International Journal of Recent Technology and Engineering (IJRTE)
ISSN: 2277-3878 (Online), Volume-7 Issue-4s2, December 2019

Efficient Implementation of Unmanned Ground and Ariel Vehicle with Nano-Quadcopter

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Abstract: ***Technologies have developed far aside in the Defence field. To make more efficient, we have designed a new modern efficient SPY BOT which plays a major role in spying and as a support. This robot is small and easy to transport. The intervention troop uses a camera to capture the data such as images and videos . The intention is to reduce human victims in terrorist attacks. Thus by designing a RF based spy robot which has a wireless camera and Nano-quad, which can spy enemies secretly and can enter in restricted areas too.***

Keywords: RF (Radio Frequency), GPS (Global Positioning System), PIR (Passive Infrared), UDM (Ultrasonic Distance Meter), quad copter, live-session, spy robot.

I. INTRODUCTION

The intention of the high level technology is that serves with high speed to command the robots. To realize the above standards some technical improvements along with the need of high performance robot is for a faster, reliable, accurate and intelligent robot which is devised by advanced control algorithm, devices and new drivers. In olden days, robots were working based on the wired networks but now-a-days they are made to follow the user commands. So robots are very user friendly.

The intention of the proposal is a RF based bot which has a wireless camera fixed for monitoring the surroundings. Arduino UNO series microcontroller is to acclimate desiderate function and is basically utilized for spying purposes.

The transmitter module send commandment to the receiver in virtue of push buttons for governing the robot's movement in any of the four directions. In the receiving module, for governing the locomotion in virtue of IC motor driver, two motors are interfaced with Arduino microcontroller.

The RF based transmitter has a stretch of 50m that transmits the signals to the receiver. To drive the DC motor the microcontroller feeds the received signals that are collected and decoded at the receiver. The wireless camera is able to capture images even in calignosity using the in-built night vision cameras.

The user can govern the bot by a remote and can spy the surroundings in any of the desired direction. As this robot is compact it is easily portable. The distinct applications of this concept in such robot are a wireless controlled robot where mobility of the bot is monitored by a robot owing to wireless communication devices (RF). RF transmits the commands of user and the data gathered to the Arduino governed and the motor is being controlled by a motor driver L923D. Arduino has an in-built receiver module which receives the commands from RF Arduino.

II. RELATED WORKS

In the virtue of RF technology a remote controllable bot can be made. For the wheel locomotion of bot 8051 microcontroller is interfaced. At the transmitter end, to transmit the information pushbuttons are used and thus the mobility of the bot is controlled. The range of an RF transmitter is about 200 metres. For the surveillance an wireless camera is used. Live telecast can be viewed through a PC at transmitting end. Colour sensing can also be augmented to the robot.

Mobility of bot is being controlled by the microcontroller programming. Actually, a normal camera cannot capture during night. For this purpose a special scotopic adaption camera is used. Thus a bot is also called as virtual artificial agent.

It is anbionic machine which can be guided through a mobile or by programming. DTMF, i.e., Dual Tone Multiple Frequency is more reliable and faster than RF technology and implied in cell-phones for transmission of signals. It is basically done by mobile buttons and each button conveys a different meaning which is programmed in micro controller.

According to Kalyanee N.Kapadnis and her team, in terrorist attacks human victims can be reduced in the virtue of spy robot. So they asserted that in the virtue of RF based robot installed with a wireless camera can be utilized to overcome this issue.

According to Mr.Lokesh Mehta and Mr.Pawan Sharma in the virtue of a computer and keyboard a spy bot could be controlled. They basically said that the transmission of audio and video signals amidst the transmitter and receiver can be done easily.

According to Wai Mo MoKhaing and KyawThiha, the data will be deported to the intercession troop with the virtue of a spy robot. As they contain wireless camera, wheels and antenna the information can be easily transmitted.

Manuscript published on 30 December 2019.
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According to Kunj Gudhka, Aishwarya Kadam and crew said that to reduce the hazard of life and to debacle the enemies military forces use these advanced and sophisticated technologies.

Robotics is one of the blistering fields of montage in which the nations are focusing upon for armed purposes in the state of war and peace.

Dheeraj Singh Patel and his team says that, for security reasons a spy robot can be utilized so that attacks can be reduced. A bot that can be governed by a mobile using the buttons and proficient for live telecast was proposed by them.

III. UNMANNED ARIEL VEHICLE

This system contains two important terms: Driving the vehicle and following the object. The vehicle uses microprocessor that drives the DC motors with Hbridges in between them. The pulses of Pulse width modulation (PWM) produced by the microprocessor is taken by the H bridge. The pulses produced by Pulse width modulation (PWM) decides the open and close actions of transistor and flow of voltage in the motor.

