Circuit diagram

4.1 HARDWARE REQUIREMENT

1. ESP32-CAM Board
2. L298N Motor driver
3. Power supply
4. Mobile Phone
5. Four DC gear motor

1) ESP32-CAM BOARD

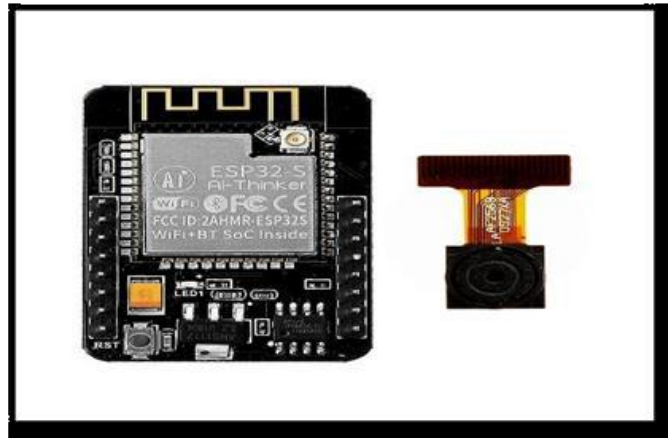


Fig.4 ESP32-CAM Board

The ESP32-CAM is a small size, low power consumption camera module based on ESP32. It comes with an OV2640 camera and provides onboard TF card slot.

2) Motor Driver

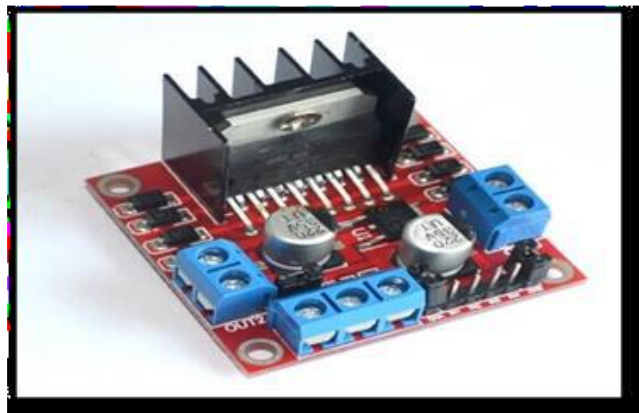


Fig.5 The motor driver



This L298N Motor Driver Module is a high power motor driver module for driving DC motor. This module consists of an L298 motor driver IC and a 78M05 5V regulator. L298N Module can control up to 4 DC motors with directional and speed control.

V. CONCLUSION

In this paper, the robot is intended to move by our guidance. The video is observed at control unit, in this model robot is planned in such way that it will move anyplace. We would this be able to sort of robot in emergency clinic to serve medication, get patients temperature and other low weight material so it forestall human contact by implication it forestall spreading of corona.

REFERENCES

- [1] “Portable surveillance robot using IOT” by K.Rajkumar¹ and C.Saravana Kumar² in international Research journal of Engineering and Technology issue 03 march 2019.
- [2] “Sanitization robot” by Apeksha Wadibhasme¹, Yedhubooshan M M², Kaushik Moolya³, Shireen Farhath⁴, Dipti Darade⁵, Sumana Hati⁶ in international Research journal of Engineering and Technology issue 8 Aug 2020
- [3] “Realization of an IOT system to ensure Door way security by integrating ESP32-CAM with cloud Server” by Ms. Priyanka¹ and Mr. Praveen Kantha² in international Research journal of Engineering and Technology issue 10 Oct 2020.