

Robotic ARM Control Using IoT Technology

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ABSTRACT

Recently, android mobile phone has become very useful for our day to day life. Our daily living style has become smarter due to smart works. Smart works means physically we won't get much strained instead of us we are making use of robots. Robotic technology is playing a key role in the present technologies and in future we can see a lot of improvements in this technology. There are some works where we can't handle it physically. Those works like removing bomb, Lifting heavy objects, picking hot Objects, Carrying objects in dangerous Places, Saving person/things in earthquake. To solve this problem we are implementing a Robot. This robot can pick and place the object in the desired place. Here, we are controlling the robot through wi-fi control.

Key words: ARM7, Wi-Fi, ARM module

INTRODUCTION

Robots are with us for fewer than fifty years however the thought of inanimate creations represents a sincere bid whose success is far older. However real robots failed to acquire existence till Fifties and 60s. With the growing invention of transistors and integrated circuits, industry accessorial brains to the sinew of already existing machines. In 1959, researchers

illustrated the possibility of robotic producing once they unveiled a computer-controlled milling machine. Bluetooth technology was created by medium seller Ericsson in 1994.

Android is Associate in Nursing package created by Google that's open-source. With such feature, golem grows chop-chop since individuals will develop their own applications while not the burden of bound rules. Several application developers have contributed to make applications that run on this package. There's one UN agency focuses on making the appliance of game, one who focuses on making the appliance of social media. Sometimes a smart-phone is supplied with many sensors, like measuring system device. The measuring system device could be a device that may live the acceleration thanks to gravity and vibration [1]. In android, this device is employed to regulate the landscape or vertical position changes on the good phone screen and set the hand movements as a tool for play consoles. On the opposite hand golem technology is developing chop-chop, not solely in code however additionally the hardware. Currently, it's already been developed a golem that may move flexibly, referred to as Omni-directional golem. The golem will move left and right and might be turned on the axis purpose [2]. Supported the exposure and a few analysis that are done antecedently, this analysis

developed a system to manage golem motion, in accordance with the lean of measuring system device for golem smart-phone. In different words, the smart-phones are used as a distant management for golem movement.

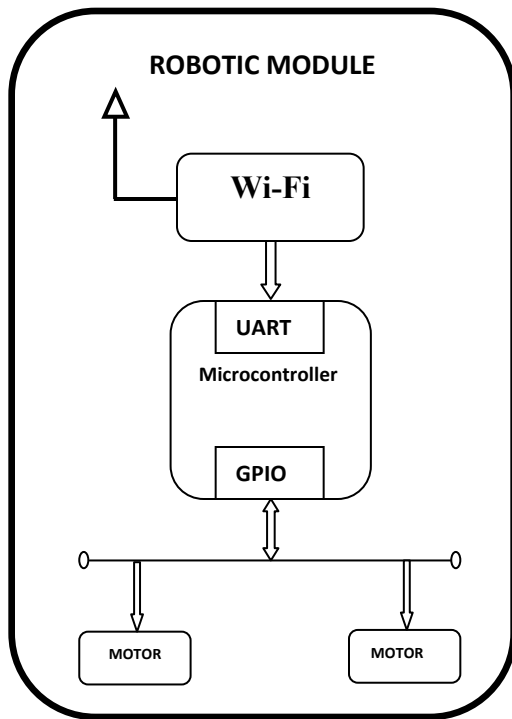


Fig: Block Diagram

III. System Hardware

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power

it with a AC-to-DC adapter or battery to get started.. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

L293D:

L293D is a dual H-bridge motor driver integrated circuit (IC). Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors. L293D contains two inbuilt H-bridge driver circuits. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively.

DC motor:

DC motors are configured in many types and sizes, including brush less, servo, and gear motor types. A motor consists of a rotor and a permanent magnetic field stator. The magnetic field is maintained using either permanent magnets or electromagnetic windings..Motors are the devices that provide the actual speed and torque in a drive system. This family includes AC motor types (single and multiphase motors, universal, servo motors, induction, synchronous, and gear motor) and DC motors (brush less, servo motor, and gear motor) as well as linear, stepper and air motors, and motor contactors and

Wireless communication:

Wi-Fi:

In this project , an Wi-Fi module based on the universal serial interface network standard, built-in TCP / IP protocol stack, enabling the user serial port, Ethernet, wireless network (wifi) interface between the conversions. Through the device, the traditional serial devices do not need to change any configuration; data can be transmitted through the Internet network. The sensor datas will be transmitted to the cloud network through this module.