For a wider PWM pulse the gate will remain opened for a long time and the running speed of motor will be faster. The onward action and reverse action of the motor is also controlled by PWM pulse. The steering on the left side and right side can be regulated precisely by using the four control signals.

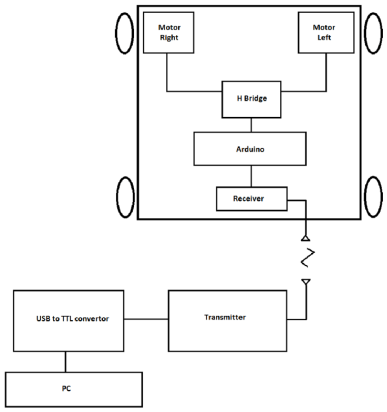

Fig.1: Experimental Setup

In a couple of years the robot technology has moved forward with the robot spies' discovery. by The government has developed Robot spies and now are being implemented more in the military techniques and the use of gathering information. Robot spies that fly, climb walls and also travel by ground will be in use in the US military very soon.

These robots are enabled to benefit the life of people and help gather information and other countries and plans. Possibly even secret organizations .Flying robots are being built by the BAE. The robots will be of birds' size or small bugs' size. As some robots have to capture image and take videos, many of the scientists should be creative. Some scientists will even use the legs for antennae and the wings might be used as solar panels which are used in the recharging of the robot's battery while it is doing work. Robots that climb also have suckers on their feet and are disguised as lizards. Their eyes are camera lenses and are implemented in data collection.

The robots are not only used for surveillance but some scientists are even thinking of making them able to rescue people stuck in houses or save people's lives when someone is trapped or where someone else cannot be reached. They also have a Wi-Fi surveillance cam so that what the robot seeing is connected with the user's computer and are able to see exactly what is happening.

IV. WORKING

When any key is pressed in the remote controller, an 8-bit address and a 4-bit data are generated by HT 12E.The address are set using DIP switches. The 8-bit address and the 4-bit data are send to the receiver by the ASK transmitter. On receiving the data in the receiver, the data gets decoded by HT 12D decoder, thus providing the required output. The motors are rotated by the H bridge found on the output signal generated. For short-range RF remote controls the 433 MHz ASK transmitters and receivers are used because of their extreme small size.

The transmitter can work on linear inputs and digital inputs and the operating range is from 1.5-12 V DC supply. The 433 MHz ASK transmitter which is in the vicinity of the standard postage stamp size and operates at 433.92 MHz with a sensitivity level of 3uV. The receiver's operating range is from 4.5 - 5.5 V DC supply.

The circuit's encoder is HT 12E and decoder is HT 12D. Remote control is achieved using 433 MHz ASK transmitter and receiver. Motors are driven by H bridge circuits. Two 12V DC/100 RPM gear motors are used as drivers.

V. RESULT AND DISCUSSION

Fig. 2: GPS Output

The latitude and longitude information of the area where the vehicle must be vehicle must be landed is displayed in the image which is the output of GPS.

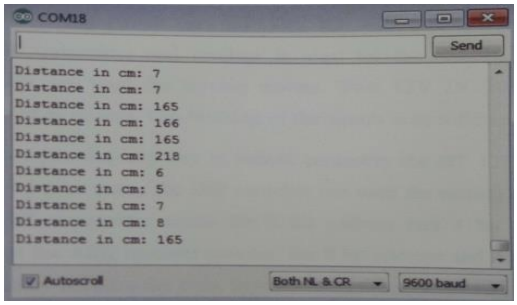

Fig. 3: Ultrasonic output

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The image describes the output of ultrasonic sensor that detects the distance of the object to be captured by the camera.

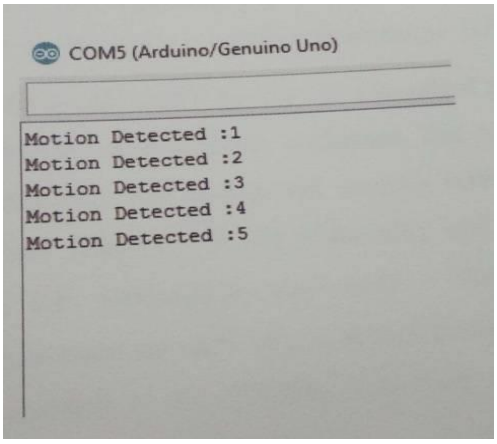

Fig. 4: PIR output

The image describes the output of PIR sensor that detects the presence or proximity of humans.

VI. CONCLUSION

People agree to the following are a robot's actions: Move around, a mechanical limb's operation, sensing and manipulation of surroundings. Controlled locally by computer, the robot can move within the RF transmitter's range, can take pictures, video and hear to the surroundings with the assistance of an on-board microphone.

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