



GESTURE & VOICE RECOGNITION OF P&P ROBOT by USING PIC MICROCONTROLLER

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Abstract— Today human machine collaboration is moving far from keypad and is getting to be unavoidable and significantly more perfect with the physical world. With new day, the association and hole amongst human and machine is decreased with the acquaintance of new innovation with facilitate the way of life. In all parts, the greater part of the job is finished by robots or automated arm having distinctive amount of level of flexibilities (DOF's) according to the necessity. This venture manages the Plan and Usage of a "Voice and Signal Controlled Automated Arm". The framework configuration is partitioned into three sections in particular: Voice acknowledgment module, Mechanical Arm and Accelerometer Part (Motion). Arm with Voice Acknowledgment is to make a remote voice controlled arm which can be worked throughout a scope of 10 meters (Line of site remove) utilizing transmitter and collector. The accelerometer is mounted or placed on the person hand, collecting its behavior and consequently the robotic arm moves. The diverse movements performed by automated arm are: pick and place/drop, raising and bringing down the items, waste cleaning.

Keywords—MEMS Sensor, Zigbee, Motor driver, PIC Microcontroller, Voice, Gesture

I. INTRODUCTION

Exceedingly relationship in human machine in step by step lives has made customer association powerfully basic. Expansion of sensor based impelled advancement complex human power and stress in electronic circuits has been essentially lowered the weight and zone of customer devices things. Motorization is the most a great part of the time spelled term in the field of equipment and electrical. The make progress toward motorization got various surprises the present headways. These had more conspicuous essentialness than some other progression due to its straightforward nature. The present rising advancement in the field of science is Robotics. It is the new rising shooting field of unfathomable use to people in the coming years. These days' different remote robots are being delivered and put to various applications and jobs. Remembering the true objective to update the dedication of robot in our step by step lives we need to find an effective strategy for talking with robots. Thus, there have been certain upgrades in zone of human- machine correspondence. MEMS accelerometer measures the increasing speed of the flag in three co-ordinates, for example, x-pivot, y-hub, and z-hub. To catch the hand movements on the web, the general MEMS sensor which can be worked with no outer reference and impediment in working conditions is utilized. In this task movement of the automated arm is control by voice and also hand motion. Here one manual switch that mounted on the automated arm area, in this in the event that we give the voice charge to the mechanical arm at that point switch is put on voice acknowledgment mode and in the event that we give the motion order to the mechanical arm at that point switch is put on signal acknowledgment mode physically.

Voice command is set to the voice recognition module with the help of Microphone; here user can give command into the Microphone. We know that output of a Microphone is analog in nature; it is given to the voice recognition module. It has ability to process that signal and give digital output. Then that signal is given to the MICRO controller and it is given to wireless transmission module for transmission. A hand Motion Control Robot is a sort of device which is controlled by the hand motions and not by utilizing catches. The robot is outfitted with two areas Transmitting segment and Accepting segment. In the Transmitting segment, the Accelerometer is mounted close by of the client catching its motion and moving the robot in like manner. For appointing legitimate levels to the info voltages from the accelerometer comparator IC is utilized. Encoder IC is then used to encode the four piece information which will later be transmitted by a RF Transmitter module. In the accepting area, they got encoded information by RF recipient module is then decoded utilizing a decoder IC which is then prepared by a

microcontroller and passed onto an engine driver to pivot the engines in an extraordinary setup to move the robot an indistinguishable way from that of the hand.

II. PROBLEM FORMULATION

We have encountered the problems in manual as well as remote controlling for home appliances such that, for physically disabled and old peoples it is difficult to control electronic devices which were used in their house. It is note that, difficult to switch on and off the devices like TV,FAN,LIGHT etc. when they needed and also difficult to control devices by one who were suffering from health problems and people who were facing difficulty to move towards switch board.

III DESIGN REQUIREMENTS

A.DC Motor

There are 4 exchanging components namely "high side left ", "high side right", "low side right", and "low side left".

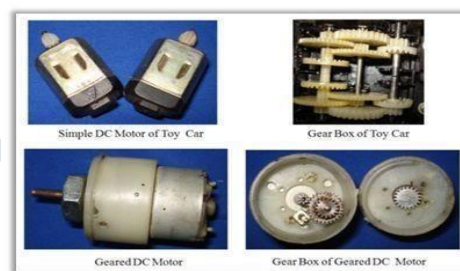


Figure 1: GEAR MOTOR

At the point when these switches are turned on sets engines alters its course as needs be. Similar to, if the switch on high side right and low side left at that point engine turns forward way, as present streams from control provide through the engine curl goes to ground by means of switch low side right.

