Autonomous Surveillance Robot With Real Time Transmission

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Abstract: EMP stands for Electromagnetic Pulse Generator whose work is to damage digital gadgets by the principle of faraday's law. Strong magnetic fields destroy crystal lattice of digital device kept in front of them. It could be used in military and defense region for safely diffusing bombs. As countries are developing in technology sector, we need such devices to solve problem of life threat to bomb diffusers. EMP can be used for diffusing time bomb and also as a signal jammer. Also with the help of cloud monitoring technology, camera present in mobile phone or otherwise various kinds of camera have enable us to view our robot from a distance. The whole idea is to avoid human intervention as loss of machine is always better than loss of a person who is diffusing bomb.

Keywords: Blender, EMP, Arduino, Zigbee

I. INTRODUCTION

Magnetic coil is used to create high magnetic field used to destroy structure of digital device .Servo motors are used for controlling the movement of robot .The camera is for tracing the path of robot for cloud monitoring. Circuit is designed to

Produce high voltage which helps us to produce high magnetic fields. For real time transmission we have used Blender gaming Software which is interfaced with Arduino. All the movement of robot is controlled by laptop with help of this software and zigbee module for communication.

II. HARDWARE

Microcontroller

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins, 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It simply connects to a computer with a USB cable or obtains power with a AC-to-DC adapter or battery.

Magnetic coil

In the device we have used a copper coil which helps in creating the magnetic field. Magnetic field is created by a current carrying conductor and magnetic flux represents magnetic field lines. According to Faraday's Law, change in magnetic flux results in the generation of EMF. So due to this reason the magnetic field induces a potential in the other device and damages it

Servomotor

Servomotor is used in the robotic arm. A servomotor is a rotary actuator or linear actuator. The role of servomotor is to control the direction and velocity of the robotic arm.

Mechanical arm

The mechanical arm is the robotic arm of the device. It is connected to the servomotor. The servomotor controls the direction and velocity of the robotic arm

