

ROBOTIC CAR WITH LIVE STREAMING IN INACCESSIBLE AREAS

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ABSTRACT:

It is known that humans cannot go to dangerous places, so robots are needed in human places. Intervention is almost impossible. In general, there are many threats to humans in hazardous areas. So, to avoid for these reasons, wireless surveillance robots can be used. This project proposes a wireless network control job surveillance robot using Adafruitserver. This project consists of building a Wi-Fi controlled mobile robot based on ESP8266 Microcontroller. The current status of the target location can be monitored by various sensors such as DHT11 sensor for humidity and temperature readings. It monitors each area to detect any intrusion at 360 degrees Camera. This provides a live video feed to the ground station agency. The robot's commands are integrated on an "Adafruit" using several commands. Eventually, he will be able to control the robot using a computer and a laptop.

Keyword: Spy Robot, security purpose, microcontroller Esp8266, sensor, wireless camera

INTRODUCTION:

Now-a-days tracing and attacking enemies at different areas are very much difficult for the soldiers. There is always a chance for loss of lives of the soldiers during war and emergency situations. With the aim of developing a high technology that serves high speed technology, advanced capacity to control the robots and to device new methods of control theory. The realize above standards some technical improvement along with the need of high-performance robot is required to create a faster, reliable, accurate, and more intelligent robot which can be devised by advanced control algorithm, robot control devices and new drivers. Therefore, to attain the requirements we can use a multimedia to control the user friendly robot. Earlier the robots were

controlled through wired networks but now to make robot more users friendly, they are framed to make user commanded work. The design of our project encourages developing a robotic vehicle based on Wi-Fi technology for the remote operation connected with the wireless camera mounted on the robot for monitoring purpose. The robot is embedded with Node MCU esp8266 microcontroller for desired operation and is generally used for monitoring purposes. The transmitting module on PC consist of the push buttons that send the commands to the receiving module for controlling the movement of robot either to right, left, forward, backward. In the receiving module of the robot two motors are interfaced with the esp8266 microcontroller to control its movement via motor driver IC. The Wi-Fi control has a range up to 400m that transmits the signals to the receiver. The receiver

collects and decodes the received signals before feeding it to the microcontroller to drive the DC motors via motor drivers. The robot motions left, right, forward, backward. Interfacing is being done between device and Wi-Fi module. Wi-fi module device receives the commands from ESP8266 microcontroller

EXISTING SYSTEM:

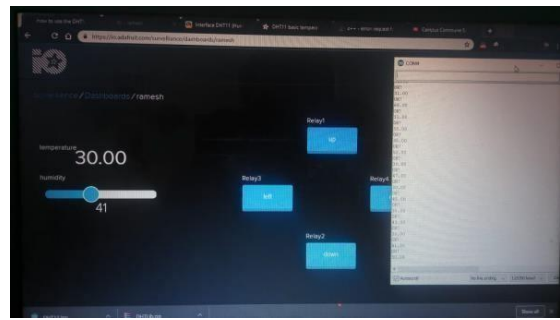
The existing models (RF, Bluetooth & GSM) has various disadvantages, few are that it works only for a short-range coverage area, making it a bit difficult for the Spying purpose or surveillance for long range. Also, the wired robots can't be used for spying purpose because of its wired connection, which may restrict the movement of the robot in the vast area of surveillance. In the previous models the video streaming is done as a continuous uninterrupted process hence a lot of unwanted data can be stored. In addition,

normal cameras were used for surveillance in war fields, where surveillance during night was a great difficulty. Capturing of images was an unavailable option. [1,7] RF, Bluetooth and GSM modules are not budget free.

PROPOSED SYSTEM:

This work consists of two sections.

- Robot section and
- Monitoring section



ROBOT CONTROL

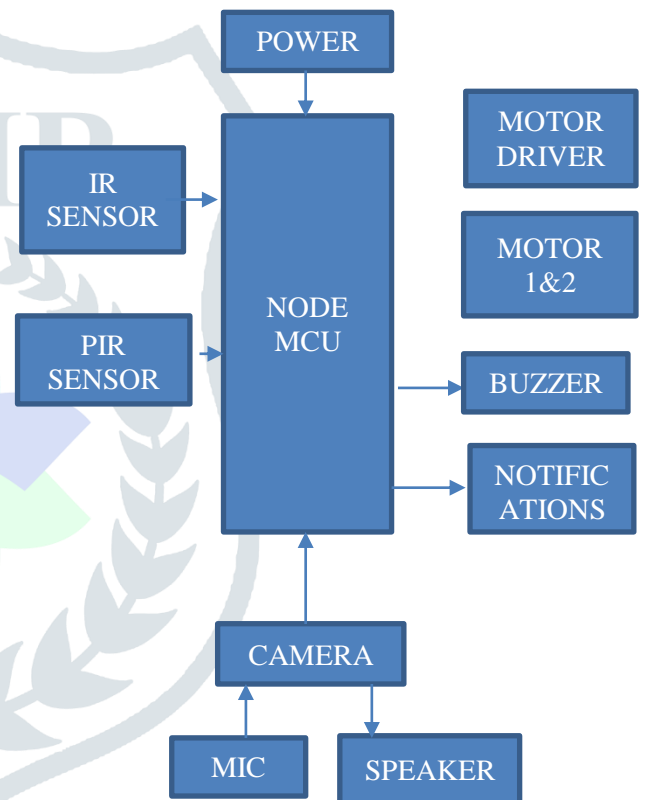


ROBOT CAR

The ESP8266 microcontroller is the heart of our project. The robot section consists of various sensors that interface with it. ESP8266. A dht11 sensor used to detect temperature and humidity in this area. It consists of a wireless night vision camera helps capture images and videos even in low light conditions. Motors are used to control the robot's movements. The Wi-Fi module acts as a transceiver to help transfer data.