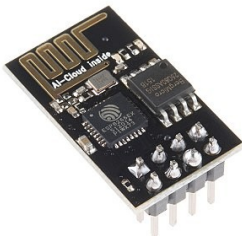


Fig: Wi-Fi module

Android Mobile phone app:

1) Remote Controller

Android Mobile phone app: - Switch ESP8266 Remote Controller

Here, we are giving remote button instructions to microcontroller via android mobile voice app. There are few simple steps to follow, remote app to work.

- Download and install switch ESP8266 app from Google Play Store.



Fig: Smart ESP8266 App

- You have to turn on Wi-Fi module interfaced on microcontroller board and open Switch ESP8266 app. It will get connected by turning on the Wi-Fi networks.
- Tap on options, you get update and settings. In setting select Edit Mode to create required number of buttons and variables.
- It takes some time to connect to Wi-Fi module, give commands only when it says connected.
- Now, you can press buttons to move the motor via Wi-Fi to microcontroller.

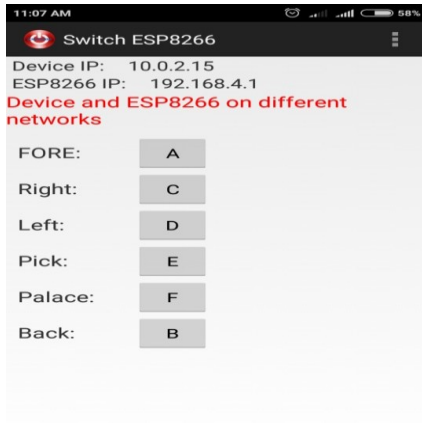


Fig: Switch ESP8266 Buttons

- Here, you can edit the button as per your requirements.
- By pressing + button, you will create a new button.
- By pressing – button, you will edit the current button.

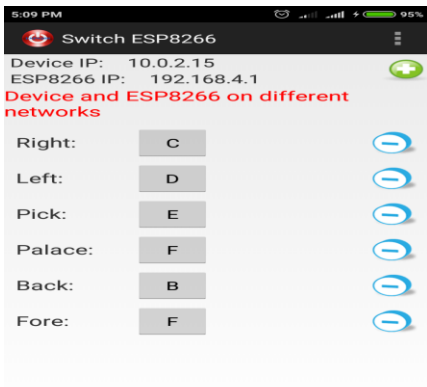


Fig: 3.3.2.3 - To edit the Switch ESP8266 App Buttons

- You can set the variable and label names for buttons

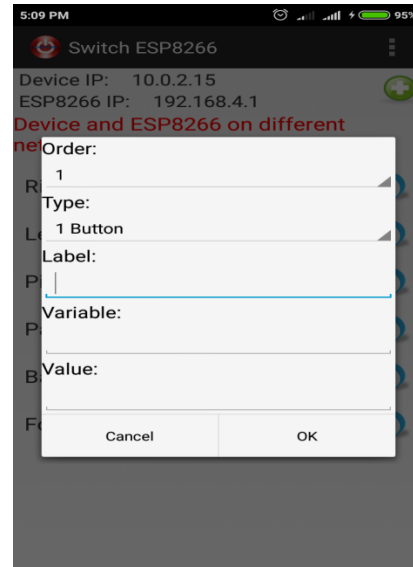


Fig: Creating names for new buttons

V. Conclusion

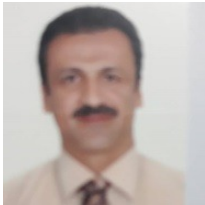
Now a day's people are giving preference to smart works. In our project we are implemented a robot which decreases man power and increases work efficiency. This robot is used for picking and placing an object in desired place by controlling the robot through remote. We are giving instructions to robot by remote. Instructions like left/ right/ forward/ backward/ pick/ place which are given to robot by remote/hyper terminal in pc and performs that particular action and picks the object and places the object at the desired location.

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