

Night Patrolling Robot: Engineering College Prospective

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ABSTRACT

The main objective for developing the robot is for the surveillance of human activities in the war field or rescue operations like fire accident and in war in order to reduce attacks from the enemy side. The robot consists of night vision wireless camera which can transmit videos of the war field in order to prevent any damage and loss to human life. Military men have a huge risk on their lives while entering an unknown territory. The robot will serve as an appropriate machine for the defence sector to reduce the loss of human life and will also prevent illegal activities. It will help all the military people and armed forces to know the condition of the territory before entering it. This can also be used in various rescue operations to save the man power and to monitor hazardous situations. The main advantage of this project is that we can easily control the robot using an android mobile by a blynk app. A microcontroller Node MCU (ESP32-CAM) is used for the desired operation. A smart cell phone with IP web cam application is mounted on the robot body for spying purpose even in complete darkness by using infrared lighting. This will send the videos wirelessly at the transmitter side (laptop). This is kind of robot can be helpful for spying purpose in war fields and in order to minimize the attacks like 26/11 in Mumbai in future. It can also be helpful where living beings cannot reach.

Keywords: Robot, War Spying robot, android app (Smart Cell Phone), Fireproof Robot.

I. INTRODUCTION

With the aim of developing a high-tech technology that serves high speed technology, advanced capacity to control the robots and to device new methods of control theory. To 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. Earlier the robots were controlled through wired networks but now to make robot more users friendly, they are framed to make user commanded work. Therefore, to attain the requirements we can use android as a multimedia to control the user-friendly robot. The design of our project encourages developing a robotic vehicle based on IOT technology for the remote operation connected with the wireless camera mounted on the robot for monitoring purpose. The robot is embedded with Microcontroller Node MCU (ESP32-CAM) for desired operation and is generally used for spying purposes. The transmitting module consist of the push buttons that send the commands to the receiving module for controlling the movement of robot either to right, left, forward, downward, stop. Basically, the project is designed to develop a robotic vehicle named War Field Spying Robot using IOT technology for remote operation attached with smart cell phone having Android application for monitoring purpose. The robot along with smart cell phone can wirelessly transmit real time video and will give confidential information regarding opposite parties.

II. PURPOSE OF THE PROJECT

The project is an implementation of IoT (Internet of Things) Based Night Patrolling Robot System Using ESP32-CAM. Nowadays we need safety and for that we are purposing this project. We are using night vision camera through which it will directly access to laptop and see what is happening and how we can prepare for a safety measure. The robot along with smart cell phone can wirelessly transmit real time video and will give confidential information regarding opposite parties.

III. LITERATURE SURVEY

1.The main objective behind the robot is for surveillance of human activity in the war field or border regions in order to reduce infiltration from the enemy side. The robot sends the signal to the RF receiver mounted on the robot via RF transmitter at the base station. With this feature the robot can transmit real time videos with night vision capabilities and cannot be identified by the enemies in war zone.

2.The main motive of the war spying robot was to make it user friendly. The spy robot can easily move, capture images and wirelessly transmit them, thus giving the soldiers an intimation about the dangers and situations in the war field. The robot will move depending on the motor direction based upon the input we give through transmitter (remote) section. RF signals are used as control signals. By using these signals encoding is done & signal is sent through the transmitter. At the receiver end, these decoded signals are given as input to drive the motor. The robot is used for short distance surveillance thus ensuring the security of the region. This helps the forces to view the things accurately that are currently happening in the surrounding area and to plan ahead accordingly. Thus, we should be able to manipulate its path, when necessary, to create the robot safely.

3. The project is designed to develop a robotic vehicle using RF technology for remote operation attached with wireless camera for monitoring purpose. The robot along with camera can wirelessly transmit real time video with night vision capabilities. This is kind of robot can be helpful for spying purpose in war fields. An ATmega16 microcontroller is used for the desired operation. At the transmitting end using Joysticks, commands are sent to the receiver to control the movement of the robot either to move forward, backward and left or right, ARM up and down etc. At the receiving end two motors are interfaced to the microcontroller where they are used for the movement of the vehicle. The RF transmitter acts as a RF remote control that has the advantage of adequate range (up to 200 meters) with proper antenna, while the receiver decodes before feeding it to another microcontroller to drive DC motors via motor driver IC for necessary work. A wireless camera is mounted on the robot body for spying purpose even in complete darkness by using infrared lighting.

4. The main motive of the spying robot was to make it user friendly. The spy robot can easily move, capture images and wirelessly transmit them, thus, giving the organization intimation about the dangers and situations in the work field or area under consideration. The robot will move depending on the motor direction based about the dangers and situations in the work field or area under coupon the input we give through transmitter(remote) section. DTMF signals are used as control signals. By using these signals encoding is done and signal is sent through the transmitter. At the receiver end, these decoded signals are given as input to drive the motor. The robot is used for short distance surveillance thus ensuring the security of the region. This helps the organizations to view the things accurately that are currently happening in the surrounding area and to plan ahead accordingly. With the available facilities and infrastructures provided we are successful in designing a cost-effective system which accomplishes the required application. Implementation of wireless technology in the project enables the handling of the robot efficiently without manual intervention.

