War field spying robot with wireless camera and firing system

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Abstract - **A paper on robotic vehicle using mobile application or TV for remote operation attached with wireless camera for monitoring purpose. The robot along with camera can wirelessly transmit real time video. This is kind of robot can be helpful for spying purpose in war fields. An 8051/PIC series of microcontroller is used for the desired operation. By using android application device, commands are sent from transmitting side to the receiver side for control the movement of the robot either to move forward, backward, left or right etc. At the receiver side two motors are interfaced to the microcontroller where they are used for the movement of the vehicle. Remote operation is achieved by any RF transmitter and receiver. Data from input is processed to the microcontroller and it controls/drives 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 signal. This proposed system also having a firing mechanism to fire the target object The proposed system accept the camera video input of the remote place if any human is detected and seems like an enemy/terrorist then this input is given to the controller to shoot the target object by using simply press the fire button of the remote then the gun will fire to the target object. The target object can be search by moving the robot left or right, up or down. The limitation of this proposed system is that the range of camera is 100 meters only, but this can be improve by using high frequency camera.**

Keywords - **Camera, Transmitter, Receiver, Object, Gun.**

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I. INTRODUCTION

In the conventional system there is separate remote monitoring for robots are available. The vision of proposed system is used to carry out human detection and tracking of the objects and fire the target object. In the conventional system the control of robot with the help of humans only, so it is somewhat complex while implementing this system. In order to rectify it we go for a new system, which works in manual mode and automatic mode as well.

In the proposed system, the robot can control and monitor at the remote location. This system is having two modes in which the robot gets controlled. The video signal from the controller is communicated to the control unit through RF Transmitter and Receiver. The proper action can be taken through control unit and the signals are given through the transmitter and receiver to the controller and controller will fire the target object.

If there is any person captured by camera and the person seems like enemy then the necessary signal is transmitted to the control unit the personal in the control unit will the necessary action to fire the person or not. This proposed system is to provide a robot that can be used in wars and other military purposes. The system is also to identify the intruders which are being carried out by using facial recognition technique.

This system has interface with a wireless RF camera on the robotic buggy. User/ controller can see the live coverage on TV at remote monitoring station. The range of the camera is around 100 meters. The administrator can monitor data as well as video on PC and TV.

In the proposed system, there is successfully implemented RF technology for data transmission as well as reception. RF waves are electromagnetic waves which are propagate at the speed of light (186,000 miles per second)(300,000 km/s). The *RF wave frequencies*, however, are slower than that of visible light, making RF waves invisible to the human eye. The frequency of a wave is determined by its oscillations or cycles per second. One cycle is of one hertz (1 Hz); 1,000 cycles is one kilohertz (1 KHz); 1 million cycles is of one megahertz (1 MHz); and 1 billion cycles is one gigahertz (1 GHz). A station on the AM dial at 980, for example, broadcasts using a signal that oscillates 980,000 times per second, or have a frequency of 980 KHz. A station a little further down the dial at 710 broadcasts by using a signal that oscillates 710,000 times a second, or has a frequency of 710 KHz. With a slice of the RF pie licensed to each broadcaster, the RF range can be neatly divided and utilized by multiple parties.

II. PURPOSE OF MILITARY ROBOT

The main purpose of military robot is given as follows:
1. Exploration of hazardous areas.
2. Search and Rescue operations.
3. To substitute humans in war:
4. To be used for purposes of espionage

Wireless Video Transmission Unit

Wireless video camera mounted on the robot is used for the purpose of surveillance and spying. We can make a large number of areas automated by controlling the direction of the camera by generating the RF frequencies. For this total action just install the wireless camera on the robot and set the wireless receiver to a TV or PC to watch the action and take the necessary steps through recorded video footage.

