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Wi-Fi Controlled Car

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Abstract–The aim of this project is to create a prototype of smart phone-controlled robot automobile that can carry out a variety of tasks in order to create a robot that is Extremely strong and adaptable while also using the least amount of technology possible. The ESP8266 utilized in this project as the main component, with which all other components are interfaced A smartphone and a Wi-Fi module are used to wirelessly control the developed car. Additionally, a Front mounted camera allows for viewing of acquired photographs on a smartphone. We may further control the car through Wi-Fi by just watching video streaming, and a live feed is available to track every move the car makes. It might be challenging to create monitoring and surveillance systems. developing surveillance and monitoring systems can be quite challenging at times, since the systems should be designed with consideration of the environment to be monitored. Good surveillance systems should have dynamic functionality, e.g. mobile surveillance cameras, and be able to move around the monitored area. One scenario that requires such mobile surveillance is to monitor a large multi-store building, which will lead to high costs to install multiple cameras in multiple locations. Monitoring such a large area will also be a challenge for security guards, as it will take them too long to patrol all locations. which would incur a high cost to install many cameras at many places. Monitoring such a large area would also be a challenge for the security officers, as they will need to spend too much time to patrol covering all places.

Key Words: Node MCU, ESP8266, Node MCU, Internet of Things, Wi-Fi,Motor Driver

1. INTRODUCTION

The internet has grown to be a necessity in our life. Most people rely on the Internet to do numerous jobs and to easy their life. In fact, the majority of folks utilize a gadget that is Internet. The Internet serves a variety of purposes, including education, task-solving, process automation, entertainment, and data processing. The "Internet of Things," a new technology, has recently started to find a place in people's life to facilitate their varied activities without them feeling too exhausted. There are two types of Internet of Things (IoT): consumer and industrial. new technology model called the Internet of Things (IoT) envisions a global network of interconnected gadgets. IoT is widely acknowledged as one of the most significant fields of the future. [1] Everything is possible thanks to the internet of things. One of the instances is our project, which involves a robot car.

This vehicle has a spy camera that can be operated using a mobile device connection. From a single location. We may watch live on our mobile devices. This vehicle can be used for tasks like saving animals trapped in regions that are inaccessible to people. It is used to keep eye on the zoo - animals as well as for surveillance. The most significant use for this car is that it can assist in getting people to some endangered locations that are off- limits to them due to security concerns. The motor driver for this vehicle is an Arduino Uno. The esp32 camera module serves as a bridge between Mobile device and a car by live Streaming the software we created for this project, which acts as a virtual joystick for controlling the car from a mobile device. Wi-Fi has a significant impact on this. which the vehicle and mobile device can communicate.

2. LITERATURE REVIEW

This article describes they tackle the development of a robotic car with hardware control, lane detection, mapping. there goal is a fully independent, decent and robust system that can traverse a single lane path traverse by white lines on an optimal path.. By 2030, it is assumed that the cabin of a car cabin will mostly resemble a living room, and internet connectivity will become one of the most importantenablers for new content delivery. Streaming media in such an environment poses a challenge, given that reliability and adequate 4G and coming 5G networks aremandatory.

We have designed and developed a robotic car for remote monitoring and control through Bluetooth. The car is programmed with auto-stability algorithms based on ultrasonic sensors. In addition to this, the car is also capable of transmitting live streaming video through an IP based Webcam.

Most of the existing video storage systems rely on offline processing to support feature-based indexing on video streams. RTFI achieves its real-time goal via incorporating metadata structure and data placement, as well as the capability of modern object detector (i.e., YOLO v3). Study proposes a real-time feature indexing (RTFI) system for enabling video storing with the identified object categories and making the video content searchable in a real time approach. RTFI can improve thesystem's throughput by up to

10.60x, compared with the base system without the proposed design.

This paper researchers have proposed a solution that makes it possible for an emergency car to start treatment in the event of an accident or illness already during transmit to hospital. Video streaming solution provides a video link between ambulance paramedics and the doctor on the emergency car. Each ambulance comes equipped with a 4G camera with an assigned phone number.

We found a way to control a robot using application built in the Android Platform. The purpose of this document is to control the robot up, down, left, and right, and get a live video stream on an Android phone from a ESP camera.

