



Metal Detector Robot With Location Coordinates Through Message

Ch. Shekar¹, K.Akhila², M.Bhavani², B.Akhil², D.Sai Ram²

¹Assistant Professor, Department of ECE, Teegala Krishna Reddy Engineering College, Medbowli, Meerpet, Saroornagar, Hyderabad.

²Department of ECE, Teegala Krishna Reddy Engineering College, Medbowli, Meerpet, Saroornagar, Hyderabad.

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ABSTRACT

The idea behind the project is to develop a robotic vehicle that can detect the metals underneath the ground which can be used to reduce the manual work in many applications. We are introducing a robotic system that can allow the user to manipulate and control robot.

Our project is used for the detection of metals, and sending the alert message and location to the operator. we use GPS for tracking the location and we use GSM for sending the alert message and location to the operator. Then we are using a fire sensor to detect the fire such that it sends alert message to the operator when the fire is detected. This project makes a huge difference in landmines, military, disposal squad by eliminating manual work.

KEYWORDS: Metal detection, GSM, GPS, Location tracking, Message sending.

1. INTRODUCTION

We know that metals are used in everyday life for many uses. But detecting metals or finding them has been a difficult task. Even though there are many techniques to extract metals but detecting metals from mines include harmful tasks. Mines contain explosives that have certain physical and chemical properties. The existence of mines buried in the ground is difficult to know without the aid of tools. One of the tools used to detect the presence of mines is a metal detector.

Metal detectors contain a coil of wire known as a transmitter coil. When electricity flows through the coil, a magnetic field is created around the coil. When metal detectors are moved above the ground, the magnetic field will also move. When held close to a metal object,

the magnetic field will affect the atoms inside the metal, even changing the way electrons move. The weakness of this metal detector is the high risk of victimization to users because its use still relies on direct human intervention.

Ease of doing a job is now a human need in carrying out its activities so that humans develop a breakthrough in utilizing technology. Utilization of technology to save time and costs. One solution to meet these needs is to use robotics technology that will help even replace some aspects of human work.

But our project reduces manual work by detecting metal underneath the ground without any digging. In general, to bombs and explosive materials has been a

difficult task but by using our project we can detect metal and also fire while controlling the robot.

2. LITERATURE SURVEY

Metal detectors are fascination machines. Metal any of the people who use them are just as enthusiastic about extolling the virtues of their favourite metal detector as they are about setting off in search of buried treasure. This is the primary means by which we determine how well we are doing our jobs, and what sort of things we need to do better. Sometimes though, communication is difficult. The most commonly used metal detection technology is very low frequency (VLF), also known as induction balance. In this type of metal detector, there are two rings: an outer coil called the transmitter coil and an inner coil called the receiver coil. The transmitter coil has an electric current running through it, which creates an electromagnetic field. This magnetic pulse interacts with any conductive object it passes over, causing that object to create a weaker magnetic field of its own; it is this magnetic pulse from the object that the receiver coil senses. The receiver coil is shielded from the transmitter coil's magnetic field, but can pick up magnetic pulses sent by other objects. The receiver coil amplifies these frequencies and sends them to the control box for analysis.

Our project is used for the detection of metals, and sending the alert message and location to the operator. we use GPS for tracking the location and we use GSM for sending the alert message and location to the operator. Then we are using a fire sensor to detect the fire such that it sends alert message to the operator when the fire is detected. This project makes a huge difference in landmines, military, disposal squad by eliminating manual work. Metal detectors contain a coil of wire known as a transmitter coil. When electricity flows through the coil, a magnetic field is created around the coil. When metal detectors are moved above the ground, the magnetic field will also move. When held close to a metal object, the magnetic field will affect the atoms inside the metal, even changing the way electrons move. The weakness of this metal detector is the high risk of victimization to users because its use still relies on direct human intervention.