A TV capture card is a computer component that used for television signals to be received by a computer. It is a kind of TV tuner. Most TV(Television) tuners also function as video capture cards, allowing them to record television programs onto a hard disk. The card contains a tuner and an analog-to digital converter along with demodulation and interface logic

BUZZER

Buzzer is used in the proposed system to indicate or to grab the attention regarding an emergency situation occurred. Buzzer act as a panic horn which indicates the need of instant attention as the condition goes out of control.

WIRELESS CAMERA SECTION

Here a interfacing of a wireless RF camera on the robotic buggy. We can see the live coverage on TV or PC at remote monitoring station. The range of this camera is around 100 meters. The administrator can monitor data as well as video on PC. While wired systems rely on cords and sensors, wireless systems send signals by RF using wireless transmitter. With lower installation costs, less required maintenance, and keypads that can easily be integrated with microcontroller wireless systems are a popular choice for many technologically well informed homeowners.

DC MOTOR

DC motors are used to physically drive the application as per the requirement provided in software. The dc motor works on 12v.

To drive a dc motor, we need a dc motor driver IC L293D. This dc motor driver is capable of driving 2 dc motors at once. In order to protect the dc motor from a back EMF generated by the dc motor while changing the direction of rotation, the dc motor driver have an internal protection suit. We can also provide the back EMF (electromotive force) protection suit by connecting 4 diode configuration across each dc motor.

DC motor is a device which is normally used to convert the electrical energy into the mechanical energy. The necessary amount of DC motor in the world is still very large yet. It is often used in industrial and household application in large amount. A lot of industrial equipments are required to be supplied with kinetic energy for a linear/rotating motion requirement. In these application fields, the DC motor is very suitable to be selected for providing kinetic energy to drive the mechanical load. In order to achieve the control purpose, many parameters of system, such as the current, temperature & speed, they would be first sampled and then feedback to the system controller immediately. The close-loop control structure is formed for this.

In order to acquire the precise control of equipment's which can be operate by using of a DC motor, such as position control, motion of the wheels of the robot, camera position , some types of sensor like the speed and/or the current sensors will be integrated into the system controller for dynamically conducting a close-loop control purpose. In addition, in the motor characteristic testing areas, DC motor is necessary to be tested regarding its speed related performances under different loads.

DC MOTOR DRIVER (L293D)

The Device is a monolithic integrated high voltage, high current four channel driver designed to accept standard DTL (Diode Transistor logic) or TTL(Transistor Transistor logic) logic levels and drive inductive loads (such as relays solenoids, DC and stepping motors) and switching power transistors. To simplify use as two bridges each pair of channels is equipped with an enable input. A separate supply input is provided for the logic, allowing operation at a lower voltage and internal clamp diodes are included. This device is suitable for use in switching applications at frequencies up to 5 kHz. The L293D is assembled in a 16 lead plastic package which has 4 center pins connected together and used for heat sinking The IC L293DD is assembled in a 20 lead surface mount which has 8 center pins connected together and used for heat sinking.

LIQUID CRYSTAL DISPLAY (LCD)

LCD (LIQUID CRYSTAL DISPLAY) is used in a project to visualize the output of the application. here the 16x2 LCD is used which indicates 16 columns and 2 rows. So, we can write 16 characters in each line. So, total 32 characters we can display on 16x2 LCD.

LCD(LIQUID CRYSTAL DISPLAY) can also used in a project to check the output of different modules interfaced with the microcontroller. Thus LCD plays a vital role in a project to see the output
and to debug the system module wise in case of system failure in order to rectify the problem.

Although some problems in cathode-ray tube (CRT) technology are not solved yet, video displays based on CRT have been widely used for approximately more than half a century. As we know of the physical size of the CRT is limited and the largest CRT available is about 40 inches. That's why group viewing like in a small theater is not realistic. Moreover, as the demand of using large screen with high quality image is increasing day to day, projection type displays have been popular. Two projection technologies, CRT projection and LCD projection, have been developed. However, CRT projectors are large in size, large in weight , and difficult to move from one place to another and install because of physical characteristics of CRT, convergence, earth magnetic field etc.

