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Robotic Arm Control with Arduino

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ABSTRACT: Theaimofthisworkistopresent aninexpensive,light-weight andeasilycontrolledroboticarmbasedon Arduino Uno. The peculiarity of the arm is it responds to the instructions given by the humanoperator through WIFI-module.Althoughtherearemanyapproachestomaketh erobotworkwithoutcontrollingitmanuallybutunlikeo therapproachesthisapproachrendersmoreaccuracyan defficiencytotherobottoperform delicatetasks. Ourgoalisto develop a robotic arm which works in assisting people in their daily activities by picking and placing things. It also deals with sensing fire & temperature in surroundings and gives a buzzerThe robotic arm is made up of three modules: The arm, the Arduino,andtheWIFI-module. In this we could see an IP address named .org when we turn on phone WIFI. As soon as phone WIFI is connected to IP address then we use an app called TELNET. Through this app we enter IP address and port number of kit, according to that operation will be done by giving commands. These commands include *1# to *9# where each command has a particular direction. Finally, microcontroller will take desired controlling action on robotic arm.

KEYWORDS:LCD,MCU,LED,ROM,PCO LAN,DVD,VCC

I. INTRODUCTION

In this paper,Humans interact in the physical world by the means of the five senses. However, gestureshave been an important means of communication in the physical world from ancient times, evenbefore the invention of any language. In this era of machines taking control of every complex work,interactionswith machines have becomemore important than ever.Robots are classified into two types: Autonomous robots like Line sensing or edge sensingrobots, and Remote-controlled robots like Gesture controlled Robots. Since this paper deals withgesture-controlled robots,theprimaryfocuswillbeontheremotelycontroll edrobotsonly.Undoubtedly,theoutputandthefunction ingofmachineswillbemoreintuitiveiftheyarecommu nicated using human gestures.Agestureisaformofcommunication in a non-verbal manner by using visible bodymovementsoractionsconveyingmessages.Ther eareseveralwaystocaptureahumangesturethatamachi newouldbeabletounderstand.The gesture can be captured using a camera, or a dataglove. Gestures can also be captured via Bluetooth or infrared waves, Acoustic, Tactile, optical ormotion technological means.The embedded systems designed for specific control functions can be optimized to reducethe size and cost of the device, and increase the reliability and performance. With the advent ofSmartphones and other modern technologies, operating machines have become more flexible. TheSmartphone is equipped with an in-built accelerometer which may be used for gesture recognitionand such other tasks.

II . EXISTING SYSTEM

Remotebasedroboticarm

The robotic arm is a technical device that consists of the number of components, which areconnected to each other using servo motors. The robotic manipulator can perform a variety ofsimpletasks, such asgrabbing and movingobjects from oneposition to another.The robotic arm, according to the way it is controlled, belongs to one of the two subtypes:devices, which require human involvement to perform their task or autonomous ones. Autonomousrobotic arms are extensively utilized for assembly lines. Such usage of robotic manipulators takeshuman errors out of the equation and leads to the improvement in the quality and complexity ofproduction.The robotic arms are also used for accomplishing tasks in the unreachable or dangerousconditionsforhumans,includingbutnotlimi tingtotheradioactiveenvironmentandspaceexplorati on. First models of robotic arms didn't include any sensors and were expected to do onlyonespecifictask.However,throughoutthetimesi mplemanipulatorshavebecomecomplexdevices,

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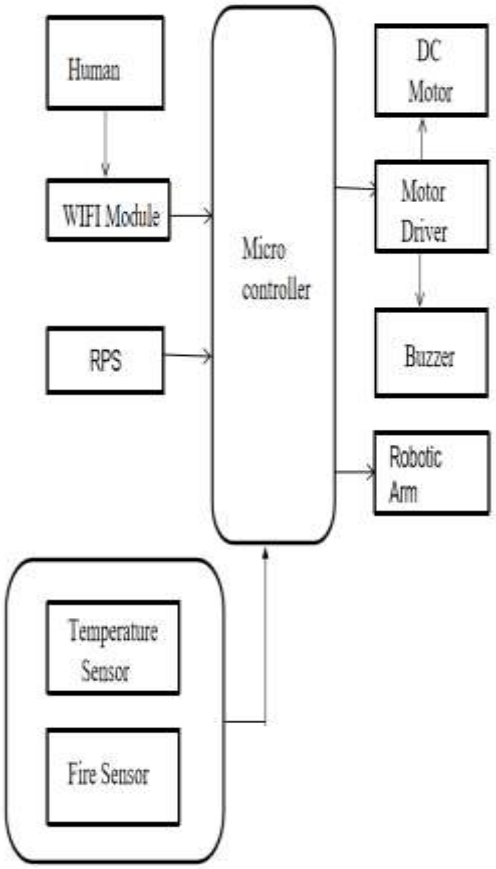
which can analyze the environment and make decisions based on the collected data.The simplest devices, used in the modern industry, have two or three servo motors, servingas links for the arm parts, however increase in the complexity of tasks requires the arm to have ahigher number of degrees of freedom.

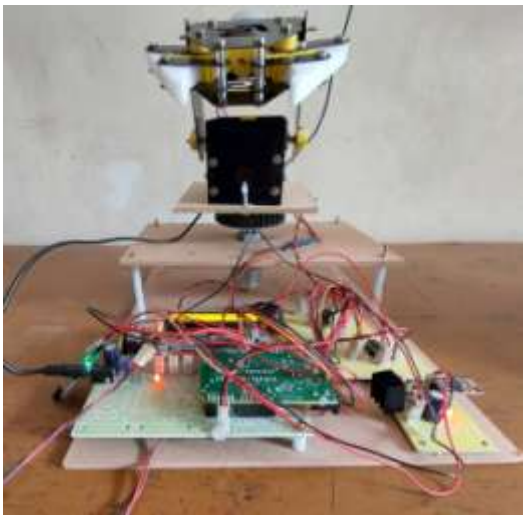
Bluetooth basedroboticarm

WIFI and Bluetooth are the most famous wireless technology that creates and managed wireless network with the of radio frequency waves. both them have the same mechanisms through which they develop the wireless networks for the organizations adopting but still there are some differences which make them different in use.

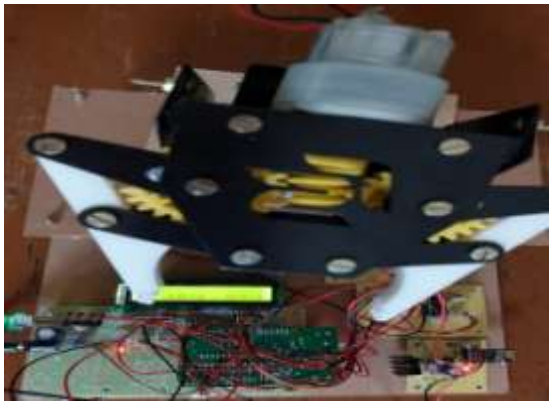
III . MODELING AND ANALYSIS



IV .RESULTS AND DISCUSSION



Practical output of pick and place robot



Practical output of sensor detection

V . CONCULSION

The robot can be used for surveillance purposes. The robot can be applied in a wheelchair where thewheelchair can be driven by the movements of the rider's hand. Wi-Fi can be used for communicationinsteadofBluetoothtoaccessitfromagreaterdistance.And also this paper concludes that robot can also used for pick and place.

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