BORDER GUARD SPY ROBOT

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ABSTRACT

Robot is a reprogrammable, multifunctional device which is primarily designed to do work like human such as pick and place, loading and unloading, surveillance, health care, industrial, aerospace application. Robots can perform dangerous and accurate work to increase the productivity as they can work 24 hours without rest. This paper deals with the design and control of automated vehicle type robot which can move in desired direction and captures pictures and videos of required location. The main controlling device of the whole system is arduino micro controller. When the user switches on the robot, the robot moving on predefine path.SR04, 5laser guns are interfaced to the arduino micro controller. An android application has developed using MIT App inventor and a Wi-Fi communication is made with robot which interfaces with microcontroller to control its speed and direction. Aim of this work is to design and control the motion of robot using Wi-Fi device of an Android phone.

Key Words: Wi-Fi device, Android OS, Smartphone, Microcontroller laser

1. INTRODUCTION

The main controlling device of the whole system is arduino micro controller. When the user switches on the robot, the robot moving on predefine path.SR04, 5laser guns are interfaced to the arduino micro controller. When the motion is detected by sr04 sensor this data is fed to the arduino. The arduino gets on the laser guns for shooting automatically. We can check the IP camera video in mobile phone. To perform this intelligent task, Microcontroller is loaded with a program written in embedded 'C' language. These robots consist of ultrasonic sensor to detect the motion and 5laser guns represent shooting indication. The advent of new high-speed technology provided realistic opportunity for new robot controls and realization of new methods of control theory. This project describes a new economical solution of robot control systems. The presented robot control system can be use for different sophisticated robotic applications. At present the surveillance of International border areas is a difficult task. The border guarding forces are patrolling the border seriously, but it is not possible to watch the border at each and every moment. An essential requirement of this situation is a

robot which automatically detects trespasser in the border and report nearby board security control unit. Many of the military departments now utilize the robots to carry out risky jobs that cannot be done by the soldiers.In this present work, aarduino operating system based spy robot. which will save human live, reduces manual error and protect the country from enemies. This surveillance system using spy robot can be customized for various fields like industries, banks and shopping malls.

2. SYSTEM DESIGN AND ARCHITECTURE:

2.1 Arduino Uno Board
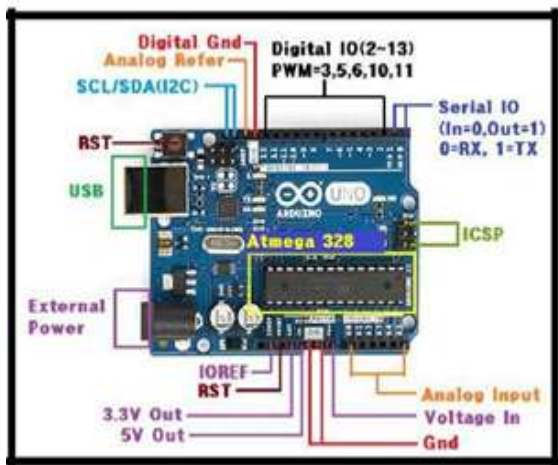
Fig.-1: Arduino Uno R3

This is the brain of robot loaded by a program written in embedded c language to do the required functioning and is interfaced with Wi-Fi module. The motor drivers are used to make the system work as required. Arduino is a open source electronics platform easy-to-use hardware and software. Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards or breadboards (shields) and other circuits. The Aurdino is shown in fig 1.

2.2. Architecture of Proposed systems

The main controlling device of the whole system is arduino micro controller. Thisrobot consists of ultrasonic sensor to detect the motion and 5lasers guns represent the shooting indication. When the user switches on the robot ,the robot moving on predefine path.SR04,5laser guns are interfaced to the arduino micro controller. When the motion is detected by sr04 sensor this data is fed to the arduino. The arduino gets on the laser guns for shooting automatically. We can check the IP camera video in mobile phone.The Block Diagram is shown in fig2.
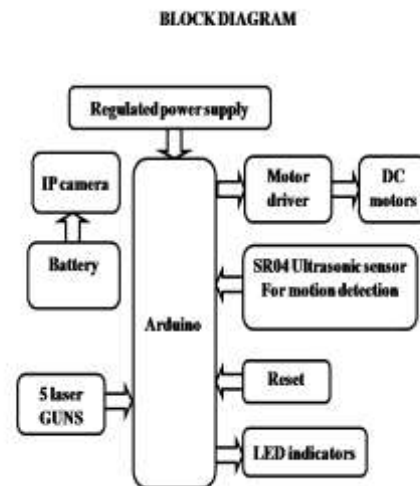
Fig;2 Block Diagram