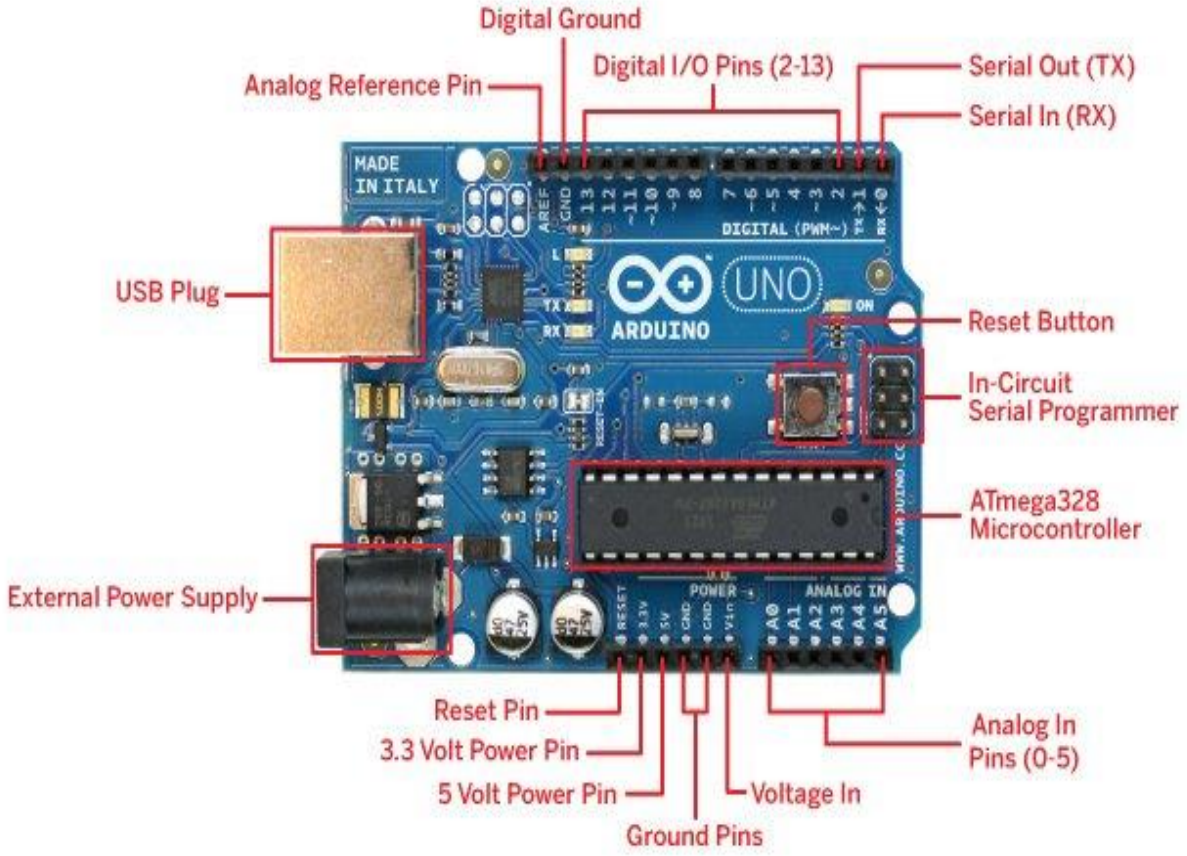

Figure1. Arduino

Figure 2. Servomotors

High voltage converter

Conversion of very low voltage (3V-6V) to a very high voltage (200kV-400kV) using high voltage converter

Relay

Relay is used to control the on and off state of the EMP. As relay acts like a switch so whenever we switch on the relay, the EMP will also turn on

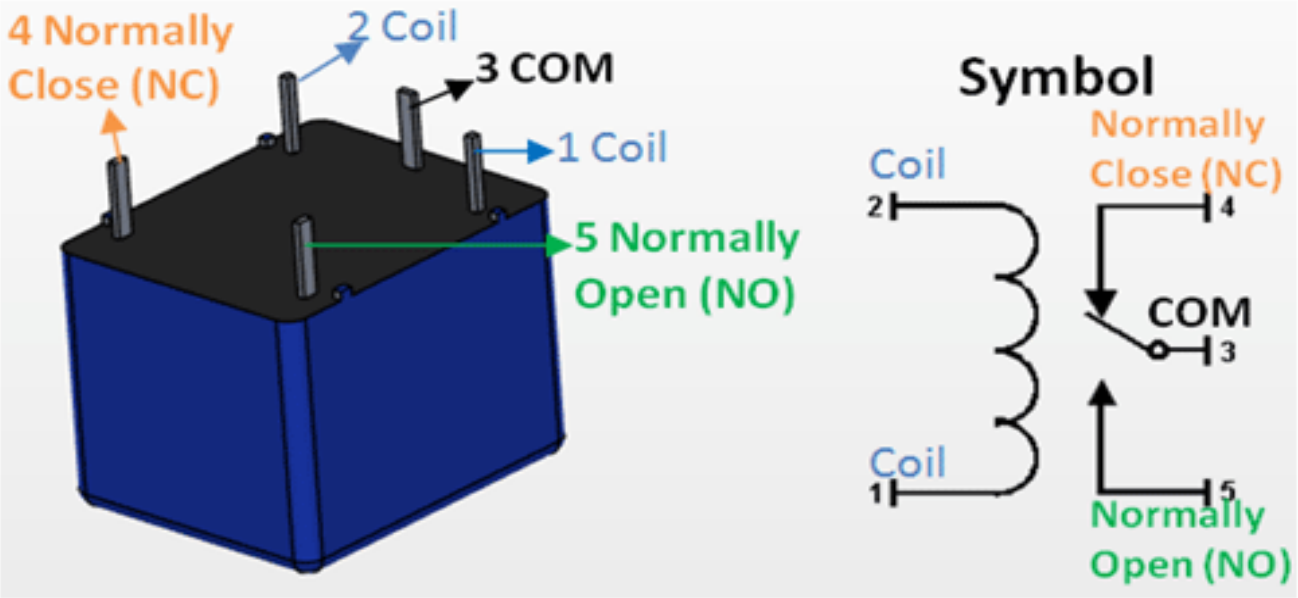

Figure 3. Relay

III. FEATURES OF THE DEVICE

Real time transmission:

Due to the trending technology of cloud monitoring, we can give the instructions to the device by being present at another place. We have used micro-controller for fulfilling this purpose.