3. PROBLEM STATEMENT

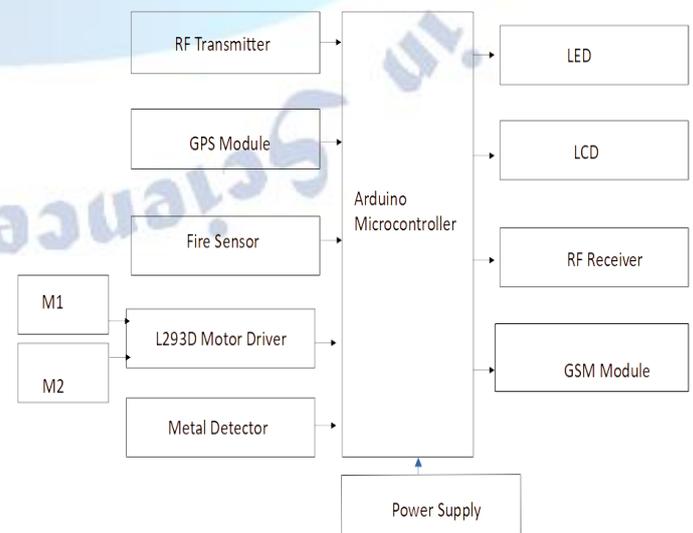
Land mines buried under the ground causes threat to the lives and affect the economy of the nation. Detection and removing of these mines manually is a dangerous task, which may sometimes causes accidents. In such situations robots aid in detection of the land mines. Not only land mines, these robots can be used to detect any other metals presented in the ground. This article explains the metal detection robot that uses RF technology. Metal detector is a very common device that is used for checking persons, luggage or bags in shopping malls, hotels, cinema halls, etc. to ensure that person is not carrying any metals or illegal things like guns, bombs etc. Metal Detectors detect the presence of metals.

4. PROPOSED SYSTEM

The problem with the existing system is that detecting metals is been a difficult task. We are going to introduce a new technology which is can detect metals efficiently ahead of its pathusing RF technology. A metal detector circuit is mounted on the robot body and its operation is carried out automatically on sensing a any metal underneath. When the metal is detected it sends an alert message location to the operator using GSM&GPS. It is harmless and can be controlled by the user. On adding the fire sensor we can detect the fire and send location to the operator using fire. This can extended using new technology in different ways such that the technology can be used better.

IMPLEMENTATION

Block Diagram



WORKING

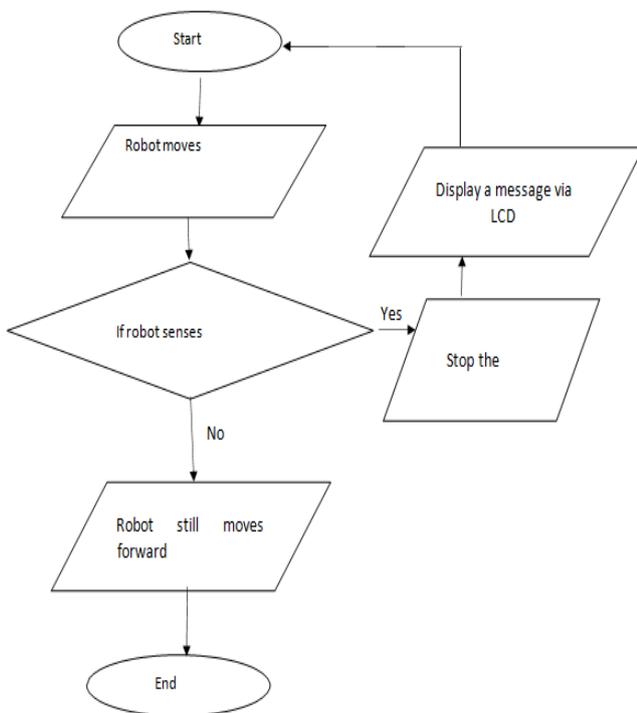
The main aim of this metal detector project is to detect the metal in the surroundings. After detecting the metal, the exact location of it is send using GPS to the operator. We will be using RF technology for controlling the robot, the transmitting end using push buttons, commands are sent to the receiver to control the movement of the robot either to move forward, backward and left or right etc.

A metal detector circuit is mounted on the robot body and its operation is carried out automatically on sensing a any metal underneath. On sensing the metals it sends the location to the operator via message and at the same time it detects the fire using fire sensor. For sending the message to the operator we use GSM and GPS here.GPS tracks the location and GSM sends it to the operator.