B.GEAR MOTOR BENEFITS

Gear motors reduce the requirement for motor/gearhead couplings and get rid of any potential bearing arrangement troubles, widespread when a motor and gearhead are bolted in concert by an end-user (separable gearheads).

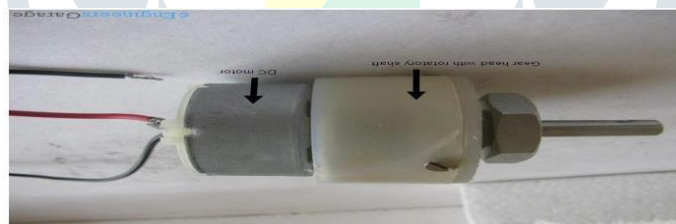


Figure 3: GEAR MOTOR

Misjoints can consequence in bearing malfunction owing to fretting corrosion. Separable motor and gearhead jointly make additional intellect in superior integral horsepower (>1 HP) applications. For example, after a 100-pound motor is placed to a 500-pound gearhead.

IV SYSTEM DESIGN

Mechanical framework is a coordinated arrangement of gadget that robotize generation and assembling of merchandise and administration's surgery. Mechanical lift and place robotization accelerates the way toward lifting parts up and putting them in new areas expanding generation rates. With man end of arm tooling choices accessible pick and place robot will be altered to fit particular generation necessities. Moving huge, little, overwhelming or difficult to-deal with items can be a simple errand to mechanize in the processing plant line. In our proposed framework mechanical technology has two sides transmitting side and accepting side. The underneath piece outline demonstrates the working of the framework.

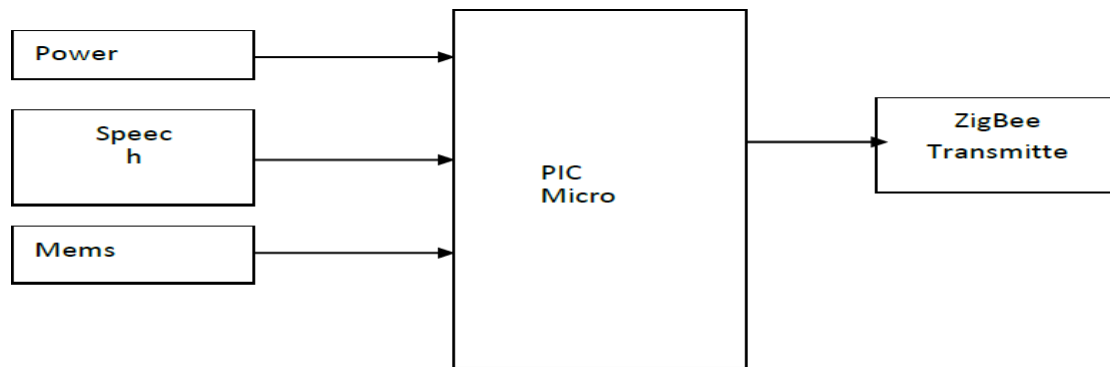


Figure 4: BLOCK DIAGRAM OF TRANSMITTER

Figure 4 show the transmitter section of the pick and place robot. It covers Zigbee transmitter, power supply, PIC Microcontroller, MEMS sensor; Speech recognition .It uses the speech recognition and mems sensor to transmit the signal. The signals from these both are sent to the PIC Microcontroller which detects and sends the signals to the ZigBee for further transmission.

Figure 5 show the receiver section of the pick and place robot. It contains power supply, Zigbee receiver, PIC Microcontroller, Motor driver .The signals from the transmitter section is received by Zigbee receiver. Then the signals are sent to the PIC Microcontroller. It detects the signals and sends them to the motor driver. The motor drives the robot with the corresponding instructions which are instructed by the instructor.