Remotely controlled:

The person doesn't need to be present over the place ,the life of the person can be saved. We can control the device through mobile.

Portable:

We can carry it anywhere we want. Even if the digital equipment is far away , it can diffuse the equipment after reaching the place.

Damage the digital equipment:

The two ends of boost converter comes in contact with copper coil to produce magnetic field which in turn destroy structure of electrical devices

IV. DESIGN OF THE DEVICE

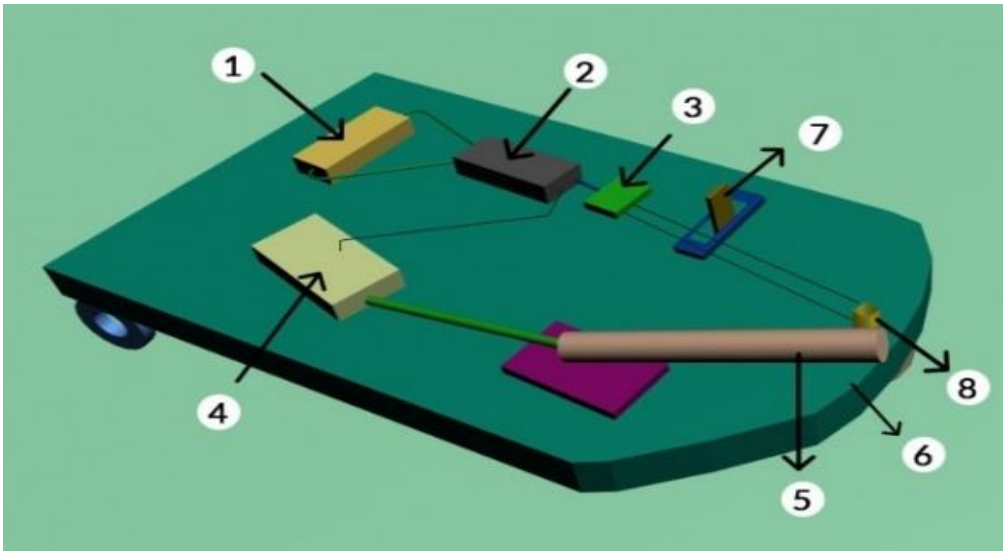

Figure 4. Layout of device

1. Battery
2. High voltage converter
3. Relay
4. Arduino Uno
5. Robotic arm
6. Remote controlled robot
7. Mobile or Camera
8. Magnetic coil

V. WORKING

The robot is released in the range of the bomb. From there we control the robot using cloud monitoring system. The microcontroller is providing the wireless signals for controlling the direction and movement of the robot. Also a Mechanical arm is connected to the robot. The main coil is connected to that arm so that as soon as the user see the bomb on our monitoring system, the bot will be placed correctly on its position and the arm is moved down with the help of high torque servo motor. The servo motor is connected to the microcontroller which is getting instructions wirelessly by the user. As soon as the above procedure completes, the user sitting outside gives the microcontroller the command to provide signal to the pin to which the relay is connected. The relay is further connected to the high voltage converter which provides voltage to the coil connected to it attached on the robotic arm. Relay turns on the high voltage converter for a period of time. The step up generator induces voltage in the coil because of which the magnetic field generates around the coil. The magnetic field generated is so strong that is changes the crystal lattice structure of the bomb hence diffuse the bomb

VI. APPLICATIONS

1. Destroy any type of electronic gadgets near the Centre.

2. It can be used to diffuse different types of digital bombs.

3. Specially designed for military purpose.

4. It can be used as a network jammer

VII. CONCLUSION

The idea is to limit human intervention and use cloud monitoring in efficient way. Boost converter allows us to induce voltage in copper coil and with hit and trial method the gap between them is adjusted to produce electromagnetic induction fields.

Conflict of interest: The authors declare that they have no conflict of interest.

Ethical statement: The authors declare that they have followed ethical responsibilities.

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This volume is dedicated to Late Sh. Ram Singh Phanden, father of Dr. Rakesh Kumar Phanden.

