Cyborg

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Abstract- *Nowadays, Robots are used in many major fields like Industries, Agriculture, nuclear energy, firefighting etc. and it is now possible to control robot wirelessly using Micro-controller, using these technology and with the help of Artificial intelligence and Android device to create voice-controlled robotic arm that can be used In various fields like small and large industries, automation plants, Assembly, Drilling, Cutting, Painting Automation, Polishing, Packaging, Part Transfer, Pick and Place etc that can be programmed for specific application. This can be also used for the disabled people, which provide them lot of independence.*

Keywords- voice controlled, robotic arm, robots

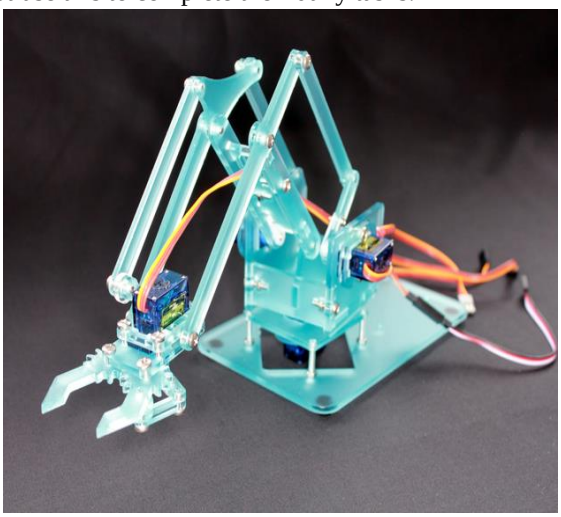
I. INTRODUCTION

In the modern world, robots and its variants are used in almost everywhere. Robots can be said as an electrical-mechanical device that can be controlled by a computer or a micro-controller. The robotic arm is a device or robot that can perform same functions as a human arm or hand. Robotic arm plays a major role in various industries. The robotic arm is used in welding, drilling, painting, picking and placing etc.
The biggest advantage of the robotic arm is that it can work in hazardous situations where a human cannot reach. Robotic arm has some variants like keyboard controlled, Gesture controlled, Remote controlled. Still, many industries use a tedious and time-consuming technique to program the robots. So our main motto is to control the robotic arm through the voice commands to provide an easy and convenient way. We will provide some basic commands that control the arm and then users can create and store their own commands for the combined task. Now, In the case where voice commands cannot be recognized, we will provide another way to control the arm so that, it can work in any way.

II. LITERATURE REVIEW

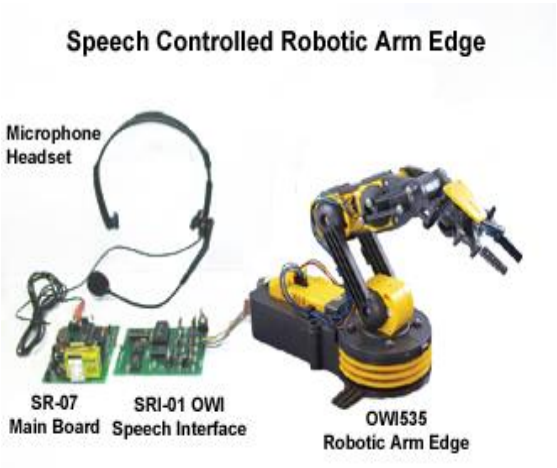
Many industries use robotic systems to complete their task and to automate the process. Industries use a robotic arm for drilling, picking and placing, welding, cutting, painting etc. People with some disabilities like paraplegia, spinal cord injuries, war-time injuries, or amputations rely on others to assist them in their daily work. Industries use time-consuming and tedious methods to accomplish these tasks, so our main goal is to provide a simple and easy solution to the industries and the people with disabilities to provide them independence so that they can use this robotic arm to accomplish their daily task.

MeArm 1 is a robotic arm which is open source project. This robotic arm is being used in the industries but the disadvantage is that this is not voice controlled so that people with disabilities cannot use this to complete their daily tasks.



(Not voice controlled
Source: https://Wikipedia.com)

Speech controlled robotic arm edge is another project which can be controlled through the voice commands but this needs the user to stay near to the speech recognition system and another disadvantage is that it cannot be used at the noisy environment and it has some specified commands only.



