



LIVE VIDEO STREAMING & CONTROLLING USING ANDROID APPLICATION

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Abstract- Our system is based on providing an easy way of controlling wireless hardware through mobile. Using Arduino Board & our mobile Application we can generate a path between the wireless object. Live video streaming is enabled & can be seen using the mobile application without any delay through the interface of transmitter kit .Easy accessing of the hardware using a Single Mobile Application in standby place.

Keyword- Wifi module ESP8266, Android mobile, IP address, Camera OV7670, Arduino IDE, JAVA, XML, Embedded Program.

I.Introduction

Wireless technologies are bringing future to present. Wifi is a one such wireless technology which is reshaping the way we live and work. It is an implementation of a protocol defined by the Bandwith. The protocol operates in the unlicensed industrial, scientific and medical (ISM) band at 2.4 to 2.485 GHz, using a spread spectrum, frequency hopping, full-duplex signal at a nominal rate of 1600 hops/sec. The 2.4 GHz ISM band is available and

unlicensed in most countries. About 13 percent of Mobile Phones shipped in the United States in 2004 had Wifi, according to IDC research. The number will grow to about 53 percent globally and 65 percent in the United States alone by 2008. The current work envisages the utilization of these Mobile Phones as remote controls to Hardware Controller.

II. Proposed System

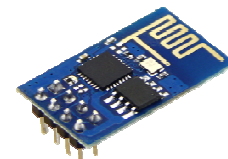
Our primary objective is to create the interface between the Android Mobile and hardware using the wifi modules esp8266.Using these wifi mobile we can able to live stream the video from the camera module ov7670 to the android mobile. And also can able to control the servo motor sg90 using the mobile phone.

III.Problems and Solutions

While developing the application for our wifi interface project we have divided the problem into two Hardware and Software:

1.Hardware

The most of the hardware which we have used in this project is highly effective one. Some of our hardware are highly voltage carry able and some of them carries are low voltage. The voltage depends upon the hardware we used, so proper voltage supplier must be provided in order to bring out the better functionality of hardware's. Below are some of the hardware used in the Live video and controlling the using android studio and atmel.



ESP8266 Wifi Module



It is the wifi module used for programming our interface in order to bring the connectivity between the android mobile and this wifi module. Via this wifi module all the functionality of the hardware are carried out.



Servo Motor (SG90)

Most of the robotics project are made using the servo motor. The mini servo motor carries only 5 volt current for its working purpose. Servo motor is used in our project to control the direction of our ball.



Camera ov7670

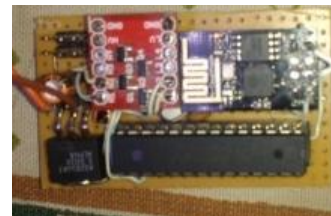
Live video streaming is performed using this camera. It consist of temporary memory for storing the picture temporarily until the picture is transmitted.



Arduino Board UNO

Arduino is an open source, computer hardware and software company, project, and user community

that designs and manufactures microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL), permitting the manufacture of Arduino boards and software distribution by anyone. Arduino boards are available commercially in preassembled form, or as do-it-yourself kits. Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (*shields*) and other circuits. The boards feature serial communications interfaces, including Universal Serial Bus (USB) on some models, which are also used for loading programs from personal computers. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++. In addition to using traditional compiler toolchains, the Arduino project provides an integrated development environment (IDE) based on the Processing language project. The main purpose of arduino board is to import the embedded program into the Integrated chip(IC). And also all the connectivity port for the hardware is pinned in the board. [8] proposed a secure hash message authentication code. A secure hash message authentication code to avoid certificate revocation list checking is proposed for vehicular ad hoc networks (VANETs). The group signature scheme is widely used in VANETs for secure communication, the existing systems based on group signature scheme provides verification delay in certificate revocation list checking. In order to overcome this delay this paper uses a Hash message authentication code (HMAC).



Combining all these hardware we have minimised them into small module for space consumption.



2. Software

We have developed android application software for accessing this hardware's. JAVA programming code is used for button functionality. XML programming code is used for creation the graphical buttons for accessing the controls. Both the JAVA & XML coding are combined together for developing android application. Java (programming language)

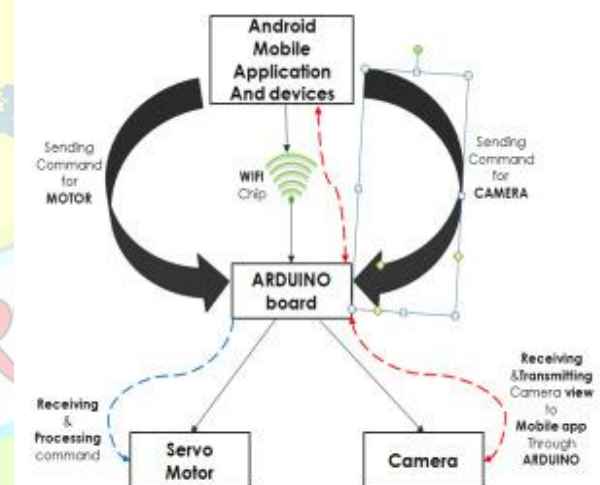
Is about a programming language. For the software package downloaded from java.com, see Java SE. Not to be confused with JavaScript. Java is a general-purpose. XML definition of XML-based languages, while programmers have developed many application programming interfaces (APIs) to aid the processing of XML data. Hundreds. Android software development is the process by which new applications are created for the Android operating system. Applications are usually developed in Java programming language using the Android software development kit (SDK), but other development environments are also available.



Above is the sample output for android application. The c program is implemented in order to use the Embedded program into the Integrated Chip(IC). To Import this embedded program we are using Arduino IDE software .

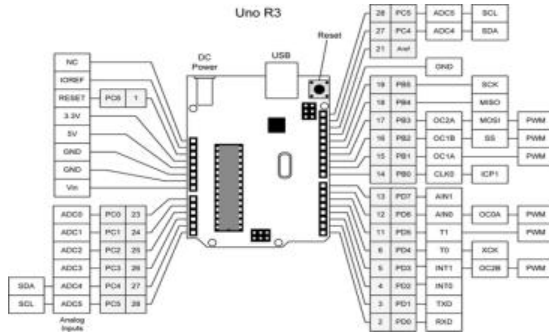
IV. Architecture

Below is the simple diagrammatic Representation of our Live video streaming and controlling using android mobile. In this architecture the Android mobile Application and devices play's a vital role. The Android application send the function message to the Arduino board. The arduino consist of Integrated Chip in which all the functions and programmes are stored in it. It sends the message to the camera to capture the picture and transmits the picture to the android mobile application. The camera module consist of temporary memory to store the captured picture. Once the captured picture is sent to the mobile it will automatically erase the stored pictures in the camera module. And then the android application also have the capacity to control the motor speed and direction.



V. Circuit Diagram

The below circuit diagram consist of arduino board functionality and also its pin connectivity. Using this circuit diagram we can able to configure this functionality according to our preference.



V. Working Process

Connect the android mobile using the Wifi module name. Use the ip address to check the correct connectivity of our wifi. Our wifi ip address is 192.168.4.1. Now open our android application and access the control of the motor Left, Right, Front & Back. Click view image button to capture the image through camera and display in the mobile app.

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