# Wireless Detection of Landmines by Using GPS & GSM

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**Abstract:**

*This system uses the Global Positioning System (GPS) tracking technology in combination with Global System for Mobile (GSM) technology. An integrated system employing latest tracking techniques using satellite receiver in the form of GPS Modem, integrated with a robotic vehicle can be used to detect the exact location of metal in the field. Then the GSM module transmits the received data to the authorized Mobile user. Main purpose of this project is to detect landmines by using a GPS enabled remotely controlled robot.*

*Keywords: Microcontroller, GSM Module, GPS module, Sensors*

## I.INTRODUCTION

Expectedly, Wireless - controlled robots use RF circuits, which have the downsides of restricted working reach, constrained recurrence run and the constrained control. Utilization of a cell phone for mechanical control can beat these confinements. It gives the benefit of strong control, working extent as huge as the inclusion territory of the specialist co-op, no obstruction with different controllers and up to twelve controls. In spite of the fact that the appearance and the abilities of robots differ inconceivably, all robots share the highlights of a mechanical, mobile structure under some type of control. The Control of robot includes three unmistakable stages as follows:1.Perception 2. Preparing 3. Activity. For the most part, the preceptors are sensors mounted on the robot, handling is finished by the on-board microcontroller or processor, and the undertaking is performed utilizing engines or with some different actuators. Robot is intended to recognize landmines in a remotely controlled manner. Client can explore the robot and find the landmines. Areas of distinguished landmines can likewise be gotten to by cell phones through SMS. The robot can be constrained by the created programming, which will program the parallel port and speak with the robot by means of radio signs. Created programming program utilizes catch and mouse control to explore the robot. The created programming will demonstrate the ongoing area of the robot and the area is transmitted. At the point when the robot distinguishes a landmine it sends the flag to the GSM framework as the sort of metal recognized and their area in, for example, Latitude, Longitude, the mechanical model.

## II. LITERATURE SURVEY

There were a few writings which alluded before beginning the work to take a smart thought and to check the conceivable outcomes of getting the required outcomes. Jadhav. 2013) have appeared in his examination about the car limitation framework utilizing GPS and GSM administrations. The framework licenses confinement of the vehicle and transmitting the situation to the landmine at the getting station. This framework is additionally given GSM to get an instant message about the where about of the mine.This writing has some shortcoming as specialist in a few spots where there is no arrangement of GSM systems it is troublesome for correspondence likewise did not make reference to progressively required data of the diverse sort of metals utilized for the mine. This is gotten by a GSM modem in the gadget and handled by the Spartan processor and the processorsends order to a GPS module in the gadget. The GPS module reacts with arrange's situation of the mine. This position is sent to the station as a SMS to the client with date, time, scope and longitude positions. This writing has some shortcoming when comprise air masses in the sky GPS will stop the work and don't send message and decide the area. Likewise some quality, utilizing a FPGA controlled framework we can without much of a stretch track the dig which guarantees wellbeing for the troops in the military vehicles and furthermore bunches of employments for open transport framework. This writing has some shortcoming as the postponed correspondence systems to send message recorded when the mishap and has some quality can catch the surges of information given by their accelerometers, compasses, and GPS sensors to give a convenient black box that distinguishes impact mishaps. The main writing study has done about the mishap location and send message utilizing GPS and GSM modems. The second examination is planning the metal location sensor, which checks if the mishap has been caused because of the impact of mines. Third writing to configuration station alert framework in case of impact. Fourthly, ponder planning mine following framework utilizing GPS. At

long last, every one of the written works found are great and gave data about the application, working rule, how to plan the System and pick best program to structure the circuit this enables us to compose the paper and furthermore to structure mishap notice system.

## III. DESCRIPTION

The automated control system consists of GPS module, GSM Modem, Microcontroller, Metal detector sensor Motor Driver L298, DC Motor. The unit is expressed in figure below:
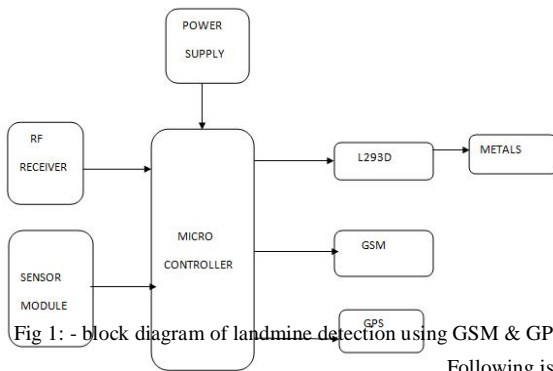


Fig 1: - block diagram of landmine detection using GSM & GPS. We have built a prototype model which as shown in above block diagram. Following is the hardware description.

**1**.**Arduino UNO**- Arduino board structures utilize an assortment of chip and controllers. The sheets are furnished with sets of computerized and simple information/yield (I/O) sticks that might be interfaced to different development sheets or breadboards (shields) and different circuits. The sheets highlight sequential correspondences interfaces, including Universal Serial Bus (USB) on a few models, which are likewise utilized for stacking programs from PCs. The microcontrollers are ordinarily customized utilizing a tongue of highlights from the programming dialects C and C++. Notwithstanding utilizing customary compiler toolchains, the Arduino venture gives an incorporated improvement condition (IDE) in light of the Processing dialect venture.

