

# Precipitation And Humanoid Monitoring Robo Vehicle For Seashore And Border Areas

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**Abstract-** The most of spy robots are remotely controlled robots, equipped with a camera, transmitting video data to the intervention troop. They are made to small and compact enough to easily transport. Humans are moved out from direct exposure to potentially dangerous situations. Robotic system can perform many security and surveillance functions more effectively than humans. In this project, supposes a movable robot with a remote controller by Arduino ATMEGA 328. Basically the project is designed to develop a robotic vehicle named Spy Robot using Arduino for remote operation attached with webcam application for surveillance. We propose a cost-effective four-wheeled surveillance robot using an Arduino and a smartphone running the Android Operating System. Surveillance robots typically consist of a video camera, a GPS module, and GSM radios. The robot along with wireless camera can wirelessly transmit real-time video and it will give confidential information. The commands are sent to the receiver, at the transmitter side with push buttons, to control the movement of the robot to move forward, backward, right and left. This research mainly concentrates on control logic program and simulation software for the robot system. This robot is a small robot designed for detection, surveillances and saving purposes.

## I. INTRODUCTION

A movable spy robot with a remote controller is implemented. Surveillance is the process of monitoring a situation, an area or a person. This generally occurs in a military scenario where surveillance of borderlines and enemy territory is essential to a country's safety. Human surveillance is achieved by deploying personnel near sensitive areas in order to constantly monitor for changes. But humans do have their limitations, and deployment in inaccessible places is not always possible. There are also added risks of losing personnel in the event of getting caught by the enemy. With advances in technology over the years, however, it is possible to remotely monitor areas of importance by using robots in place of humans. Apart from the obvious advantage of not having to risk any personnel, terrestrial and aerial robots can also pick up details that are not obvious to humans. By equipping them with high resolution cameras and various sensors, it is possible to obtain information about the specific area remotely. The

robot is not quite huge one and designed to be easy in transportation. The remote controller is to control the robot to reach the desirable destination. The spy robot is made up of Arduino ATMEGA 328, a wireless camera, an antenna, batteries and four movable wheels. The robot will transmit the images that are spied via antenna to the laptop for a good spying system. The user will get required information due to a movable the spy robot and seeing the images when it spies. The system is to build a spy robot that has a wireless camera and the capabilities to control the movement by using the remote controller. The images will appear on the laptop or mobile phones which is intended for the visual. In this research, the wireless camera is involved the two direction to rotate left and right. It is just only to monitor the images around the robot. Thus, in recent times, surveillance technology has become an area of great research interest. In the last few years, feature-rich smartphones have become popular. These phones come equipped with the required features such as a GPS module, a high resolution camera and internet connectivity. The operating system on these smartphones provide Application Programmer Interfaces (APIs) for using the various sensors with ease.

## II. SYSTEM COMPONENTS

### A) ARDUINO ATMEGA 328:

Arduino ATMEGA-328 microcontroller has been programmed for various applications. By using the power jack cable, arduino microcontroller has been programmed so that the execution of the program may takes place. Various kinds of arduino board are present in the market. In this project, Arduino UNO ATMEGA-328 microcontroller is described in a detailed manner. Arduino software is installed in the computer and so that we can edit and upload the program according to the applications. Mainly these arduino software supports c and c++ programming languages. Various inputs and outputs are present in the arduino board and therefore simultaneously 8 input and output ports can be used for various applications. Some of the applications used by using arduino boards are rotating general motor, stepper motor, control valve open, etc..



## B) WIFI CAMERA:

An Internet protocol camera, or IP camera, is a type of digital video camera commonly employed for surveillance, and which, unlike analog closed circuit television (CCTV) cameras, can send and receive data via a computer network and the Internet.

### DESCRIPTION:

Simple Three Setups, Easy to Use. Support IOS/Android/Windows devices for remote view. Control your camera just by finger's sliding on the screen.

**In Night Vision :**HD Night Vision With Inbuilt in Lens For Crisp & Clear Image Even In Dark.

**Motion Detection:** Will Send Alerts Whenever Any Motion Is Detected.

**2 Way Audio & Sd Card Slot:** Video Chat With Your Loved Ones With The Help Of Inbuilt Microphone & Speaker. No Need Of Computer. Sd Card Slot To Record Images & Videos. No Need Of Separate Dvr..

**360 Degree Mobile Control :** Rotate Camera Horizontally Or Vertically From Anywhere

**Two Way Audio:** Built-In Mic & Speaker, Directly Talk To Your Family And Friends With Phone Or Pc Anytime And Anywhere.

## C) L293D MOTOR DRIVER:

The L293D motor driver is available for providing User with ease and user friendly interfacing for embedded application.