III. BLOCK DIAGRAM

Robot section

Controller section
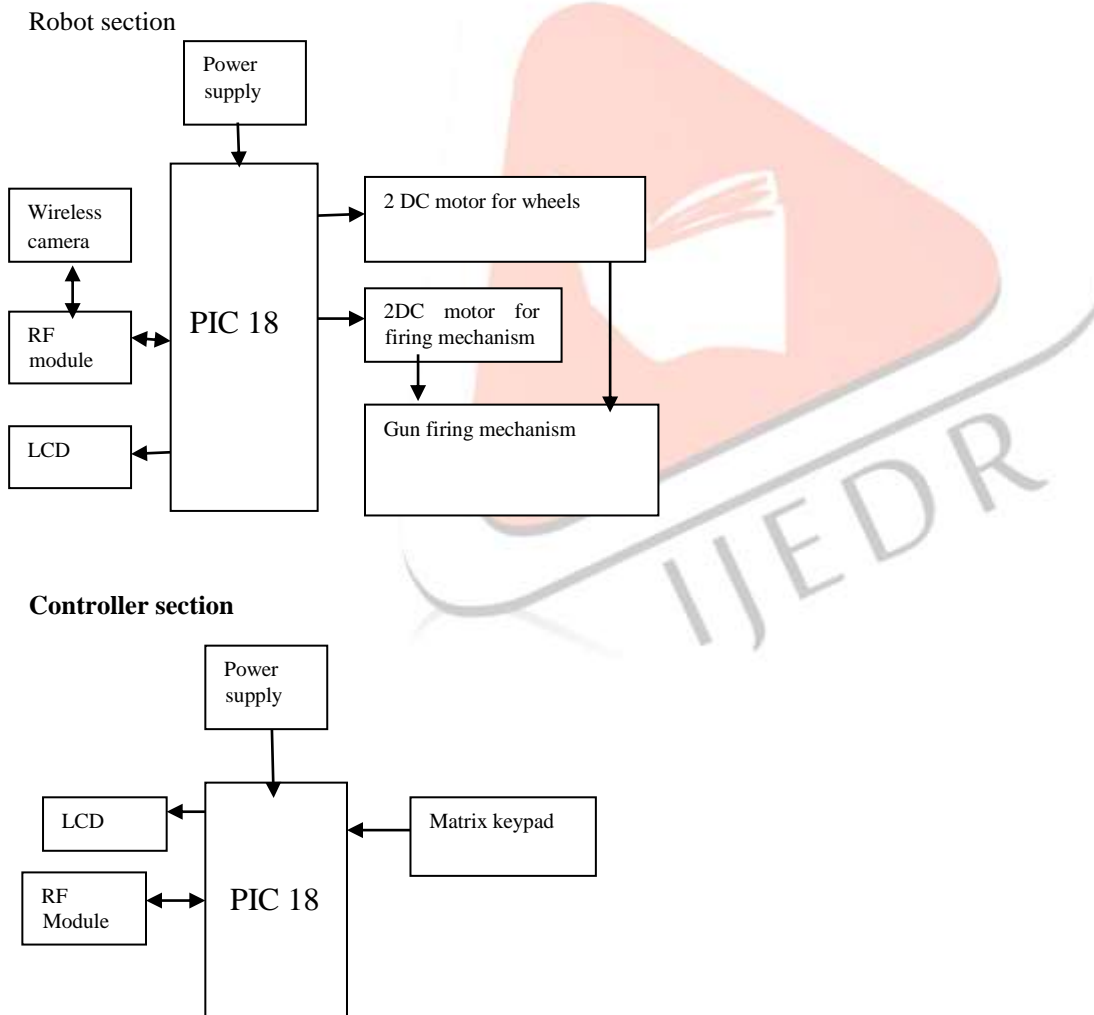
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