Dc motor:

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. Every DC motor has six basic parts -axle, rotor (armature), stator, commutator, field magnets, and brushes. In most common DC motors the external magnetic field is produced by high-strength permanent magnets.

DC Motor

D.C. motor is controlled by DC voltages and moves in forward, backward, left and

right, direction according to the polarity of voltage applied. Mostly all mechanical movement which robot performs is accomplished by an electric motor. Electric machines are means of converting energy into mechanical energy. Electric motor is used to power devices. An example of small motor applications such as motors used in automobiles, robot, hand power tools and food blenders. Micro-machines are electric machines with parts the size of red blood cells and find many applications in medicine.

Fig: 3 DC motor

Ultrasonic sensor:

Ultrasonic sensors (also known as Transceivers When They Both Send and Receive) work on a principle similar to radar or sonar which evaluates attributes of a target by interpreting the echoes from radio or sound waves respectively. It is used to generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object. This technology can be used for measuring: speed and direction.
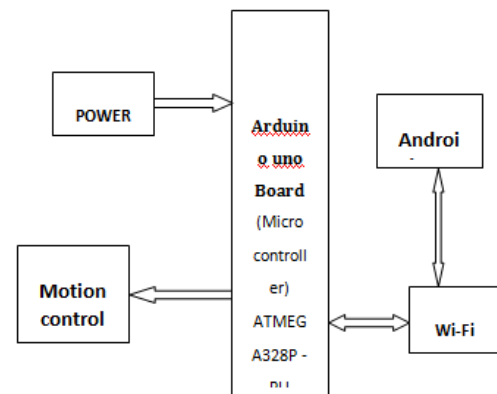
IP or Web Camera:

A webcam is a video camera that feeds its image in real time to a computer or computer network. Unlike an IP camera (which uses a direct connection using Ethernet or Wi-Fi), a webcam is generally connected by a USB cable, FireWire cable, or similar cable.IP camera is shown infig4

Fig:4 IP Camera

3. SYSTEM ARCHITECTUR

Fig. 5: System Architecture of proposed system

3.1 Border guard Detection system

The Aurdino 328 Atmega microcontroller is used inthis project.In this Aurdinocontroller we use 4 digital pins 8,9,10 and 11.8 and 9 pins are used to move in forward directions and 10 and 11 pins are used to move in backward directions. Motor driver is used to detect the paths which automatically moves forward   and backwarrddirections.Ultrasonic sensor is used to detect the obstacles .The complete live streaming is seen in IP camera which rotates 360 degrees.The Dc motor is used for the rotation of wheels of spy robot.

4. Results

Spy Robot is the name of the android application designed for this project. It was designed through App Inventor. The basic function of the application is to control the robot (created with Arduino and Chassis).

It has different buttons integrated to it and each button has different functions these robots consist of ultrasonic sensor to detect the motion and 5laser guns represent shooting indication. Laser gun attached works when any adverse condition happens or robot is being attacked by any person the outputs of this project are shown in fig 6 and 7.

Fig: 7 Spy Robot

Fig: 7 Live Streaming

5. CONCLUSION

The proposed system shows that how a robot can be used for spy & rescuing purpose. The operating system of the smartphone is Android, and we can develop effective remote controller program and by using Wi-Fi wireless network, which makes it simple and convenient to control the robot. It has proven to allow for meaningful two-way communication between the Android phone and the robot which would allow a non-expert to interact with and adjust the functionality of a system which uses ATmega328 controller, a single board micro-controller intended to make the application of interactive objects or environments more accessible. The surveillance is always has been a quite sensitive task. And it includes so many risks. So it's better to use robot for this job instead of people. And if you are able to control the robots with efficiency and accuracy then you can guarantee yourself with good results and success. This system is a good step for secure surveillance using robots.

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