

# Landmines and Missiles Detector Robot

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**Abstract:** destroy that The main objective behind this proposed work is to develop a robot to perform the act of surveillance human activities along with metal detection and Robots can be manually controlled using IOT android application. In this project, one can control the robot with the help of mobile. This robot will collect data from remote place and able to send those data to a remote IoT cloud database. We can control the movement of the robot by sending instructions via IOT app from our android phone. a multipurpose Robotic vehicle moves Forward, Left, Right, Backward and Stop directions at which can be constrained by Arduino. When any metal/Landmine detected automatically sends data to IOT server with buzzer alert. In proposed system we are going to designed a low-cost Microcontroller Based Android controlled Robot. The robot will move forward, backward, left and right direction by following the instructions given from the mobile. This system can be helpful for various purposes. Our project aims to provide a robotic vehicle equipped with metal sensor that will detects the ground mines. There is such system available that will detect the missiles using ultrasonic radar sensor and missile using laser.

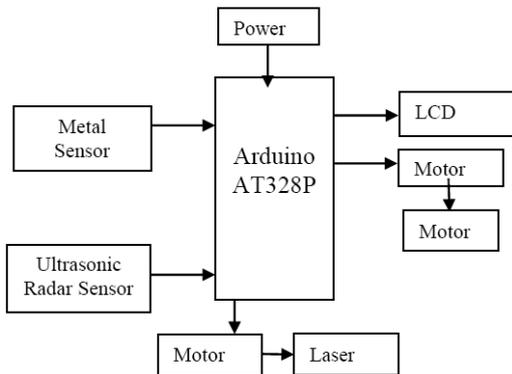
**Keywords:** Robot, Landmines, Missiles, Soldiers, Solution.

## 1. INTRODUCTION

Open It is important for landmines still hidden under the ground everywhere. It causes life disaster and durable and fleeting failure for individuals and other living creatures. It impacts the economy and quietness of the nations[1]. As a result of the battles between countries, landmines have turned into a certifiable overall issue and the opportunity of it needs a tremendous proportion of money to be spent on it. Numerous horticultural countries which are affected by stowed away explosives, to make this mission productive, spent a bundle of gross public compensation and human effort on breath in [2]. Even though advancements kept on making, the manual landmine slack is still outstandingly preferred

considering its consistency, consistency, and relentless quality [3]. Regardless, the weaknesses of the standard system are, that the association is slow and it is perilous to the trained professionals. This investigation has spread out a landmine acknowledgment wander robot to help the field, which is speedier, got, and more definite than the standard methodology [4]. Mine revelation is ordinarily performed by metal distinctive sensors. The distance between the sensor head and the covered landmine is the huge limit that chooses the execution of the landmine acknowledgment cutoff of the metal finder. By changing thing and level among the landmine and sensor head, the presentation of the metal locator can be moved along. The limit of the robot-assisted secret dangerous area with canning is acted profitably, accepting the sensor heads stay aware of uniform opening with ground level [5]. The more prominent need is given to human security in this endeavor. The robot can be worked from a safer distance or from the area where the landmines have proactively been cleared. Since the landmine area head is projected before the vagabond, the gamble of the impact is killed. By this philosophy, the vagabond, as well as the individual, are safeguarded to remotely work. Bluetooth controller is used for correspondence between wonder, and what's more, director since it is of insignificant cost and unquestionable level security benefits. Various shield activities can be accomplished by this drifter robot. It can convey stuff and officials. In like manner, the major wander robot model showed in Fig. 1. can be changed over into exceptional endeavor given out robots like Metal revelation robot, Army conveying robot, or Battle robot[6]. This paper is elucidated as follows. Region, one portrays the show about the structure, region two depicts the composing study, section three inspects the framework, region four depicts the results and discussion, and fragment five wraps up the paper by portraying the future degree quickly.

