Advanced Military Spying & Bomb Disposal Robot

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Abstract- As Warfield areas and border areas like Kashmir identification of intelligencers isn't an easy task and, in the night,it becomes indeed more delicate. Although numerous people are living at the border areas chancing intelligencers is burdensome at night. So, to overcome this problem we've chosen this design idea.The main purpose of this system is to identify the intelligencers in the night using robot as set robot has high speed, it can work in dangerous or dangerous terrain,to perform repetitious task, effectiveness, delicacy, rigidity. The task of covering intelligencers, sound, mines, with the help of the separate detectors becomes easy. This design is veritably salutary in areas where there's high threat for humans to enter. This system makes use of robotic arm as well as robotic vehicle which helps not only to enter an area involving high threat but also to pick whatever expostulate it wants to. In this proposed system we've used an essence sensor detector in the essence, which is used in the landmines, can be detected by the robot and with the use of the arm the landmine can be removed and can be disposed in a veritably proper way without harming any of the army personals. With the use of similar robot, we can also diffuse the bomb used by terrorist. The persons diffusing the bomb they need to wear the large quantum of protection tackle. However, by the use of the robot they do have to harm any further. With the use of camera the person controlling the robot can see veritably easily and handle veritably precisely with the use of detectors we can also measure the distance in between them and if any kind of stir appears the robot will descry incontinently.

Keywords- surface reconstruction, Automation, Robotic Arm, ESP32 camera module, DIY

I. INTRODUCTION

 In this work, we've introduced advance military syping and bomb disposal robot. Robots are taking on condemning task in the war field areas. It's unsafe for the persons in the border areas to do all the huge work themselves. The huge ways are dangerous for the soldier. As a result of that robot plays an important role in the place of the warrior. Our design is designed keeping in mind, the view of the current civil wars, military insecurity and terrorist scripts across the globe. Nearly, every day so numerous trained people get either injured or losses their lives while dealing with or trying to defuse the bombs. All this can be perceived by the innumerous number of newspapers and pictures that appears daily on news channels and print media around the world. Then we are going to construct a robot, which is used for bomb disposal purpose. The main idea of the robot is to serve the bomb disposal team with proving safety and security from the troubles that they're facing in their daily lives. The bomb outfits in India have various sensors and may be some other outfit for detecting the bomb and disposing it, but still they have to keep their lives at threat by going near the bomb physically or the suspicious packets without any safety and preventives. Now a days IOT technology taking granted for most of the controlling operations like medical, defense, machine, artificial design, smart metropolises and numerous further. It has been considered as another technological revolution. A High number of operations and regulator can get connected to the IOT network, and with the help of the robot, we can dispose the bomb. This design is concentrated on developing a military surveillance system that helps the solider to cover the places and to avoid intelligencers entering into our areas by using web camera and IOT technology for distant control as well as bomb disposal.

II. PREVIOUS WORK

[1] Sarmad Hammed, Adeel Azfar Khan, Military spying robot

The main aim of this paper is to make a robot which helps us to monitor video survelliance for detection of spies. The proposed robot has camera unit that is useful for monitoring live video by preventing damage of the human life by providing security to the humans. Now a days, providing security at the military order areas like Kashmir

becomes even more difficult task. even though border areas providing their support and safety to the people, but it is not as easy task to watch every moment and providing security at the night becomes even more difficult. An indispensible obligation of this circumstances a robot which implusively spots intruder in the military border areas. Robot plays an important role in serving humans, even some robots put back humans by doing their work and by providing security to the persons robot .This robots can be used for short range distances at the border areas. This robot has inbuilt micontroller aand web camera to detect the obstacle path.