**GPS Receiver with Active Antenna-**Global Positioning System (GPS) satellites Broadcast signals from space that GPS receivers use to provide three-dimensional location (latitude, longitude, and altitude) plus precise time.GPS receivers provides reliable positioning, Navigation and timing services to worldwide users on a continuous basis in all Weather, day and night, anywhere on or near the Earth. Sunroom's ultra-sensitive GPS receiver can acquire GPS signals from 65 channels of satellites and output position data with high accuracy in extremely challenging environments and under poor signal conditions due to its active antenna and high sensitivity.

The GPS receiver's160dBm tracking sensitivity allows continuous position coverage in nearly all application environments. The output is serial data of 9600 baud rate which is standard NMEA 0183 v3.0 protocol offering Industry standard data messages and a command for easy interface to mapping software and Embedded devices.

2. **Power supply unit**- On-board 5Vrechargeable battery is used to drive dc motors &PIC16F877 &AT89C51. We require 3.3V and for various sensors and we require 5V to drive RF module, etc. So to do this we will have to build power supply unit using voltage

## IV. WORKING

Metal detector consists of copper coils. On the off chance that any metal is identified, it sends the flag information to controller and with the assistance of GPS it shows the scope and longitude of the correct position. GSM through Attention Command sends the SMS. We utilize engine driver L298D on the grounds that we give just +5v control supply and +12v is required to turn the engine so just L298D has the property to pivot the engine regardless of whether the information control supply is +5v.System comprises of two fundamental modules, which are the control station, which keeps running on a PC or Laptop and the remotely controlled robot. The control station comprises of three coordinated modules comprising of Metal recognizing segment, GPS information gathering segment and Remote control segment. These three segments go about as one framework however the fundamental framework parts go about as all the while working autonomous frameworks. Remote control framework utilizes a radio recurrence transmitter. Control framework, which keeps running on a PC or a Laptop, utilizes the parallel port and control transfers to remotely control the robot. Bluetooth GPS sends the area of the robot through Bluetooth information association. Controlling programming of the GPS of three incorporated modules comprising of Metal distinguishing segment, GPS information gathering part and Remote control segment. These three segments go about as one framework yet the fundamental framework parts go about as all the while working free frameworks.

Remote control framework utilizes a radio recurrence transmitter. Control framework, which keeps running on a PC or a Laptop, utilizes the parallel port and control transfers to remotely control the robot. Bluetooth GPS sends the area of the robot by means of Bluetooth information association. Controlling programming of the GPS goes about as a transitional layer, in the correspondence between the created programming and the robot. GPS segment of the created programming peruses NMEA information by means of correspondence port of the PC or the laptop.The programming unravels NMEA information and the area of the robo delineate is utilized as the GIS programming, which serves the GIS layers to the created programming. In the event that the robot recognizes a landmine by utilizing its metal indicator, it sends a radio flag by utilizing a FM transmitter. At that point the flag is caught by a FM collector which is connected to the control framework and afterward framework perceive the situation of the robot as thelandmine sullied area and adds a point highlight to the landmine point layer in the GIS database.

## V. ADVANTAGES

 Totally Remote Controlled.

  With the help of GPS we get the latitude and longitude of the detected position.

  Locations of detected landmines can also be accessed by mobile phones via GPRS and SMS.

  Wireless-controlled robots use RF circuits, which have the drawbacks of limited working range, limited frequency range and the limited control. Use of a mobile phone for robotic control can overcome these limitations.

  It provides the advantage of robust control, working range as large as the Coverage area of the Service provider, no interference with other controllers and up to twelve controls.

## VI. APPLICATIONS

 Anti-Car Theft.

 Alive Human Detector.

 To detect the landmine and prevent the loss of human lives.

## VII. CONCLUSION

The paper presents an advanced solution and a new direct approach for remote sensing based on the concept of metal detectors to detect the metallic landmines in El Alamein region. The advanced solution solves three main problems a) The absence of maps thatshow landmines locations that planted in the Egyptian western desert from WWII,

b) The lack of funds, c) The limited use of technology. The solution based on integrated technologies by using the wireless communications, cellular technologies and the packet oriented mobile data service to obtain a full control from a safe distance for landmine monitoring team in fenced minefields or suspicious regions. GSM sound tracker, GPS tracker, smart cellphones plus advanced applications and RC truck equipment were brought together to do three main tasks for metal landmines, a) Tracing,-b) Detecting,-c) pinpoint location coordinates.

### FUTURE WORK

In future, this proposed system can be used to find the actual condition of the place where the robot is sent to detect the landmine. This can be achieved by using a CCTV (Closed Circuit Television) interfaced with the microcontroller. Thus the actual images can be accessed directly using the CCTV. Since the use of GPS, the weather conditions of the area can be accessed. Knowing the weather conditions like heavy snowfall, landslide, heavy rains, etc. can be known. Thus the army headquarters can actually decide to send more number of personnel in order to minimize the loss.

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