R-MCC (Remotely Mobile Control Car)

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Abstract -*At present, more and more mobile phones have powerful functions. therefore, new solutions are provided by the mobile devices for remote control of model car. People can control the car at anytime and anywhere by using phones. A remote toy car controlled by an android mobile platform with Wi-Fi technology. The system combined with an android mobile platform and a two-wheel car which is under control. The mobile platform requests to connect with the car then sends instructions to microcontroller via a firebase server to control it. The car is composed with 2 step motors with their drivers and main microcontroller which accepts instructions from Android mobile platform through the firebase server, meanwhile, status information that is collected through the camera fitted Infront of the car is sent to the application software*

1.INTRODUCTION

The idea behind this project is to develop a mobile application to control the toy car remotely with server. Project consist of an Android App which will be remotely connected to a toy car via firebase server. Car will have the ability to reach anywhere anytime. The car will have camera in front of it and recording (i.e., live streaming) of the camera will be displayed on Android App through cloud.

2.LITERATURE SURVEY

In [1] On the client side, users built a connection with server, and then send a request through J2ME.On the server-side CGI accept the client request and then invoke interface to control it. When the application is run in emulator, the connection with IP camera is set up. The images which IP camera sends to client continuously are displayed in mobile phone.

The mobile phone will display the exactly status of model car when control it. users control the car running at 8 directions, numbers 1,2,3,4,6,7,8,9 mean 8 directions--moving forward, reverse, left forward, right forward, left, right and 5 means the home position of camera.

In [2] This project proposes a design and implementation of a remote-controlled car by wi-fi technology via computer or mobile devices. wireless software and hardware technologies have been used, such as wireless module of ESP8266 for transceiver, Arduino Uno as microcontroller, an H-bridge L293D IC for motor controller, and to move the automobile electric DC motors are used. Two objectives of this project are to expand the limitation range of a normal radio frequency car using wi-fi technology and also to create a technology for automobile that operates in daily life with a control system. The performance depends on the device signal strength.

In [3] A remote toy car is controlled by an android mobile platform with Bluetooth technology. The system is combined with an android mobile platform and a 2-wheel small car which is under control. The platform requests to connect with the small car then sends instructions to control it by calling the android system Bluetooth API. The small car is composed with 2 step motors with their drivers and MCU chip, connects with and accepts instructions from Android mobile platform through the BT module, meanwhile, status information is sent to the application software.

In [4] Project is to design and build a fully functional product based on interaction of an embedded system and a smart mobile device. Platforms used is Arduino Uno on the embedded system side and an Android application on the side of a smart mobile device.

Commonly used microcontrollers are based on Reduced Instruction Set Computing or Complex Instruction Set Computing architecture. Wi-Fi is a very popular choice when connecting embedded systems and smart mobile devices since both can easily be modified to work together. It has only one activity. Connection can be established or terminated using menu button or action bar. The application requires Bluetooth and Bluetooth admin system permissions. When 'Connect' option is selected, application looks for the name of the device in the list of paired devices. If the designated device is found, two streams are created and initialized. Mobile application allows user to take control of model boats movement, read out the sensor data and adjust parameters of collision avoidance system.

In [5] The Augmented Car uses an Android application to make it controllable through online software services. It consists of both hardware and software components, this car includes two DC motors for 2-axes movement, a rechargeable 9V battery and front and back lights (LEDs). An Arduino UNO micro-controller board has been used to control the lights and the motors. For an efficient motor controlling, a L298N Dual H-Bridge module has been used.

The camera, microphone, speakers and the Wi-Fi capabilities of the smartphone is utilized in order to achieve the target goals. Adafruit Pro Trinket micro-controller (5V -16MHz) connected with an Ultrasonic Ranging Module (HC - SR04) and a Piezo Buzzer, has been attached to the above system, A router with WIFI capabilities has been used.

3. APPLICATIONS

3.1 Existing System

The existing system provides features such as connecting to the car via Bluetooth and controlling it using keypad mobile phones. Some of them use old technologies which is also expensive.

3.2 Proposed System

- To control the car remotely from anywhere and anytime.

- For people to experience real time driving.

- For children to play with car and control it remotely via application with live video streaming.

3.2 Scope

- The project can help to solve the real-time problem of seeing the things in small risky areas where people can't reach.

- The project can be used to help investigators and detectives to capture some important evidence from dangerous areas.

- It will give real time driving experience for children and other people as the Entertainment purpose by giving live streaming of video on mobile application.

3.4 Technologies Used

Software Requirements:

1. Android Studio IDE 4.1.0

2. Arduino IDE 1.8.1.0

3. Firebase Cloud Server

Hardware Requirements:

1. Esp8266 micro-controller

2. IP camera, jio-fi router with sim-card and power bank

3. Servo and Geared motors, relays and other basic toy car parts.

3.5 Working of the System

The working of the project is just like a remote-control car but instead of remote, mobile application is used to control the car. It will have a camera in front of the car and live streaming will be shown on Android mobile App through cloud. The basic working of the project is that signals will be sent from mobile app to firebase cloud server and from that it will get received by the esp32 or esp8266 microcontroller and the car will get controlled. Esp32 chip has in-build firebase and camera is connected to it externally.
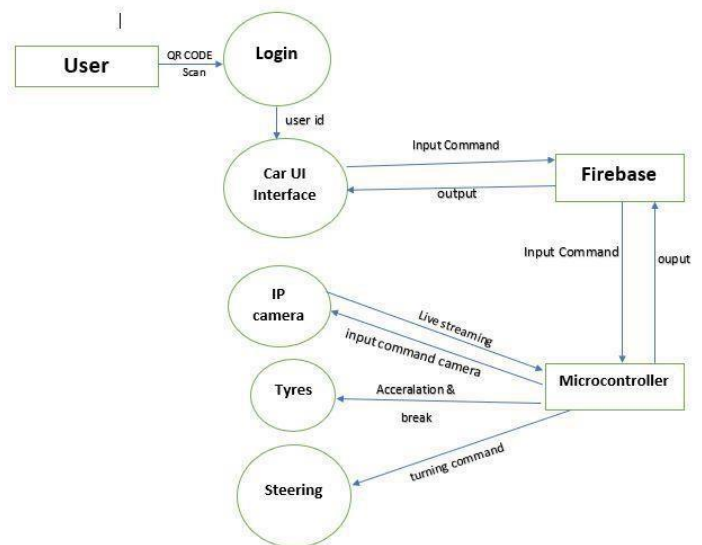

Fig.1. Working of the system

4. CONCLUSION

The project titled "R-MCC (Remotely Mobile Control Car)." has been developed using Android Studio (to develop Mobile App), Firebase Cloud Server, Esp32 microcontroller with Camera. The basic working of the project is that signals will be sent from mobile app to firebase cloud server and from that it will get received by the esp32 or esp8266 microcontroller and it will get controlled. Esp32 chip has in-build firebase and camera will be connected to it externally. The main important point is that our system is similar yet different from existing systems. All the existing systems have different drawbacks but one of them is common in all, which is all of them are bombarding the user will too much information. But this system saves the users time and is also easy to use.

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