[2] Priyanka Yadav, Leena Chaudhari, War Field Spying Robot with Wireless Night Vision Camera

This robot mainly focuses on safety of soilders in the warfield. By using this robot we can maintain the distance from an enemy while attacking increase our elasticity occur by knowing their activities. Here we are using laser for to lock the position of the enemy and missal, and it also have a additional feature like mine detector it will helps us to know where the land mines which makes to lose many lives. The project is designed to develop a robotic vehicle using RF technology for remote operation attached with wireless camera for monitoring purpose. The robot along with camera can wirelessly transmit real time video with night vision capabilities. This is kind of robot can be helpful for spying purpose in war fields. An ATmega16 microcontroller is used for the desired operation. At the transmitting end using Joysticks, commands are sent to the receiver to control the movement of the robot either to move forward, backward and left or right, ARM up and down etc. At the receiving end two motors are interfaced to the microcontroller where they are used for the movement of the vehicle. The RF transmitter acts as a RF remote control that has the advantage of adequate range (up to 200 meters) with proper antenna, while the receiver decodes before feeding it to another microcontroller to drive DC motors via motor driver IC for necessary work. A wireless camera is mounted on the robot body for spying purpose even in complete darkness by using infrared lighting.

[3] V. Abilash, J. Paul Chandra Kumar, Ardunio Controlled Landmine Detection Robot

The paper describes an advanced multi-sensor demining robot. The robot transport system is based on a simple structure using pneumatic drive elements. The robot has robust design and can carry demining equipment up to 100 kg over rough terrains. Due to the adaptive possibilities of pedipulators to obstacles, the robot can adjust the working position of the demining sensors while searching for mines. The detection block consists of a metal detector, an infrared detector, and a chemical explosive sensor. The robot is controlled by means of an on-board processor and by an operator remote station in an interactive mode. Experimental results of the transport, control, and detection systems of the robot are presented. The main disadvantage of the robot is weight factor due to the overloading of sensor.

[4] Rajat desai, Virendra naik, Advanced military spy robot and bomb disposal

This paper presents the wireless bomb disposal robot which will help to improve defense of our nation from terrorist, suicide bombers and other such activities. The bomb detectors and disposal system works only with the presence of experts. But this way of analyzing takes more time and make risk to life of experts. The Wireless Bomb Disposal Robot uses a control application, at the user end to control the robot remotely using Wireless technology. The bomb technician controls the robot using this application at control site. Input from the user is transmitted over Bluetooth to the Receiver, where it is received, identified and given to the appropriate module (Robot) to act. The Robot consists of a Base, a robotic Arm and a wireless camera on it. We have used DC motors for the elbow and the gripper of the robotic arm. As we are not risking the life of a bomb expert or any other commando. Hence introducing the safest way for disposing the explosive to save life of common people. By using this robot we can easily controlled wirelessly by using android mobile which is connected to Bluetooth. We have done this project mainly to safeguard the army from landmines and missals without letting the soldiers life in risk.

[5] Amit Kumar, Rinkesh Ingole, Neha Roy, Military spying and military mines detection wireless robot with night vision camera

The main aim of this paper is to detect the spies at the time of the terrorist attack. The proposed spy robot is used in land and underwater. This paper deals with the controlling robot with Raspberry pi and ultrasonic sensor is used to detect the presence of the humans. This robotic model is mainly useful in the remote areas for providing security and in underwater mines to detects the presence of bombs and sends the information.

III. PROPOSED METHOD

First the Wi-Fi module is used to connect with the arduino and the app which is build using the MIT app inventory which is build and successfully tested so that the app can be control the vehicle using the command in the given following functions which are Right, Left, forward, Backward, left Forward which can be used through the the vechile can be moved freely through the all the directions also using the other app we can control the vehicle using the ESP32 Camera module which will be very useful for avoiding the obstacles like pedals and the rocks for the smooth transform of the vehicle we can also use the camera module we can check the landmine type and the amount of time will be required for the disposing the landmine next we have used nema 17 stepper motor so that it can be controlled the speed of the vehicle and the vehicle can be managed for the robotic arm. We have used MG996R Servo motor, which can pick up the landmine and can be successfully disposed. (Fig.1)
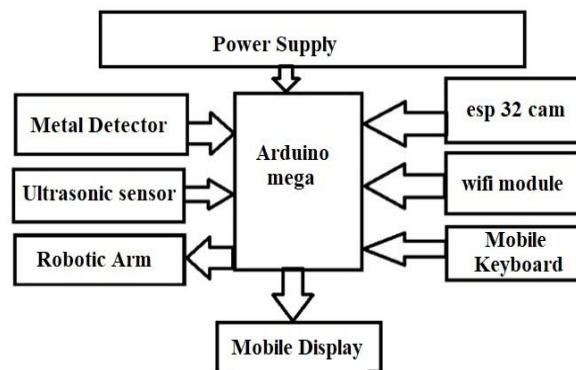

