International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 9 Issue 5 ǁ 2021 ǁ PP. 44-45

Iot Based Gesture Controlled Robotic Arm

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Abstract
Nowadays, robotic arm is used in the various industries such as military, defence and medical surgeries. Also, used for the pick and place function in industrial automation application. Arm is flexible and easy to use. Do work properly without any error or mistake. . In some industries such as chemical industries some hazardous chemicals has to pick and place from one place to another. Sometimes accident will happen and workers is died or seriously injured. There are various techniques to control the robotic arm.
This paper deals with accelerometer Based gesture recognition for controlling the movements of robotic arm through Wireless control using local server (MQTT Protocol). Accelerometer Sends the gestures to the Wi-Fi module (Esp8266).Wi-Fi module will transmit the gesture through local server. It is received by the raspberry pi at the receiver. Rasp-berry pi gives the signal to motor and robotic arm moves as per gestures.
Keywords: *Gesture, Local server.*

Date of Submission: 16-05-2021 Date of acceptance: 31-05-2021

I. INTRODUCTION

Nowadays Everywhere machines are used for the work in the industry in Automobile, Electronics or any other industry. For the assembly of the car. So time is save by the machine. Mainly, Arm is used for the assembly of the any component of the product. Which are all the time at one command. Also many man hours are save by the robotic arm. Robotic arm is also known as mechanic arm. It is same act or work like a human hand and make the human efforts easier. It also same as human hand.

Robotic arm gives the stability and also provide speed to the work in the industry.So, Nowadays every industry use a robotic arm in their industry. Sometimes, humans can't do much things. Such as lift the object of several tons. Which requires more no of humans to carry the load. Sometimes risky works are in the industry. Which is risk for the human lives. So that can be done by the robotic arm. In our project we provide gesture to the arm for the movement. Main aim is of our project is to decrease the human efforts and it is easy to use.

II. BLOCK DIAGRAM

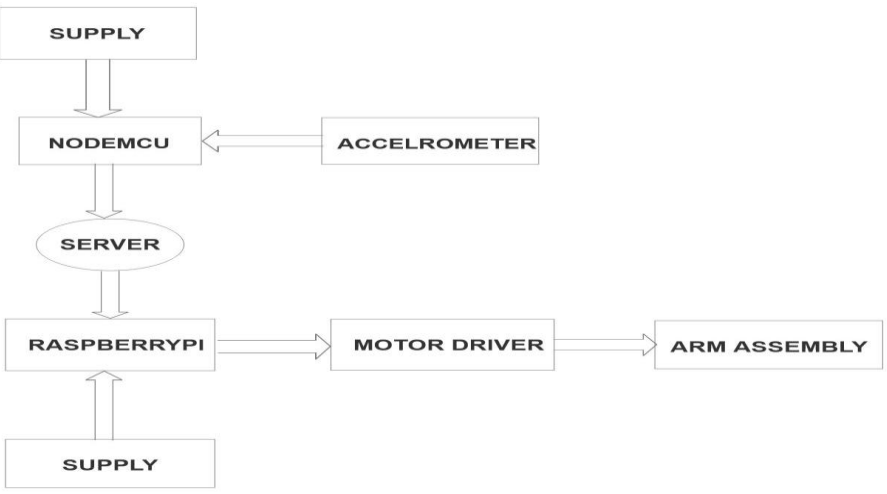

Fig. 1

III. WORKING

Our robotic arm is divide into two main parts. One is transmitter and another is Receiver. Transmitter part of the arm has to work of provide gestures. Receiver part has to receive the part of gesture signal and process on that and provide further instruction. The sequenced of the working of the project as follows:

1) Initially accelerometer MPU 6050 will take the gesture of hand. Where MPU 6050 is 6-axis accelerometer . It is mainly known as gyroscope.
2) Accelerometer provides the gestures to the ESP 8266(Wi-Fi module node mcu) .Node MCU is open source IOT platform. Also, it supports the arudino IDE programing software. By using node mcu gesture signal is transmit the signal using local server and local hotspot is the main station between transmitter and receiver. Which connect the transmitter and receiver.
3) Gesture signal is receive by the receiver. Receiver contain raspberry-pi. Raspberry pi process the gesture signal. Raspberry-Pi has built in Wi-Fi has 32 GPIO pins. It is small in size.
4) After reception of gesture signal and process on the signal. As per the signal or gesture raspberry- pi give instruction to MG 996R Servo motor.
5) Three motor is attached to the robotic arm one is at bottom, one at middle. Robotic arm moving as per the gesture.

IV. CONCLUSION

The theory behind the project was to implement a way to ease controlling a robotic arm to replace the traditional way and to design a wireless gesture controlled robotic arm to prevent workers from involving into dangerous tasks. Also, we want provide arm which is easy to use.

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