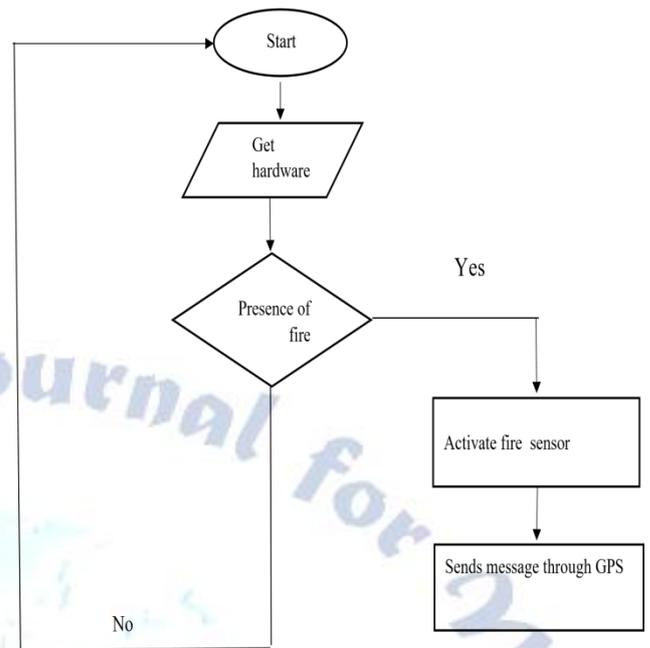
We will be mounting a fire sensor to the robotic vehicle which can detect fire ahead of its path.We use photoelectric fire sensor for detecting the fire so that whenever the fire is detected a message is send to the operator with the location where the fire is detected.

FLOW CHART

Stage-1:



Stage 2:

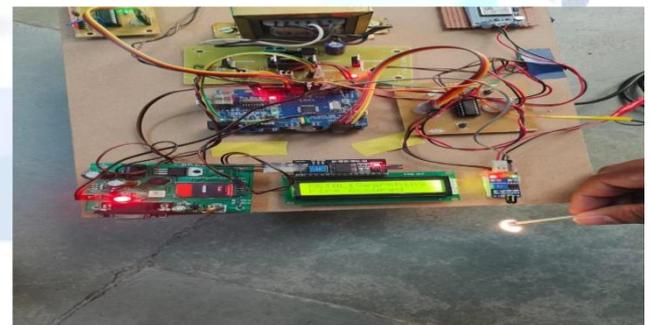


Arduino IDE software
C++ language

5. OUTPUT STREAMS

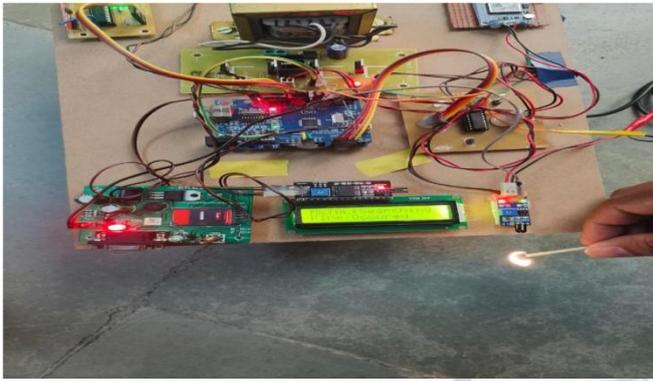
STAGE1RESULT:

We use a metal detector that can detect metals underneath the ground. Metal detectors detect metals around and operates at a frequency between 7 kHz to 25kHz.we are using GPS to trace the location where the metal is detected and we GSM to send the location to the operator. It also sends an alert message to the operator.



STAGE2RESULT:

In stage2, we will be adding photo electric fire sensor to the robotic system such that is can also sense or detect the fire when the temperature is above 50 degrees. It sends an alert message to the operator with location.



5. CONCLUSION

This paper presents "MULTI SENSOR ROBOT" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit using highly advanced IC's and with the help of growing technology the project is extended by adding the fire sensor.

FUTURE SCOPE

The future scope to this project "MULTI SENSOR ROBOT" can be improved by using gas sensor. The design of a sensor-based automatic gas leakage detector with an alert and control system which is a low-cost, low power, lightweight, portable, safe, user friendly, efficient, multi featured and the simple system device for detecting gas. Gas leakage detection will not only provide us with in the, health department but it will also lead to raise our economy, because when gas leaks it not only, contaminates the atmosphere but also wastage of gases will hurt our economy. Any research work has always some limitations and scope of expansion. The extent of this work can done by using a camera.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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