Fig.1. Block diagram of the proposed method

1. Battery:-So first we will be using the battery of 12v 8amps reason because we will be using nema 17 stepper motor which requires about 12v 8amps per motor.
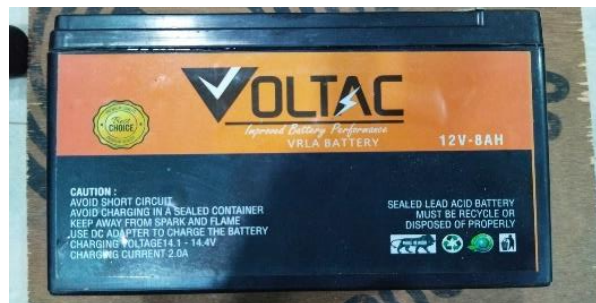

Fig 2. Lead Acid Battery 12V-8AH

2. Metal detector: - We will be using for detecting the metal, which is present over the landmine.

Fig 3.Metal Detector

3. Ultrasonic sensor:- We will be using for measuring the distance form robotic arm and the landmine

Fig 4.HCSR-04 Ultrasonic Sensor

4. Robotic arm:- We will be using for moving the landmine from one place to another through which it can be disposed

Fig 5.Robotic Arm

Fig 6.MG996R Servo Motor

Fig 7.SG 90 Micro Servo Motor

5. ESP32 cam:- When the metal detectors detects we should check that the proper landmine is present or the other metal is present over there and can also guide the vehicle in the proper pattern
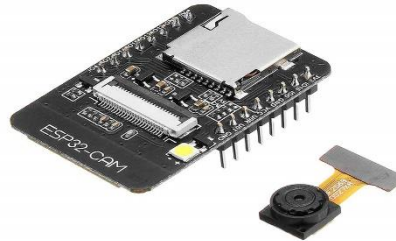

Fig 8.ESP 32 Camera Module

6. keyboard:- We will be controlling the vehicle through the app we have build using the mit app inventory

7. Display: - There will be two displays one for controlling the vehicle in which the keyboard will be controlled a and on the other display the through the esp32 camera module we will be looking for the and controlling the vehicle thorough it.