### L293D Motor Driver



IC's pin functions. The L293D is a Dual Full Bridge driver that can drive up to 1Amp per bridge with supply voltage up to 24V. It can drive two DC motors, relays, solenoids, etc. The device is TTL compatible. Two H bridges of L293D can be connected in parallel to increase its current capacity to 2 Amp.

## D) GSM MODEM WITH SIM-900:

GSM/GPRS RS232 Modem from rhydoLABZ is built with SIMCOM Make SIM900 Quad-band GSM/GPRS engine, works on frequencies 850 MHz, 900 MHz, 1800 MHz and 1900 MHz. It is very compact in size and easy to use as plug in GSM Modem. The Modem is designed with RS232 Level converter circuitry, which allows you to directly interface PC Serial port .The baud rate can be configurable from 9600-115200 through AT command. Initially Modem is in Autobaud mode.

## E) TEMPERATURE SENSOR:

The DF Robot LM35 Linear Temperature Sensor is based on the semiconductor LM35 temperature sensor. The DF Robot LM35 Linear Temperature Sensor can be used to detect ambient air temperature. This sensor is produced by National Semiconductor Corporation and offers a functional range between -40 degree Celsius to 150 degree Celsius. Sensitivity is 10mV per degree Celsius. The output voltage is proportional to the temperature.

## F) RAIN SENSOR:

The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity.

## HARDWARE CONFIGURATION

### 1 ARDUINO ATMEGA328 IC :

This ATMEGA-328 integrated chip consists of 28 pins. It consists of 6 analog inputs that are shown in the

pin diagram. Analog inputs can be represented as PC0 to PC5. These analog input pins possess the continuous time signal which acts as an analog input for the system. PC6 pin are the one where it can be used for the reset option. Resetting the program can be done by using this PC6 pin. The pin diagram of atmega-328 microcontroller can be shown below.

### POWER JACK CABLE / USB PORT:

This Arduino atmega-328 microcontroller can be interfaced with the other electronic devices such as computer by using USB port or power jack cable from these power jack cable, we can upload the program of Arduino for their applications. At first, the program can be initialised or can be edited by using Arduino software tools. Then these programs can be transferred through arduino microcontroller board by using usb cable or power jack cable.

### POWER SUPPLY:

There is an additional power supply source present in Arduino microcontroller. Power supply port is present at the corner of the arduino microcontroller. Either we can use this power supply port by connecting with external power supply (ie, ac power supply), or by connecting an dc power supply through input pins. These power supplies produce an active form to the arduino microcontroller. These arduino microcontrollers can accept a range of power supply.

## III. WORKING PRINCIPLE

The working of arduino microcontroller is where the proper connection is made. Checking all the input ports as well as the power supply connection. The output of the pins can be connected with the external devices according to their applications. The program to be executed for the applications can be done by using arduino software. From this arduino software, we can edit according to the applications. This software can work on c and c++ programming language. It is fully a high level language. We can control the process of the application by editing the program in the arduino software and again can be uploaded to the arduino microcontroller via power jack cable. There is an option of reset button. The purpose of reset button is to reset the program which means the previous programs are deleted and we can use the arduino for the other application purposes. These arduino microcontrollers are widely used in automation industries for controlling the process and to work the system in an automation mode. Here, I have provided a simple arduino program to do the process of rotating a stepper motor for one revolution. There are many number of example programs

that are present in the arduino software. We can edit these programs for our applications purposes.

## 2. WIFI CAMERA:

Wireless camera is used to send real time video and audio signals from the war field, which could be seen on a remote monitor at the base station, and action can be taken accordingly. Heart of this robot is ATMEGA328. ATMEGA328 controller is the master controller that decodes all the commands received from the transmitter unit and give commands to slave controller. It also acts as Slave controller at the receiver unit which is responsible for executing all the commands received from the master and also generates PWM pulses for the speed control of the robot. Based on the input codes given by the user master will give command to slave controller and robot. The created camera system is used for a remote acquisition of images. It can be used, for example, in these applications: • Security systems – scanning when a door is opened, motion in the monitored area or periodical check of an area. • Monitoring - checking the condition of a monitored area or object, for example control of fuel level. • Remote reading - periodical readings of the inaccessible meters (water meters, gas or electricity).

### Night Vision System

The robot equipped with a wireless camera, which is not very useful in situations where the visibility or light level is very low. For night or dark area, spy robot will be almost impossible for identifying objects because the lights, which are provided on the robot, are fixed therefore it may not be possible to view those objects which are in the dark. At night or dark area where light is low a lighting circuit can be mounted on the robot instead of a night vision camera, which will increase the visibility in case of no light at all.

