DESIGN AND IMPLEMENTATION OF PICK AND PLACE ROBOT USING VOICE & GESTURE RECOGNITION

ABSTRACT

In today's world, in almost all sectors, most of the work is done by robots or robotic arm having different number of degree of freedoms (DOF's) as per the requirement. This project deals with the Design and Implementation of a "Voice and Gesture Controlled Robotic Arm". The system design is divided into 3 parts namely: Voice recognition module, Robotic Arm and Accelerometer Part (Gesture). Arm with Voice Recognition is to create a wireless voice controlled arm which can be operated through a range of 10 meters (Line of site distance) using CC2500 transmitter and receiver. It is basically an Accelerometer based system which controls a Robotic Arm wirelessly using a, small and low-cost, 3-axis (DOF's) accelerometer. The accelerometer is mounted / attached on the human hand, capturing its behavior and thus the robotic arm moves accordingly. The different motions performed by robotic arm are: pick and place / drop, raising and lowering the objects, trash cleaning, hi/hello.

PROPOSED METHODOLOGY

In this project motion of the robotic arm is control by voice as well as hand gesture .Here one manual switch that mounted on the robotic arm section, in this if we give the voice command to the robotic arm then switch is put on voice recognition mode and if we give the gesture command to the robotic arm then switch is put on gesture recognition mode manually. Here voice command is given 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 have 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 (CC2500) for transmission .that command/signal is received another transreceiver present at robotic arm section. And then that command/signal is send to the MICRO controller. MICRO controller generate a signal that is send to motor drive. We know that output of MICRO controller is insufficient to drive the dc motor so to increase strength of that signal we use motor drive(L298). Motor drive signal given to different motor that is use to controlled the motion of the robotic arm. Similarly for gesture recognition user can wear glove, on that gesture recognition sensor (accelerometer) is mount. That command is given to the ARM controller and signal transmission is takes place wirelessly. And at the receiver that signal send to the robotic arm. Hence robotic arm give the movement according to the signal.