(Source: https://Wikipedia.com)

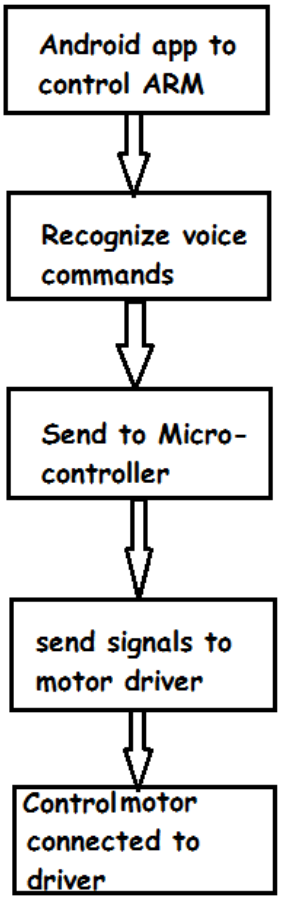
The existing system has some disadvantages which are as follows.

- Higher cost
- Less support
- Target environment indoor only
- Need to be present near the system as voice recognition system is integrated into the system
- Up to 32 commands supported only
- We cannot add our own commands

Under the consideration of these disadvantages, we have created this project to overcome all these disadvantages and to provide an easy and convenient way to use the product.

III. METHODOLOGY

In this product, the first thing to do is to recognize the voice commands. We will accomplish this task in the Android phone. We will create an android application to recognize the voice commands and then will convert it to the text using speech to text API.
Basic building block is as shown in the diagram.



The product will work as follows.

I. Android application will recognize the voice commands.

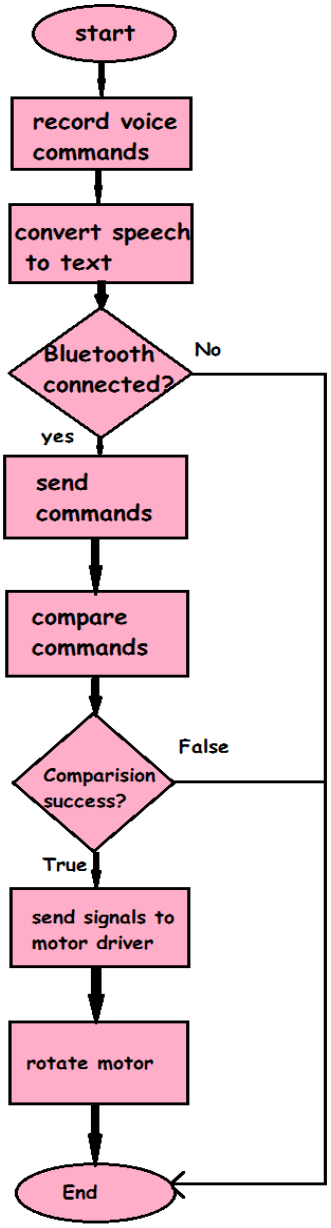
II. The application will convert the voice commands in the text using speech to text API.

III. After getting a text it will send the commands to the Micro-controller Arduino mega via Bluetooth.

IV. Arduino will compare the commands and then will send control signals to the relevant motor driver.

V. The motor driver then rotates and control the speed of the stepper motor connected to that driver.

Flow Diagram of the system is as follows.



IV. SPECIAL FEATURES

The existing system has some of the disadvantages so, to overcome these disadvantages there are some the special features which are listed below.

- We can use higher speed and accurate motors to increase speed and accuracy of the system.
- We can use object detection technique to identify the object between collections of the object.
- After Distance measurement, it would be able to identify how much distance to be traverse using this technique we can use it as a pick and place robot.
- By Embedding wheels to the base and with use of some motors we can move the robotic arm as a robot but we have to balance it using the gyroscope.

V. CONCLUSION

Cyborg is a micro-controller based robotic arm which can be controlled through voice commands given from android application via Bluetooth.

Our main motto is to provide an easy and convenient way to use the robotic arm and to help disabled people to do their daily task without any assistance.

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