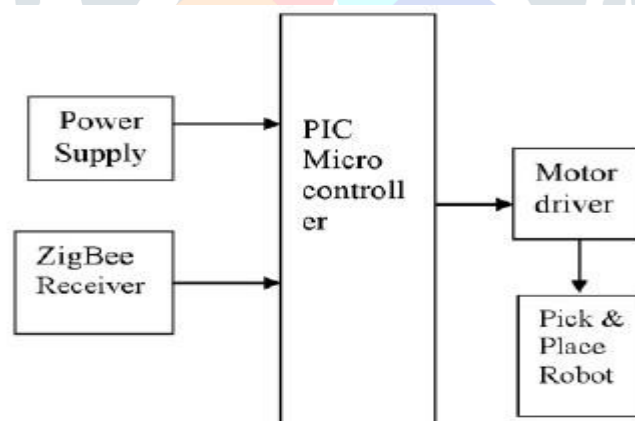


Figure 5: BLOCK DIAGRAM OF RECEIVER SIDE

V APPLICATIONS

- Garbage collection and waste disposal operation.
- It can be used for surveillance and also to pick up harmful objects like bombs and diffuse them safely.
- It is used in libraries of school, colleges.
- Newspaper printing press for picking bundles of papers.
- Industrial, home applications.

VI RESULT

The result consists of voice and gesture recognition of pick and place robot, it has been intended to function and control a robot using speech and voice recognition module. The robot is able to picking and placing many objects as shown in the below figure 6.

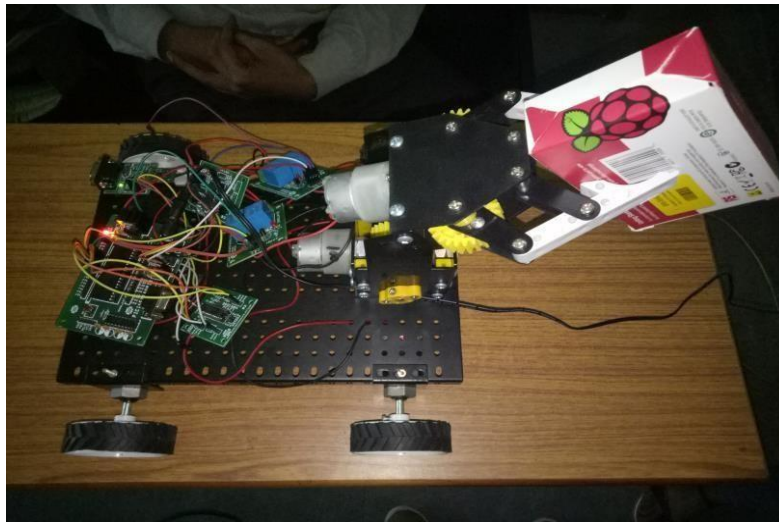


Figure 6: PICKING OF AN OBJECT

The below figure 7 shows the robot placing an object using robotic arm. The instruction to pick and place an object is given through voice.

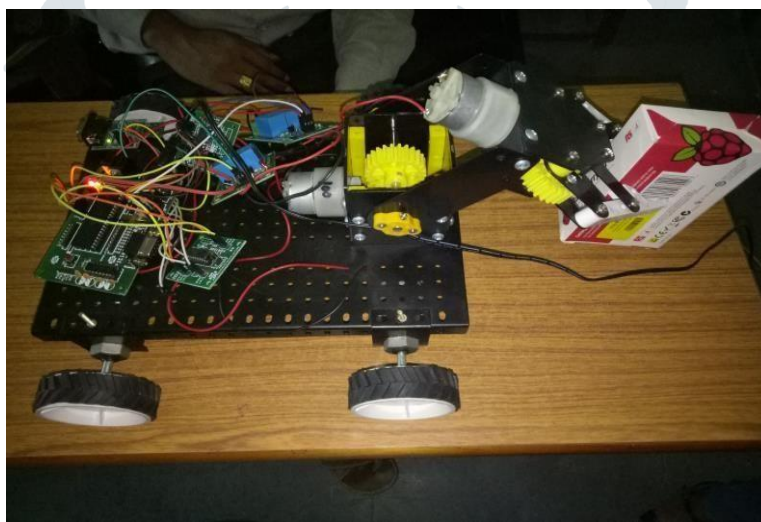


Figure 7: PLACING OF AN OBJECT

VII. CONCLSION

The Presented work gives the brief working of Gesture and voice related things management by Robotic Arm using MEMS sensors and Zigbee. The microcontroller with the block diagram which acts as the intermediary between the input and output has been successfully programmed using C compiler. This model finds its major uses in garbage collection and waste disposal operation, factories, libraries of schools and colleges etc.

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