## 2. BLOCK DIAGRAM OF PROPOSED SYSTEM



## 3. SPACIFICATION OF EQUIPMENTS

ESP8266:

### ESP8266 Wi-Fi Module Specifications

The ESP8266 Wi-Fi module specifications or features are given below.

It is a powerful Wi-Fi module available in a compact size at a very low price.

It is based on the L106 RISC 32-bit microprocessor core and runs at 80 MHz

It requires only 3.3 Volts power supply

The current consumption is 100 m Amps

The maximum Input/Output (I/O) voltage is 3.6 Volts.

It consumes 100 mA current

The maximum Input/Output source current is 12 mA

The frequency of built-in low power 32-bit MCU is 80 MHz

The size of flash memory is 513 kb

It is used as either an access point or station or both

It supports less than 10 microAmps deep sleep

It supports serial communication to be compatible with several developmental platforms such as Arduino

It is programmed using either AT commands, Arduino IDE, or Lua script

It is a 2.4 GHz Wi-Fi module and supports WPA/WPA2, WEP authentication, and open networks.

It uses two serial communication protocols like I2C (Inter-Integrated Circuit) and SPI (Serial Peripheral Interface).

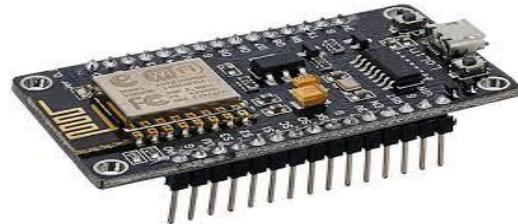
It provides 10- bit analog to digital conversion

The type of modulation is PWM (Pulse Width Modulation)

UART is enabled on dedicated pins and for only transmission, it can be enabled on GPIO2.

It is an IEEE 802.11 b/g/n Wi-Fi module with LNA, power amplifier, balun, integrated TR switch, and matching networks.

GPIO pins – 17



Memory Size of instruction RAM – 32 KB

The memory size of instruction cache RAM – 32 KB

Size of User-data RAM- 80 KB

Size of ETS systems-data RAM – 16 KB

Metal Sensor:

### Metal Detector Sensor Module

A metal detector sensor module is a device that uses electromagnetic induction to detect the presence of metal objects. The module typically consists of a transmitter coil that generates a magnetic field, and a receiver coil that detects changes in the magnetic field caused by the presence of metal.

When a metal object comes into proximity of the sensor, it will disrupt the magnetic field and the sensor will generate an output signal indicating the presence of metal. These types of sensor can be used in a variety of applications, such as security systems, industrial automation, and even in hobby projects. The output can be digital or analog, some modules can even provide the depth of the metal.

You can use this LC Metal detector non-contact metal induction detection module as a metal detector. When it approaches any metal, it makes a sound. This is a module specifically designed to detect metal. The module operates by inducing currents in metal objects and responding when it occurs. A nice onboard buzzer signals when it detects something and an onboard potentiometer allow adjustment of sensitivity.

The power cables of the Metal detector non-contact metal induction detection module will need soldering on for the module to function, positive to the outside of the module and negative between the potentiometer and an electrolytic capacitor.

Features:

“V+” ↔ Connect to power positive

“V-” ↔ connect to power negative

Adjust the potentiometer to vary the detection range and strength.  
 Small and easy to use the module.  
 It comes with a Buzzer for metal detection indication.



Ultrasonic Sensor:

Power Supply: DC 5V  
 Working Current: 15mA  
 Working Frequency: 40Hz  
 Ranging Distance : 2cm – 400cm/4m  
 Resolution : 0.3 cm  
 Measuring Angle: 15 degree  
 Trigger Input Pulse width: 10uS  
 Dimension: 45mm x 20mm x 15mm



DC Motor:

Features:

The motor has sturdy construction.  
 Shaft equips metal bushes for long life.  
 It comes with High-Quality gears.  
 The shaft has a hole for better coupling.  
 These “Grade B Johnson DC Motors” are in fame for their performance even at a low price compared to “Grade A Quality Johnson DC Motors”. (to know the difference between the two motors please read the Note below)

