Abstract: The android phone and raspberry pi board is connected through Wi-Fi. Because the name indicates the automatic arm is designed because it performs exactly the same activity like a human hand works. This paper proposes a technique for controlling a Automatic arm utilizing an application build in the android platform. An indication is produced in the android application that will be received through the raspberry pi board and also the automatic arm works according towards the predefined program. The android application is the command center from the automatic arm. This program is written within the python language within the raspberry board. He different data controls the arm rotation.

Keywords: Robotic ARM, Android Application, Raspberry Pi.

I. INTRODUCTION

Robots are more and more being built into working task to replace humans especially to operate on repeated actions. In general robots could be classified into different fields Industrial and service robotics. Service robots is really a robot which per forms semi or fully autonomously to do services use fully for that well-being of humans and equipments, excluding manufacturing procedures [1]. Alternatively hand internet and WI-FI have become most typical resource for everything. People prefer to go shopping online rather than getting them by hand Internet has become everywhere, compare to the final decades where internet is just wired, and people needs to become while watching computer to gain access to the web but now a days, internet is simply in the tip of the finger. This really is an advantage where we are able to introducing robot to house hold works. The robot is build robotically and electrical components were also accustomed to build the automatic arm. Mostly the internet controlled robots is going to be wired these wired robots possess some space limitation. To steer clear of the limitation, the automatic control is created wireless that’s, it's controlled by Wi-Fi [2]. Wirelessly does mean using Bluetooth but the advancement used this is actually the WI-FI that is most widely used nowadays.

The raspberry pi is really a credit-card-sized single-board computer which is produced by the United kingdom based Raspberry Pi Foundation. The Raspberry Pi has 17 GPIO pins. Using L293 motor driver boards, the Automatic Arm is controlled through the GPIO pins. A USB camera (i-Ball) can be used for visual feedback by supplying live video streaming with the Wi-Fi. The automatic arm will be controlled from an Android application build in android platform inside a wise phone. With the wireless connection the control is offered to the robotic arm. This automatic arm could be controlled via a wise phone and RASPBERRY PI serving as communication media between them. An android programs is coded in the android platform. Here Android application being the command center from the automatic arm because it instructions the arm to move or grab some things because the instruction is transferred towards the arm through android JAVA language. The controlling board that’s the Raspberry Pi has 17 GPIO pins. Using L293 motor driver boards, the Automatic Arm is controlled in the GPIO pins.

II. HARDWARE AND SOFTWARE

A. Raspberry PI

Raspberry pi is dependent on a Broadcom BCM2835 system on a chip (SoC). It incorporates an ARM1176JZF-S 700 MHz processor. The Raspberry Pi Foundation began served by a256MB RAM, that was labelled as Model A, and later made one B with 512MB RAM. The GPU used may be the Video Core IV, possessed through the Broadcom. The Raspberry Pi’s GPIO port is situated on top-left of the pcb, it's labelled as P1. It’s a 26-pinport, fitted with two rows of 13 male 2.54 mm headers at the factory [3]. The spacing of those headers is particularly important: 2.54 mm pin spacing,) is a type of sight in electronics, and it is the conventional spacing for prototyping plat forms which include ss trip board and breadboards. Each pin of the GPIO port features its own purpose, with several pins working together also it forms particular circuits.

B. Automatic ARM

The automatic arm has four rotational joints, the bottom, make, elbow and wrist. The bottom rotates the arm around the vertical z-axis, as the other three rotate it around the x-axis. The positive x-axis is mentioning of the page, and it is think of it as around the "right". Each joint has the rotation limit within the backwards and forwards directions as well as the wrist, elbow and shoulder, and also to the left and suitable for the bottom, that will become important later when rotations are implemented using position values and Gravity does mean the arm’s rotational velocity is not
constant that’s for instance, rotating the shoulder joint downwards will require a shorter period than rotating it upwards by the same amount. Take into consideration may be the battery power supply - because the batteries fade, the same is true the arm’s speed.

C. Android Application

Android application is definitely an application build within the android platform. All wise phone most broadly uses the android application (apps). The android programs built-in JAVA language. An indication is produced on clicking a particular button on the android application which enables the raspberry pi to make the arm move based on the predefined program. Here Android application to be the command center of the robotic arm because it instructions the arm to maneuver or grab. The instruction is passed towards the automatic arm through android java and Raspberry Pi. An application development package (SDK) is typically some software development tools that enables the creation of programs for ascertain software program, software framework, hard ware platform, computer, video gaming console, operating system, or similar development platform as shown in Fig.1. It might be something as simple because the implementation of a number of application programming interfaces (APIs) in the form of some libraries to interface to a particular programming language or to include sophisticated hardware that can communicate with a particular embedded.

![Fig.1. An Arm of a Robot.](image)

An average Android app is made for a smart phone for a tablet computer running on the Android Operating System. Google android apps are designed in the Java programming language and employ Java core libraries. They are first put together to Dalvik execution environment by modifying the Dalvik virtual machine, that is a virtual machine specifically designed for mobile products.

III. SYSTEM ARCHITECTURE

The wise phone is created by the newest technology based on the Android platform. It’s nearly all features which is available in personal computers and laptops. The raspberry pi is connected for the android while using the Wi-Fi network. The Edimax 150 mbps dongle is connected to the raspberry pi to support the Wi-Fi network. An android application is created in the android platform which supplies the signal since the instruction to the raspberry pi as well as the automatic arm is controlled. The four movements might be controlled in line with the different instructions given. The applying can’t send and obtain the data through the wi-fi. You’ll find really two type of connection to the wi-fi network in the pi. Router method: In this particular Wi-Fi of both pi and android phone are associated with an average router. Thus signal or instruction are delivering and received. Wi-Fi Direct method: In this particular method the data’s can been changed directly using the Wi-Fi involving the pi and the android phone. The automated arm has 5 motors, so 3 motor driver ICs are essential for your control of all the joints in the automatic arm. A triple L293 driver board which includes three L293D motor driver ICs is designed for the control of all the motors which is interfaced with the GPIO pins of Raspberry Pi. The enable pin needs to be made high for your motor to function by modifying the of the input pins, we could affect the direction of motion in the arm. Each driver IC can control a maximum of two motors. A total of 15 GPIO pins of Raspberry Pi can be used as the control of all the joints of automatic arm. For just about any motor driver IC like L293D, we must provide separate power for both the IC and motors associated with it [4]. As all the motors of the arm works at 5V, only one 5V supply is provided for the IC as well as the motor.

IV. CONCLUSION

The Raspberry Pi can be used as the charge of a Robotic Arm with Smartphone from the remote area. The present scenario internet controlled robot has lots of disadvantages such as wired limitations and server problems. In this smart phone technique the delay and server problems are reduced because the Wi-Fi can be used the quickest usage of internet. In present situation most people uses the smart phone worldwide. The automatic arm are capable of doing nearly same actions while using stepper and Electricity motors getting aprecise control.

V. REFERENCES


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