FLOWCHART
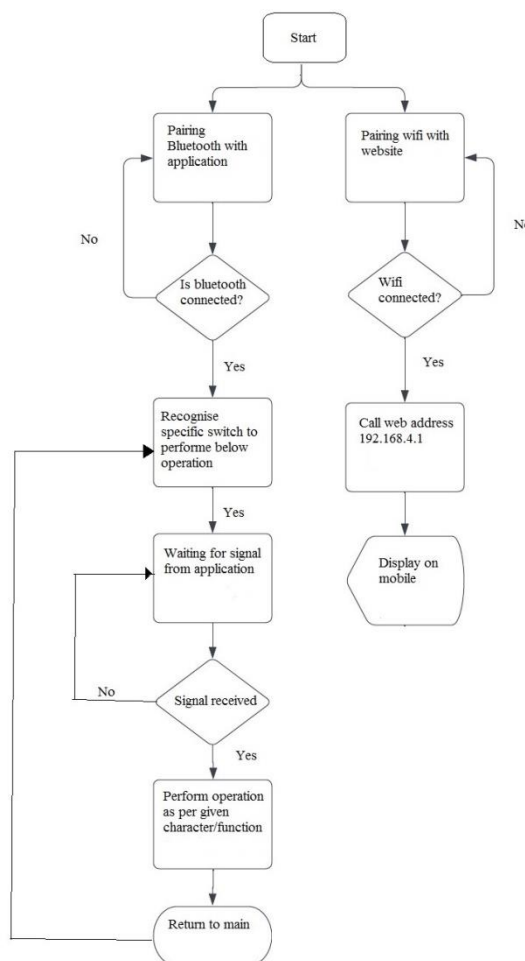
At the beginning when we start the device the power gets on and then we need to connect it to the Bluetooth and to Wi-Fi on both of the devices through the app which has been developed through the mit app inventory and for the other we need to insert the IP address to the chrome for getting the input of the video. If both are not paired need to reboot the device and the app for the proper connection after getting the proper connection we have defined the proper keywords or functions for the proper function such as we have defined the functions from 1 to 27 for moving the Forward, Backward, Right, Left, Side Right, Side Left, rotate Left, Rotate Right, Right Forward, Right Backward, Left Forward, Left Backward & Stop Moving same as per for the robotic arm for the Waist, Arm, Gripper etc. After getting the value/function through the app the arduino mega will move as per the command given as per we know there will be camera module we will be checking through the metal detector thorough which the we will be confirming the landmine and disposing is through the robotic arm.

IV. APPLICATIONS

1. Helps for surveillance and provide security for the people.

2. For hostage situation, reconnaissance missions video feedback.

3. Beneficial in areas where there is high risk for humans to enter.

4. Robot which helps for the surveillance and for providing security for the people

5. The pagers of identifying spies become easy with this project especially the military purposes.

6. The spy robot can easily move, capture images and wirelessly transmit them, thus giving the soldiers an intimation about the dangers and situations in the war field.

7. The robot will move depending on the motor direction based upon the input we give through transmitter (remote) section.

8. Robots can make quick decisions in fast-paced combat situations.

9. Human lives can be saved if robots are sent into frontline combat.

10. They can be mass-produced and upgraded instead of being trained.

11. Military robots can traverse hazardous environments that are otherwise fatal to humans.

12. Military robots are often lifesaving, they can perform duties similar to human duties without the actual danger to human lives.

13. They can be easily replaceable.

V. ADVANTAGES

1. The proposed system of the bomb- disposing robot will be very useful in the area of security and spying of enemies.

2. Using camera. it's easy task to watch every moment which are act at border areas and it's Support as well as safety to soldiers

3. Using sensors robot can detect "mine in military areas. In addition, other secure a Because of that robot dispose the active.

VI. DISADVANTAGES

1. Military robots can be hacked and and misused through the enemy.

2. Robot can be jammed by the use of the jammers available by blasting electromagnetic noise at the radio frequencies.

3. Military robots, without the right kind of restrictions in place, can make unethical decisions during military operations that might result in a high count of civilian casualties.

4. Vehicle cannot be used at night due to less vision available to see through the camera.

VII. RESULTS

According to our work, we will be using this system to disposing of landmine with the help of robotic arm, ESP32 camera module and metal detector. Therefore, with the help of this project we will be helping army person to clear the landmine field and can processed for their ongoing mission. In addition, this system can be useful for civilians so that they will safe incase if they incidentally step over the landmine.

PCB Designing-

Fig 9. PCB Designing

3D Printed Robotic Arm Model-

Fig 10.Robotic Arm

TESTING OUTPUT

Fig 11.Final Project Vehicle With Robotic Arm

VIII. CONCLUSION

In our system, we are presenting 'The Advanced Military Spying and Bomb Disposal Robot'. Using metal detector sensor we can remove landmines as well as we can defused the bomb used by terrorist. It detects the signal, which is transmitted and according to that control robot in forward, backward, left turn, right turn movements. Metal/Bomb detector can detect the metals. The Wireless Bomb Disposal Robot uses a control application, at the user end to control the robot remotely using Wireless technology. The bomb technician controls the robot using this application at control site. Input from the user is transmitted over Bluetooth to the Receiver, where it is received, identified and given to the appropriate module (Robot) to act. The camera detects the exact location of the robot. In addition, we used ultrasonic sensor for measuring the distance range. Hence, in this work, we are tried to design a secure bomb diffusal spy robot, which ensures several benefits**.** In this manner, our project plays a crucial role in Military as well as in our police department.