## TEMPERATURE SENSOR :

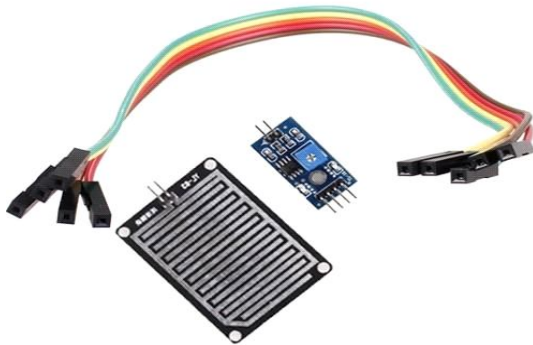
### LM35 Linear Temperature Sensor



The DFRobot LM35 Linear Temperature Sensor is based on the semiconductor LM35 temperature sensor. The DFRobot LM35 Linear Temperature Sensor can be used to detect ambient air temperature. This sensor is produced by National Semiconductor Corporation and offers a functional range between -40 degree Celsius to 150 degree Celsius. Sensitivity is 10mV per degree Celsius. The output voltage is proportional to the temperature.

Platinum resistance temperature used in the measurement of 800 degrees Celsius, while the thermal resistance and semiconductor temperature sensor suitable for measuring the temperature of 100-200 degrees or below, in which the application of a simple semiconductor temperature sensor has good linearity and high sensitivity.

**5 RAIN SENSOR MODULE:**

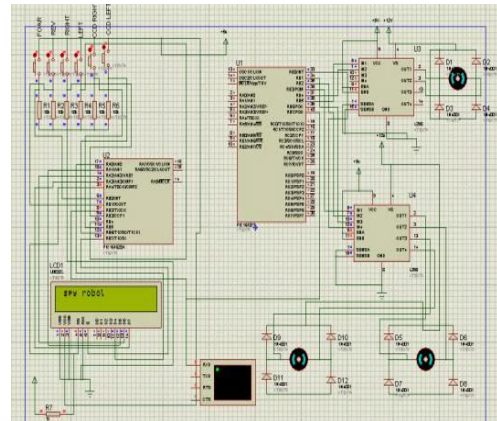


**Description**

The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. The module features, a rain board and the control board that is separate for more convenience, power indicator LED and an adjustable sensitivity through a potentiometer. When dropping a little amount water, DO output is low, the switch indicator will turn on. Brush off the water droplets, and when restored to the initial state, outputs high level.

**IV. SOFTWARE AND SIMULATION**

For the system, the simulation result is done by using Proteus professional schematic software. After the two programs are compiled as hex files, the compiled code sent to microcontroller to load the microcontrollers with no errors. The programs have successful compilation and then the circuit is tested using the proteus software as shown in figure



**Simulate Result of Spy Robot**

**V. APPLICATION**

- The Arduino ATMEGA 328 controllers are the most suitable microcontroller for the robotic applications.
- It can be built further to work as a HUMANOID.
- It is helpful in wars as a part of spying.
- The proposed robot can be further improved in terms of decision taking capabilities by employing varied types of sensors and thus could be used in border areas for different applications.
- The robot may also consists of temperature sensors to detect the ambient air temperature in the environment.
- It prefers rain sensor module to monitor the humidity of the environment.
- This robot can also be used in time of environmental disasters where the robot detects whether a human is present alive in that area.

**VI. RESULT**



**FIG: EXPERIMENTAL OUTPUT**

## VII. FUTURE SCOPE

- At present this project consists of few applications such as observing the surrounding through camera , but there is availability for increasing the enhancement of the project by including more application with extra features.
- This robot in its current state provides a platform for further research into improving its capabilities.
- Robot can be made more miniature in size.
- Halogen light can be used for the vision of the robot. We can also control the device by giving it voice command thereby making it a voice recognition system.

## VIII. CONCLUSION

The primary need for our project would be accuracy. We have been able to view the things accurately that are currently happening in the surrounding area. Our design has not caused any sort of disturbances. The robot will move depending on the motor direction based upon the input we give through command by remote section unit. It display 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.

## REFERENCES

- [1] International Journal of Science, Engineering and Technology Research (IJSETR), “**Smart Spy Robot**”, Ankit Yadav, IMS Engineering College, Ghaziabad, April 2016.
- [2] International Journal of Science, Engineering and Technology Research, Volume 3, Issue 9, September 2014, “**Wireless controlled spy robot by using pic microcontroller**” ,Wai Mo Mo Khaing, Department of Mechatronic Engineering, Mandalay Technological University, Mandalay, Myanmar.