

Project Report

Name of Project:
Robotic Arm



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1. Introduction

This project aims to create a robotic arm that is capable of lifting heavy objects. Often huge buildings collapse during earthquakes or by catching fire. Sometimes people get stuck within those collapsed structures. The rescue operation of which is quite challenging. The Robotic Arm can be of great help to the rescuers in those scenarios. This arm would be able to lift objects and it can also be controlled remotely. Arduino and its programming language are used to build this robotic arm. The movement is controlled by servo motors.

2. Motivation

The inspiration for the robotic arm came from its potential to revolutionize industries and solve real-world challenges. They have the potential to increase productivity, reduce costs and improve products and services, potentially assist individuals with disabilities, drive innovation, and encourage sustainable practices. The integration of robotic arms in the fields of manufacturing, healthcare, research, and education provides numerous benefits and a promising future for automation and collaboration between humans and robots.

3. Working Principle

Components used

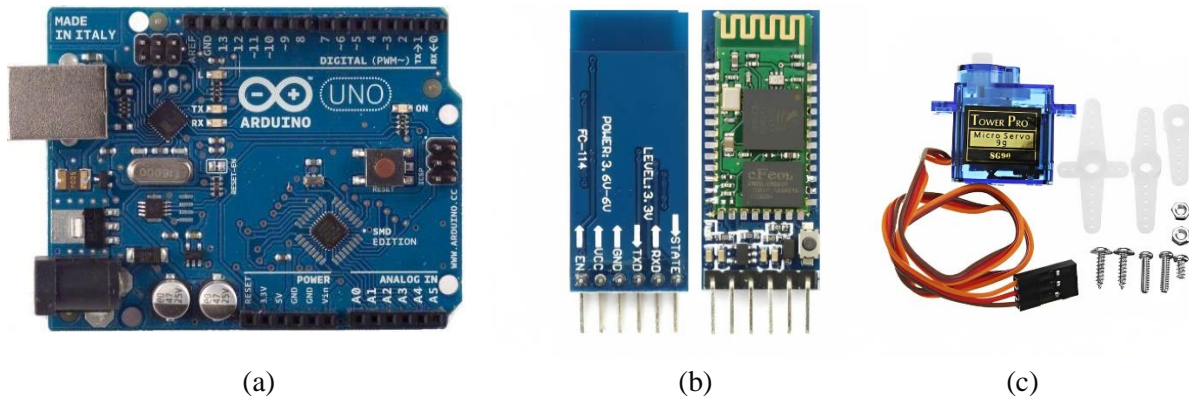


Fig:(a) Arduino Uno Revision 3.(b) HC-05 Bluetooth Module.(c) SG90 9G Micro Servo Motor

This Robotic Arm is controlled by Arduino Uno Rev3 and it uses an HC-05 Bluetooth module which can be used to communicate with the controller application. The movement of the arm is performed by four SG90 9G Micro Servo Motors. The whole arm is programmed using Arduino programming language which is a modified version of C or C++.

4. Application

- **Research and Development:** In the current era, the fields of robotics and artificial intelligence have gained researchers' significant interest. Several programs such as robotic arm technologies, novel control systems, or distinctive actuation techniques are areas that have been advancing continuously.
- **Agriculture and farming:** By using robotic arms for jobs like planting, harvesting, or sorting products, agriculture can improve production and streamline farming operations.

- **Safety and hazardous environments:** Using robotic arms to work in hazardous environments that could be unsafe for people is another significant goal. This can entail using poisonous substances, traveling over dangerous terrain, or working in hot conditions.
- **Accuracy and Precision:** Robotic arms are often designed to perform tasks with high accuracy and precision that exceeds human capabilities. This can be very important in industries such as electronics manufacturing, surgery, or handling delicate materials.
- **Space Exploration:** Robotic arms are employed in a variety of space exploration missions to handle and deploy experiments, manage items, and support astronauts while engaging in extravehicular activities.