



SPY BOT SURVEILLANCE BASED ON WI-FI TECHNOLOGY

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ABSTRACT

A Wi-fi Controlled Spy Robot is an Arduino Uno based robot that can be monitored and controlled by an Android device using an Android application. The Wireless Network Camera mounted on the robot can also be displayed on any other Android/iOS device for monitoring. In this project simple materials are used like plastic wood for the chassis, cycle spokes for the wheel axle, DRV8833 motor driver and two 600 rpm DC motors for propulsion in four directions namely front, reverse, left and right. Wi-Fi module is used to receive commands in the form of strings from the Android application. The robot is covered with camouflage texture so that it does not alert surroundings. It is made up of simple materials rather than preassembled kits because the materials are readily and cheaply available, the robot becomes very lightweight and it can be formed into any desired size.

Index terms: Wireless, robot, wi-fi technology, android, DC motor, camera, battery.

1. INTRODUCTION

The project was inspired by the main purpose of finding people who are struck under building during earthquakes in the case where humans are not capable of entering through small holes. With the help of our project we can access the places where human can't and also can't enter. This project can be useful in many ways like spying on enemies in the military, find people who are struck under the buildings during earthquakes and even in our homes.

The robot can be reprogrammed faster and more efficient. The robot has sufficient intelligence to cover the largest area to provide a secured space. The intelligence robots can perform preferred tasks in unstructured environments with or without human detection. The real time object detection is required because safety and security are essential in the remote monitoring and control systems such as intelligent home environments, consumer surveillance system.

The real-time human body detection is essential for various fields like home security systems, surveillance systems, communication systems and more. Basically the surveillance systems are building up with multiple cameras which are placed in different angles of view to track human objects. Particularly the tracking task is needed on cameras for dynamic objects which increases the number of cameras used in the system.



2. OBJECTIVE

The main function of the spy robot is to roam around high sensitive region and provide video information from the required environment to the remote monitoring station. In this project one can control the robot using Wi-Fi reducing the human effect.

It is mainly used for monitoring activities. The act of surveillance can be performed both indoor as well as in outdoor areas by humans or with the help of embedded systems such as robots and other automation devices.

3. LITERATURE SURVEY

- **Paper Name:** Engineer's garage

Author and Year: Tarun Agarwal, DivyaShekhawat, November 2018.

Description: Arduino Controlled war field spying robot and Android.

- **Paper Name:** IEEE Journal

Author and Year: Apoorva Singh, Sakshi Chauhan, May 2015.

Description: war field Spying Robot using Metal Detector.

- **Paper Name:** International Journal of research in Engineering and Management.

Author and Year: Mr. Lokesh Mehta and Pavan Sharma, November 2014.

Description: Architecture of Wi-Fi Module along with DRV8833 motor driving IC compatibility.



4. TOOLS REQUIRED

Hardware Requirements

- Microcontroller: ESP 32 Cam
- Micro Bot Chassis
- Battery 4V
- Micro Motor 3.3V
- DRV8833 Module Software Requirements:
- Arduino IDE – Arduino works good in terms of prototyping. It is easy to program and programming can be done using embedded C Language.

ESP 32 Cam

The ESP32 Cam Wi-Fi Module with OV2640 camera Module 2MP for face reorganization has a very competitive small-size camera module that can operate independently as a minimum system with a foot print of only 40 x 27 mm; a deep sleep current of up to 6mA and is widely used in various IOT applications. Here is the pinout of the ESP 32 cam Module:



Features of ESP32 Cam

- The smallest 802.11b/g/n Wi-Fi BT soc module.
- Built in 520 KB SRAM, external 4MPSRAM.
- Supports UART/SPI/I2C/PWM/ADC/DAC.
- Support image Wi-fi upload.
- Supports TF card.
- Supports multiple sleep modes.
- Low power 32-bit CPU, can also serve the application processor.

DRV8833 DC Motor:

DRV8833 is a dual H-bridge motor driver IC that can be used for bidirectional control of two brushed DC motors at 2.7 V to 10.8 V. The maximum supply current is limited up to about 1.2A per channel continuously where as the peak current range is 2A per channel for a few seconds.

Battery 4V:

This is a rechargeable lead-acid battery. They are also commonly known as sealed batteries or maintenance-free batteries. We can use this type of battery in any position or orientation we like without the fear of spillage. Also this battery does not require any water top up throughout its service life.

- This is maintenance free battery.
- It has a long battery life of up to 10 years.
- Moreover this battery is designed with high density thin plate technology.

5. PROPOSED WORK

- Wi-fi is found to be the best IoT solution because it operates in an unlicensed Industrial Scientific and Medical (ISM) band and provides long distance connectivity to low power devices.



- The employment of the defense applications plays an important role in keeping an eye on its citizens and Wi-Fi modulation is an improved version of the traditional method as it is based on the chirp spread spectrum, which allows the use of low-end oscillator for storage, and makes synchronization faster and more reliable.

6. WORKING

It moves according to commands delivered from android remote-control app via Wi-Fi.

Remote control app has four buttons for the relevance forward, left, right and backward movements and as well as stop buttons.

The remote-control app uses a web viewer component, which is used as recipient of the Wi-Fi video stream from the android phone mounted on the robot this video is streamed by IP webcam app, which is installed on the android phone.

The robot can transmit video via Wi-Fi through webcam app which is installed on the phone directly on the remote-control app.

7. APPLICATIONS

- Military Scouting Mission.
- Wireless security and surveillance in hotspots.
- Search and rescue operations.

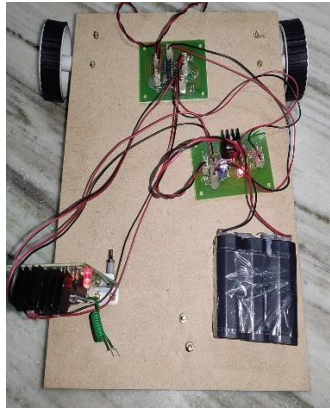
8. FEATURES

- Records video for an adjustable amount of time.
- Super small size.
- Streams video to a browser window.
- Ultrasonic sensor controlled – fully independent

9. ALL – TERRAIN DESIGN. FUTURE SCOPE

- In future the size of the robot can be reduced to small size, using Bluetooth and Zigbee the range of the robot can be increased.
- Also in future we can also add gas sensors to identify the presence of toxic gases in the nature.
- A bomb discard equipment can be added in order to dispose bombs in the war field.

10. RESULT



In one mobile we have to change the hotspot device name and password as Device Name: iot server Password: iotserver123

In another mobile we have to connect with that hotspot and there should be network scanner app in that mobile. After connecting to hotspot open the Network Scanner App and then press the start button. Then in that app it will show us three devices.

They are: a. router

b. Mobile Device Name

c. ESP 32 Cam

In ESP 32 Cam click on IP address and copy it. Paste the IP address in Chrome then it will show us left, right, forward, backward and stop buttons with video.

11. CONCLUSION

The wireless spy robot has been designed in such a way that it can fulfill the needs of the rescue, detection and searching for human beings at hazardous areas. It has many applications and only tends to spy around the spy robot in this system.

In this research, a wireless remote-control system for moving a spy robot and a CCD rotate is considered. In a PIC microcontroller, programming can be done in several languages such as Assembly, C, or Basics etc. In this research, the programming that Pic Basic Pro language is implemented into the PIC microcontrollers which control the whole system by sending USART data from one to another. The simulation and operation of the control system can support in one corner of fully functional hardware construction. This control system needs many considerations of motor specifications and torques for further research works. In this research, the user can control the spy robot with a wireless remote.

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