IV. IMPORTANCE OF NIGHT PATROLLING ROBOT

The idea behind that is **to protect the region as a whole**. It is a surveillance Robo sending the notification through the Blynk robot to the person concerned consists of the night vision camera from which we can see the live video through the smartphone and we can capture the photos also.

V. ADVANTAGES OF PROPOSED SYSTEM

1. Portability

It is a compact device which consists of many sensors like sound sensor, Smoke sensor and metal detector including cloud which are all combined by using internet of things (IoT).

2. Safety

If we make this Robot fireproof then it will through tunnel and also used for polluting environment.

3. Cost

Compared to others it's efficient and low cost because sensor is clubbed by using internet of things (IoT) and ESP32-CAM microcontroller where camera is pre-install.

4. Simple Maintenance

As the Project deals with IOT based so maintenance will be easy and this can also be installed in ESP32-CAM (ESP32-CAM-1.8.10-windows.exe).

VI. IMPLEMENTATION TECHNOLOGIES WITH RELATED DEVICE IMAGE

- ☐ Node MCU (ESP32-CAM) microcontroller
- ☐ DC motor
- ☐ Motor Driver (L293D)
- ☐ Battery
- ☐ Chassis
- ☐ Wheels
- ☐ Night vision camera
- ☐ Bread board and connecting wires

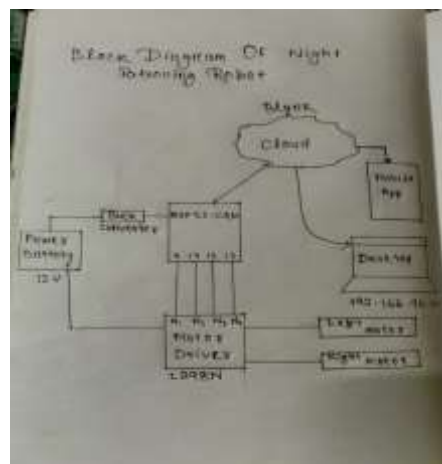




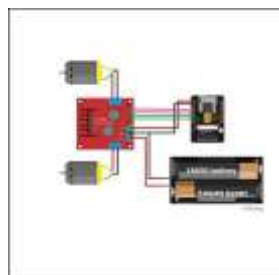
VII. WORKING PRINCIPLE

When the operator turns on the hot spot, the wi-fi module present in the receiver side connected with that particular device which is programmed in it. Once it is connected, it would start working according to the command. At the transmitting end, there are 5 buttons V0, V1, V2, V3, V4 i.e. (forward, backward, right left) respectively. The robot will operate according to the key pressed. robot. The robot is operated wirelessly so that a person can operate it anywhere anytime under the earth .360degree rotating Wireless Camera is installed over the top of Robot which captures the 360-degree footage of surrounding and send it to the receiver portal. It sends the generated information to the Node MCU (ESP8226 Wi-Fi module) which further transmits the information over the cloud portal using internet. The cloud portal shows the information in term of Time and date.

VIII. BLOCK DIAGRAM REPRESENTATION



IX. CIRCUIT DIAGRAM



XI. HARWARE SETUP



XII. CONCLUSION

The robot will move depending on the motor direction based upon the input we give through command by remote section unit. It displays the current operation is going on as example left robot, near to object, clear up. With the help of the camera, we are able to view the things that are happening in the surrounding area where the robot is hidden. By keeping the circuit easy and simple, most users will be able to use it easily. Thus, we should be able to manipulate its path, when necessary, to create the robot safely. To all that, a control unit is needed, where control units IOT signal is used. By using these signals encoding is done & signal is sent through the transmitter. At the receiver end these decoded signals are given as input to drive the motor. For long range applications it can be used as a spy robot.

XIII. REFERENCE

- I. Journal of Network Communications and Emerging Technologies (JNCET) Volume 2, Issue 1, May (2015). Aaruni Jha, Apoorva Singh, Ravinder Turna, Sakshi Chauhan SRMSWCET, UPTU, India (Journal).
- II. International Journal of Computer Techniques Volume 3, Issue4, July-Aug2016 Sakshi Babasaheb Cha Vanke, Teja Dryander Bar hate. Third year Electrical Student, Department of Electrical Engineering, Guru Gobind Singh Polytechnic Nasik Maharashtra, India (Journal).
- III. International Journal of Ecology and Development Research IJEDR | Volume4, Issue2, 2016 Prof.S.G. Gelande, Pawar Yogesh, Korade Amit, Chavan Jalindar, Associate Professor, E&TC Dept. PREC, Loni Department of Electronics and Telecommunication Parva Rural Engineering College, Loni. (Journal).
- IV. 5th Nirma University International Conference on Engineering (NUiCONE) November 2015 JigneshPatoliya, Haard Mehta, Hitesh Patel, V.T. Patel Department of Electronics and Communication Engineering Charotar University of Science and Technology, Changa,
- V. International Journal of Electrical and Electronics Engineer vol no9, issue no1 2017.Priyanka Yadav, Leena Chaudhari, Swati GawhaleBharatiVidyapeeth College of Engineering, Lavelle, India (Journal)