IX. FUTURE SCOPE

This spying robot can be modified and made it for prolonged ranged and can be make it more useful by consuming more operational procedures and modules like Wi-Fi module, raspberry pi. Future scope of this robot is very efficient it may have gas sensors to detect the harmful or hazardous gases in the surroundings. It can also be used as bomb diffuser and bomb disposal team can also use this type of robot in many ways and reduces the risk factor of human loss. Further, a terminating framework can be set on the robot, to fire any foe when he is spotted. The innovation can be enhanced further by offering directions to accepting circuit and control it by utilizing satellites correspondence. It will utilized in shopping centers for pickup, drop trolleys and car vehicle painting. Likewise, the framework can be made android based, where all controlling should be possible through an advanced mobile phone. There is a light called halogen light, which is useful for the camera's vision, which is attached on the robot. This robot can also be controllable by giving commands through voice it will response to the voice commands also.

REFERENCES

[1] V. Abilash1, J. Paul Chandra Kumar2 "Arduino Controlled Landmine Detection Robot"http://ijesc. Org/ upload/ 58c75b 08e20d4f9694451a5f9e 4dcd4b. Ardunio20Controlled%20Landmine%20Detection%20Robot.

[2] Mehta, Mr. Lokesh, and Mr. Pawan Sharma. "SPY Night Vision Robot with Moving Wireless Video Camera & Ultrasonic Sensor."

[3] Jenifer, T. Maria, e t al. \"Mobile Robot Temperature Monitoring System Controlled by Android Application via Bluetooth.\" International Journal on Advanced Computer Theory and Engineering (IJACTE) 2.3 (2013)...

[4] Borker, Kunal, RohanGaikwad, and Ajaysingh

Rajput. "Wireless Controlled Surveillance

Robot." International Journal 2.2 (2014

[5] Bowcott, Owen. "UK opposes international ban on developing 'killerrobots'". The Guardian. Archived from the original on 2015-07- 29.Retrieved 2015-07-28.

[6] Dhiraj Singh Patel. Mobile operated spy robot. International Journal of Emerging Technology and Advanced Engineering (IJETAE); 2013.

[7] Arduino Controlled War Field Spy Robot using Night Vision Wireless Camera and Android Application, JigneshPatoliya, Haard Mehta, Hitesh Patel, 2015 5th Nirma University International Conference on Engineering (NUiCONE)

[8] Wireless Bomb Defusing Robot with camera interfacing Prof. Vaibhavjoshi, SonaliKatore, Yogini Bhandare, AmolKanade. #Department of Electronics and Telecommunication SITRC, Nasik, SPPU

[9] Arduino Military Spying and Bomb Detecting Robot Sonali R. More1, Priyanka P. Togarge1, Amruta P. Shetkar1, Prof.A.R.Dumne 2 BE Student, Dept. of Electronics Engg, STME'S Latur, Maharashtra, India1 Assistant Professor, Dept. of Electronics Engg, STME'S Latur, Maharashtra, India2.

[10] Military robots of the present and the future, AARMS TECHNOLOGY Vol. 9, No. 1 (2010) 125–137.

[11] Peterson, J.K. Understanding surveillance technologies: spy devices, privacy, history & applications. Auerbach Publications. 2007.

[12] Rohan Gaikwad, Boarkar, Kunal, and Ajay R   "Wireless Controlled Surveillance Robot"   International Journal 2.2 (2014).