Surveillance systems need to have dynamic features, e.g., mobile cameras that can move around an area. We propose a surveillance system based on a moving camera carried by a Wi-Fi remote controlled car. Users can be inthe next room, the next building, or in another country while controlling the vehicle via the Internet. A web interface enables live video streaming and allows users to control the movement of the RC car using the navigation control panel.

Video analytics is one of the killer applications in edge computing. We implement an edge video capturing and processing platform on a Raspberry Pi board and an Alpha Bot smart car. The platform consists of mobile video capture, data processing, and load balancing of multiple users while concurrently streaming edge serverlive video.

3.GENERAL SYSTEM DESIGN

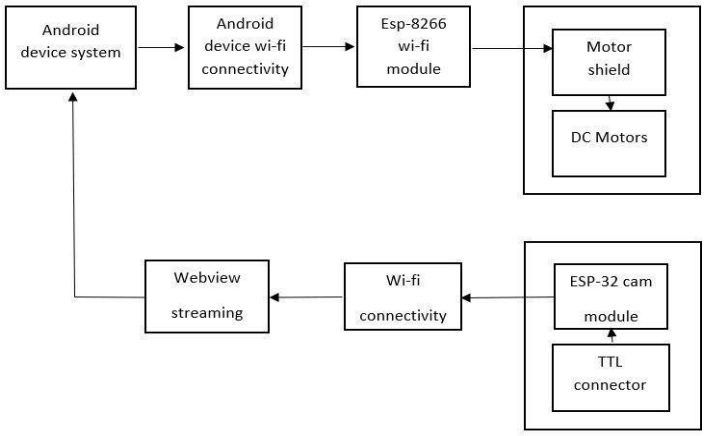

Fig-1: Block Diagram

4.COMPONENTS

1. Motor Driver

Here, a H Bridge motor drive called the L298n is utilized. This motor drive has numerous controls, including motor A and B controls.

A device constantly needs push to complete its task. In his approach, power plays a crucial role in how Node MCU functions. If two components have different powersupplies, the output is better. Any voltage level, including 9 volts, 12 volts, and others, can be used

2. Esp-32

The ESP32CAM is widely applicable in numerous IoT applications. It is appropriate for IoT applications such as wireless positioning system signals, industrial wireless s control, wireless monitoring, QR wireless identificationn, and smart home gadgets. For IoT applications, it is the perfect answer.

3. Node Mcu (ESP-8266)

Even if it has already been incorporated with esp12. For IoT start-up students, it is ideal. Both devices that use Wi-Fi and tethering Hotspot are compatible. Here, we areutilizing the Arduino IDE to create this prototype. In thisprototype, the Node MCU connects to the router, which has an IP address that our computer or mobile device canuse. in order for us to host or operate the prototype usingthe installed application.

4. Power Supply

Consumer electronics frequently use lithium batteries. They have high energy-to weight ratios, a high no load voltage, a low self- discharge rate, no memory effect, and a gradual loss of charge when not in use, making them one of the most wwidely used types of rechargeable batteries for portable gadgets. For our project, we used an 11.1V 25000mah Li-ion battery.

5. SYSTEM OVERVIEW

An overview of the prototype design will be presented first, followed by some details of the proposed algorithm. To connect to the server, the system will rely on a Wi-Fi network that allows data to be transferred to the Web server. The Wi-Fi allows the RC car to access the Internet at broadband speeds once connected to an access point. Wi-Fi has been chosen over since Wi-Fi have all specifications needed for this system. For instance, Wi-Fi allows some security measure to be imposed if needed, e.g, a user that is not connected to the same network, will not be able to control the RC car via the web interface. This project is limited to an area that has network coverage only and the camera used can only provide frontal views.