From the robot section to the monitoring section and vice versa. The Wi-Fi module supports the delivery of services over long distances. This can be very useful for military intelligence espionage purposes. This microcontroller is low cost and low connect power to the equipment. The 30-rpm motor is used to move the robot (left, right, forward, backward).

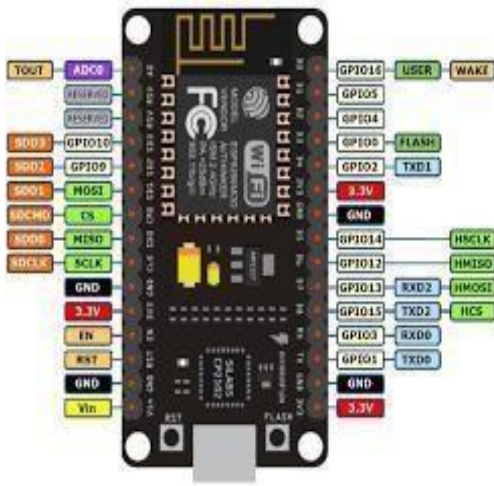
BLOCK DIAGRAM:



A. NODE MCU ESP8266 MICROCONTROLLER:

The ESP8266 is a low-cost Wi-Fi microchip with full TCP/IP stack and microcontroller capability produced by manufacturer ESP Systems in Shanghai, China. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using commands. ESP8266 BASIC – An open-source basic interpreter specifically tailored for the internet of things. Selfhosting browser-based development environment.

WIRELESS CAMERA



C. IR AND PIR Sensor:

An infrared (IR) sensor is an electronic device that measures and detects infrared radiation in its surrounding environment. Infrared radiation was accidentally discovered by an astronomer named William Herchel in 1800. While measuring the temperature of each color of light (separated by a prism), he noticed that the temperature just beyond the red light was highest. IR is invisible to the human eye, as its wavelength is longer than that of visible light (though it is still on the same electromagnetic spectrum). Anything that emits heat (everything that has a temperature above around five degrees Kelvin) gives off infrared radiation. A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors. PIR sensors are commonly used in security alarms and automatic lighting applications.

Type: 32-bit microcontroller
 CPU: @ 80 MHz (default) or 160 MHz
 Memory: 32 KiB instruction, 80 KiB user data
 Input: 16 GPIO pins

ESP32 The ESP8285 is an ESP8266 with 1 MiB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi.

B. WIRELESS CAMERA:

We use wireless CCD cameras that are widely available in the market. This camera operates on 5-volt DC supply. The camera has a receiver that is placed on a remote station. output to audio and vide signal. These signals are sent directly to the computer through the application. This CCD camera is placed on the robot. A camera captures audio and video signals and sends and uses these signals to a remote station. You can view the captured signal through a camera receiver connected to your computer. It is a mini wireless surveillance video camera and wireless receiver were installed to monitor the border area. Post here. A wireless camera for combat robots that will be on the battlefield.



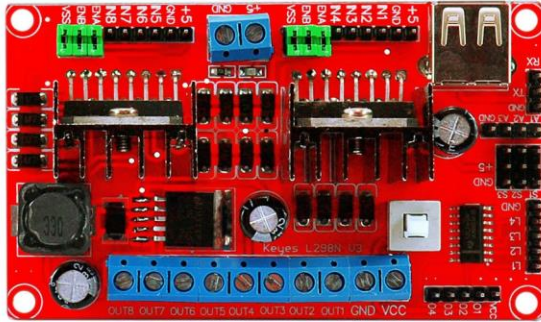
IR Sensor

D. Engine driver:

A motor driver is a small current amplifier. The function of the motor driver is to receive the low current control signal. Then switch to a higher current signal that can drive the motor.

- The L298 is a monolithic integrated circuit in a 15-pin multi-watt and PowerSO20 package.
- This is a high voltage, high current double bridge driver.
- Two enabling inputs are provided to turn the device on or off regardless of the input signal.

- Wide supply voltage range: 4.5 to 36V.
- Compatible.



FUTURE SCOPE:

To improve the sensors in the border area. Also, improve the performance of the robot and attaching the GPS in the robot to determine the location of the robot.

CONCLUSION

This type of robot can perform difficult and repetitive works for humans. It can have a very risky job and such dangerous job could be done by using small spy robot. But it is useful to check and look out the places where dangerous to the humans. Spy robot can also be used in searching people who are in building destroyed by the earthquake. Because of the wireless camera is installed in spy robots, it can be used remotely to enter and exit dangerous place that human cannot. When the user controls by remote controller, the spy robot will move to desired destination and spy images around the robot. The user can check and recommend from computer with the wireless remote controller

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D. WI-FI module:

The ESP8266 Wi-Fi module is a standalone SOC with an embedded TCP/IP protocol stack that anyone can provide. Microcontroller access to Wi-Fi network. The ESP8266 can host applications or offload everything. Wi-Fi network functions are performed by another application processor.

Advantages:

- It can be used for longer range surveillance.
- Capturing of images during live streaming is possible.
- Night vision camera makes surveillance easy during low lighting conditions.

Applications:

- At the time of war where it can be used to collect information from the enemy terrain and monitor that information at
- A far secure area, and safely devise a plan for the counter attack.
- Making surveillance of any disaster affected area where human beings can't go.

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