Industrial Arm

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Abstract- *In recent years the industry and daily routine works are found to be more attracted and implemented through automation via Robots. The pick and place robot is one of the technologies in manufacturing industries which is designed to perform pick and place operations. The system is so designed that it eliminates the human error and human intervention to get more precise work. There are many fields in which human intervention is difficult but the process under consideration has to be operated and controlled this leads to the area in which robots find their applications. Literature suggests that the pick and place robots are designed, implemented in various fields such as; in bottle filling industry, packing industry, used in surveillance to detect and destroy the bombs etc. The project deals with implementing an pick and place robot using RoboArduino for any pick and place functions. The pick and place robot so implemented is controlled using RF signal. The chassis is supported for the displacement of robotic arm by four Omni wheels. The robotic arm implemented has two degrees of freedom. Many other features such as line follower, wall hugger, obstacle avoider, metal detector etc can be added to this robot for versatility of usage.*

I. INTRODUCTION

Since many years people try to replace human work with machines. Machines called robots are faster and more effective than people. The term robotics is practically defined as the study, design and use of robot systems for manufacturing. Robots are generally used to perform unsafe, hazardous, highly repetitive, and unpleasant tasks. They have many different functions such as material handling, assembly, arc welding, resistance welding and machine tool load and unload functions, painting, spraying, etc. Many elements of robots are built with inspiration from the nature. Construction of the manipulator as the arm of the robot is based on human arm. The robot has the ability to manipulate objects such as pick and place operations. It is also able to function by itself. The development of electronic industry robot system technology has been expanded increasingly. As one such application, the service robot with machine vision capability has been developed recently.

Present day industry is increasingly turning towards computer-based automation mainly due to the need for increased productivity and delivery of end products with uniform quality. The inflexibility and generally high cost of hard-automation systems, which have been used for automated manufacturing tasks in the past, have led to a broad based interest in the use of mechanical arm capable of performing a variety of manufacturing functions in a flexible environment and at lower costs.

II. AIM

To perform many tasks as a human arm. The simplicity of its design gave it the way to perform motion as good as a human arm with improved values of strength and speed.

III. PROBLEM STATEMENT

The pick and place robot being implemented to ease the process of sorting, process of moving heavy materials etc. Usually the transfer process of the heavy materials is being carried out, using man power and if the transfer process is repeated for a period of time, it can cause injuries to the operator. By using the particular robot the operator, will no longer have to bent and lift up heavy loads thus preventing injuries and increasing the efficiency of the work. Operator will make mistakes whether small or big in a while. In the industrial world, the industry cannot afford to take any kind of mistakes. As every mistake is costly whether interns of time, money and material.

VI. OBJECTIVE

The main objectives of this project are To control the displacement of the robotic arm¬ so that the arm can be used to pick and place the elements from any source to destination. To control the displacement and movement of robotic.To implement a robotic arm with two degrees offreedom.

V. ARCHITECTURE

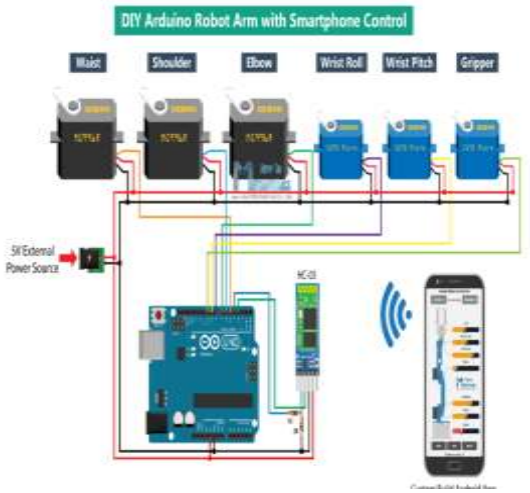

Fig1.1: Architecture

VI. SCOPE OF THE PROJECT

The robot so programmed for pick and place operation can be made versatile and more efficient by providing the feedback and making it to work on own than any human interventions. It can be made possible by image processing tool interfaced with this Arduino. The features that can be added on to improve its efficiency, make it operate on its own thought without any human intervention are line follower, wall hugger, obstacle avoider, metal detector, bomb diffuser etc.

VII. SOFTWARE REQUIREMENTS SPECIFICATION

- **System Operating** : Windows
- **Software** :Ardiuno IDE

VIII. HARDWARE REQUIREMENTS SPECIFICATION

- MG996R Servo Motor
- SG90 Micro Servo Motor
- HC-05 Bluetooth Module
- Arduino Board
- 5V 2A DC Power Supply

IX. CONCLUSIONS

The proposed concept of pick and place robot using Arduino is implemented via RF play station. It is found that, the robot so implemented has the ability to locate itself to the location where the object to be lifted is available with the help of chassis and four dc motors. Further depending upon controlling action provided to servo motor it lifts the object and locates the same at required destination.

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