6. FLOWCHART

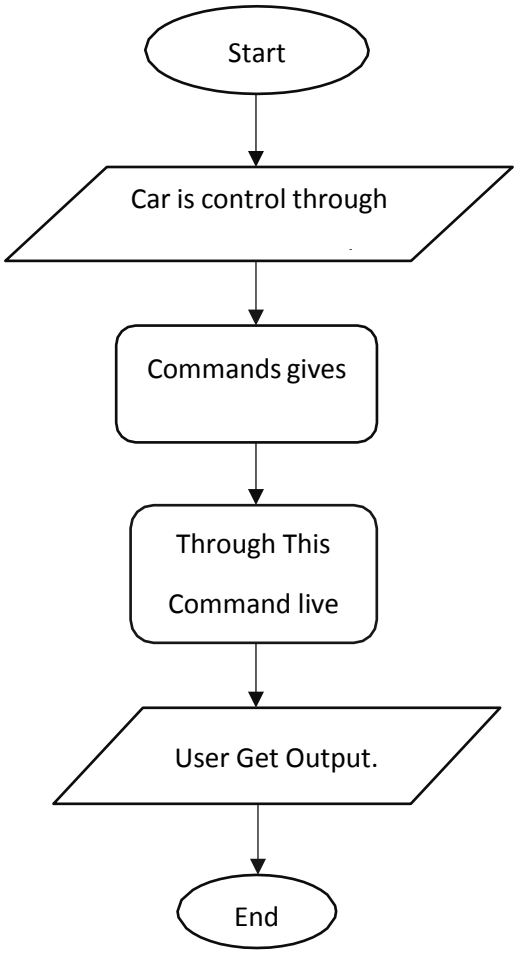

Fig-2: flow chart

7. OUR IMPLEMENATTAION

Through our Design and implementation of our proposed system, we are able to achieve the following as results:

1. car is controlled through Wi-Fi commands given by theuser who is operating the project.
2. These Wi-Fi commands need to be given through an android app which is installed on the user's androidmobile.
3. Live stream can be done within the android app whichis developed by us.

8. RESULT

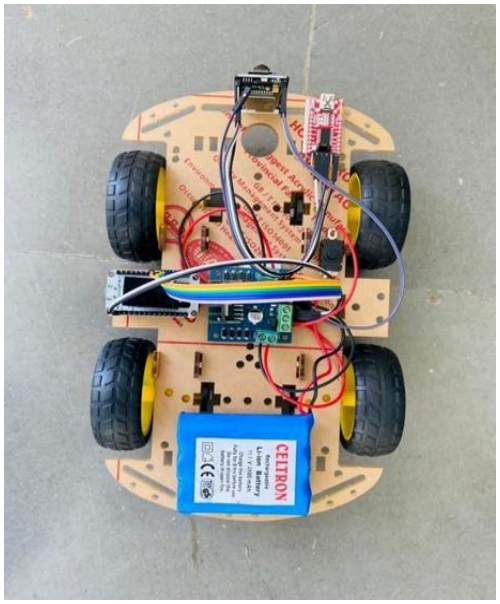

Fig-3: Top view of Wi-Fi car

Fig-4: Side view of Wi-Fi car

9. CONCLUSION

the idea of development of remote monitoring work and prototype system using a Wi-Fi controlled RC car controlled by mobile phone which work as a remote. The different hardware components and studies were done to investigate the bestapproaches to combine the parts in order for them to Communicate with a web interface the camera acts as the viewer, either to provide surveillance view or

toWhen used for surveillance or other purposes, thecamera serves as the viewer guide the user while remotely navigating the car. The web interface enableslive streaming video, while the user is equipped with a navigation controller panel that enables control of themovement of the RC car. This project may be utilizedwith a completely functional prototype for monitoringpurposes in a building, in a hazardous location, and other such locations. Several improvements can be made to enhance the capability of the project. For example, the camera maybe upgraded to a higher-quality camera to boost the quality of live streaming.

10. FUTURE WORK

In recent years, with the development of the mobile technology and network communication technology, mobile phone has become more and more convenience in people's daily life. And mobile phone has more and more functions such as Walkman phone, smart cell phone and so on. All of these are unbelievable just at 10 years ago. Collaborating with wireless communication technique, people can use mobile phone to deal with business activities and personal affairs. It plays an important role in work and life of lots of people.

Nowadays, people can control smart appliances not only still but also active by using mobile phones or smart phones, at anywhere and anytime. As mentioned above, no matter from the aspect of hardware environment or design of prototype, remote control of real devices will not a dream anymore, it can be realized. And it will become an indispensability part of our daily life in nearly future.

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