It is a simple DC motor featuring metal gearbox for driving the shaft of the motor, so it is a mechanically commutated electric motor which is powered from

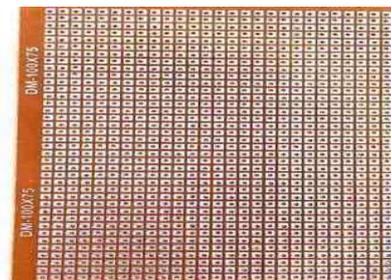
DC supply. The Johnson Geared Motors are known for their compact size and massive torque-speed characteristic.

The Johnson Motor comes with side shaft also known as an off-centered shaft and six M3 mounting holes. The shaft of the motor equips metal bushes which makes these DC gear motors Shaft wear resistant. The shaft of the motor has a hole for better coupling.

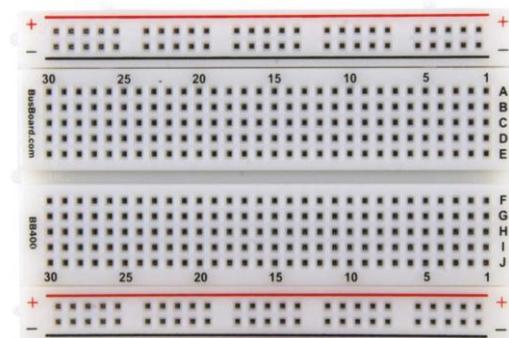
The motor will run smoothly between the voltage range 6 to 18 V DC and give you 500 RPM at 12V supply. It provides the torque of 1 kg-cm at 500 RPM.



Zero PCB:



Breadboard:



Servo Motor:

This is a TowerPro MG90S Mini Digital Servo Motor (180° Rotation).

TowerPro Servo Motors are optimum-quality and affordable cost servos.! They are suitable for a wide range of applications, including RC aircraft,

automobiles, and robotics, Or just to have some fun with whatever crazy project you're working on.

When you purchase TowerPro motors in India, they are almost usually NOT ORIGINAL, and these are no exception... These are NOT ORIGINAL Tower Pro Servos, either. However, they are dead cheap and Serve the purpose. We put them to the test and found them to be of good quality for the price.

You can buy E Max Servos OR Orange servos if you're seeking high-quality servos.

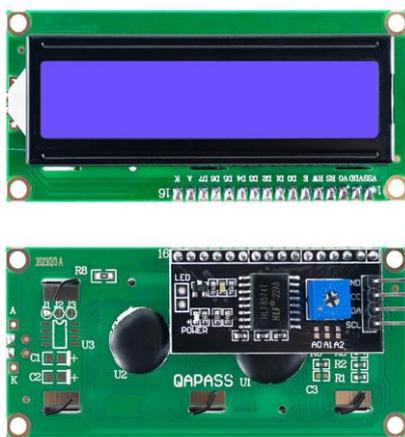
Note: Sticker color may be different.

Features:

- High resolution
- Accurate positioning
- Fast control response
- Constant torque throughout the servo travel range
- Excellent holding power



LCD Display:



A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers to display information

#### 4. ADVANTAGES

- 1) this robot can measure distances over long ranges.
- 2) Reduce the number of casualties caused by landmines.
- 3) It can automatically destroy the detected missiles.
- 4) It can detect landmines without putting humans in danger.
- 5) We can communicate between the operator and the robot.
- 6) There are millions of landmines around the world, and robots can help clear them out.
- 7) Can track objects moving in multiple directions

#### 5. APPLICATIONS

Both landmines and missiles detection robot is used in Army.

Only missile detection robot is used in Navy.

#### 6. CONCLUSION

This project of missile detection and automatic destroy system is modified to aim at a missile object in three-axis rotation by following the Ultrasonic transceiver data.

Landmine detection robots can be a safer, faster, and more cost-effective way to detect landmines than manual demining.

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