E-Rakshak-The Border Surveillance Robot

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Abstract- *In this project, we'll carefully examine a E-Rakshak The Border Surveillance Robot as we know surveillance is a difficult task of international border areas. It is not possible by the border guarding forces to watch the border at each & every moment. In this case the essential requirement is to have a system Security control unit. Nowadays, to carry out risky jobs the robots are used that cannot be done by the soldiers. The main purpose of developing such a new technology in this present System-based spy robot platform with remote monitoring & control Algorithm through Internet of Things (IOT) has been developed which will save human live, reduces manual error and protect the country from enemies. The system comprises the Raspberry Pi (small single- board computer), camera, PIR sensor and shooting gun. The Raspberry Pi is the brain of the system. Android app control the moving to a specific direction and camera for live streaming videos of required areas for tracing and attacking & the PIR sensor are activated depend on external stimuli via IOT. The user is able to access the system with control buttons on the android app from control room.*

I. INTRODUCTION

In military fields they always tried to use new gadgets and weapons for reducing the risk of their. Causalities and to defeat their enemies. The robotics product is used largely by the industries, defense, academic & research. The robots can be reprogrammed faster & more efficient design and implementation cost is very less than hiring a human caregiver. The robot has sufficient intelligence to cover the largest area to provide a secured space & perform preferred tasks in unstructured environments with or without human direction. For safety and security, real time object detection is essential in the remote monitoring such as intelligent home environments, consumer surveillance system, etc. Basically, the surveillance systems are building up with multiple cameras which are placed in different angles of view to track human objects. The tracking task is needed on cameras for dynamic objects which increases the number of cameras used in the system. The PIR sensor is used to monitor any living object and it is more suitable for surveillance systems. The wireless control provides additional benefits including increased flexibility and reduced installation cost. In proposed model the system's movement is controlled through android app.

OBJECTIVE

- To design functional block diagram.
- To develop the hardware.
- To develop the software program.
- To design the android app

II. LITERATURE SURVE

A robot which is usually an electro-mechanical machine that is guided by computer and electronic programming. Many robots have been built for manufacturing purpose & can be found in factories around the world. The design of the robot is such that it is controlled by a mobile app.

We use Bluetooth communication to interface Arduino UNO and android. Arduino can be interfaced to the Bluetooth module though UART protocol. According to input commands from android the robot motion can be controlled. Many of the military departments now utilize the robots to carry out risky jobs that cannot be done by the soldiers. In this present work, a Arduino Uno operating system based spy robot platform with remote monitoring and control algorithm through Internet of Things (IoT) has been developed which will save human live, reduces manual error and protect the country from enemies.

Review

1. **Yadnesha** Vaidya designed a robotic vehicle using Radio frequency (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. Also the Robot vehicle is provided with the laser beam gun and Water sprinkler operation. Robot has supported with the Laser gun for any destruction or so use, purposes, also the Robot has added a water sprinkler in advance for the fire safety as well are for extinguishing purposes, the Robot have a gun for shooting purpose which can load and reload accordingly. Also a cutter for cutting tresses. This is kind of robot can be helpful for spying purpose in war fields. From this paper we came to

know SITS, about how to make wireless robot also having shooting capabilities.

2. **Tanisha Gupta** designed a robot which is usually an electro-mechanical machine that is guided by computer and electronic programming. The design of the robot is such that it is controlled by a mobile app. We use communication to interface Arduino UNO and android. Arduino can be interfaced to the module though UART protocol. According to commands received from android the robot motion can be controlled. The consistent output of a robotic system along with quality and repeatability are unmatched. This robot is capable of spying using a wireless camera. This robot can be reprogrammable and can be interchanged to provide multiple applications. The design of the robot is such that it is controlled by a mobile. Generally many of the wireless controlled robots use RF modules. But our project for robotic control makes use of Android mobile phone which is very cheap and easily available. From this paper we came to know about the function of Bluetooth to control spy robot.
3. **Object Detection for Military Surveillance Using Distributed Multimodal Smart Sensors. This paper considers an autonomous ground Intelligence, Surveillance and Reconnaissance (ISR**) system comprising of multiple distributed, wirelessly communicating smart sensors. The ISR system, in turn, is a part of a larger System of Systems (SoS) consisting of aerial, manned, etc. surveillance systems and information collection centers. The smart sensors of the ISR system perform environment monitoring using different modalities and exchange object detection and identification results to assess the situation and provide other SoS components with this information. In the paper we discuss using acoustic, magnetic and Passive Infrared (PIR) sensor information for target detection and identification. We also propose an approach to distributed acoustic source localization and a method of velocity estimation using PIR data. For sensor communication an asynchronous ad hoc WSN configuration proposed. The system is implemented on low power smart sensors utilizing Atmel ATmega128RFA1 processors with integrated 2.4GHz IEEE 802.15.4 compliant radio transceivers. The smart sensors of the ISR system perform environment monitoring using different modalities and exchange object detection and identification results to assess the situation and provide other SoS components with this information. Connecting the sensors through an ad-hoc WSN and using redundant sensors reduces the role of every lone sensor and provides robustness, which is very important in military applications. From this paper we came to know about how to detect living object.
4. **T.Veeramanikand** studied: At present the surveillance of International border areas is a difficult task. The border guarding forces are patrolling the border seriously, but it is not possible to watch the border at each & every moment. An essential requirement of this situation is a robot which automatically detects trespasser in the border & report nearby board security control unit. Many of the military departments now utilize the robots to carry out risky jobs that cannot be done by the soldiers. In this present work, a Arduino Uno operating system based spy robot platform with remote monitoring and control algorithm through Internet of Things (IoT) has been developed which will save human live, reduces manual error and protect the country from enemies. The spy robot system comprises the Arduino Uno (small single board computer), night vision pi camera and sensors. The information regarding the detection of living objects by PIR sensor is sent to the users through the web server and pi camera capture the moving object which is posted inside the webpage simultaneously. The user in control room able to access the robot with wheel drive control buttons on the webpage. The movement of a robot is also controlled automatically through obstacle detecting sensors to avoiding the collision. This surveillance system using spy robot can be customized for various fields like industries, banks and shopping malls. The PIR sensor and proximity sensors are activated depend on external stimuli via IoT. The control room collects this information for later reference. The brain of the spy robot is the Arduino Pi minicomputer. From this paper we come to know about the working of spy robot and its uses for military environment.

III. PROBLEM STATEMENT

To develop a prototype which is based on IOT platform using Arduino PI, microcontroller, microcontroller, Arduino for tracing, Monitoring and attacking enemies by live steaming of videos using camera with Android application connected to a remote network wirelessly and is controlled by a remote user.

IV. STATEMENT OF SCOPE

We need to include distance measurement and temperature along with night vision. We want to make this system as advanced system and compatible with all features. Since these robots are implemented at the border region they should be designed to be water proof and should be able to loco mote in the rugged surface

V. BLOCK DIAGRAM

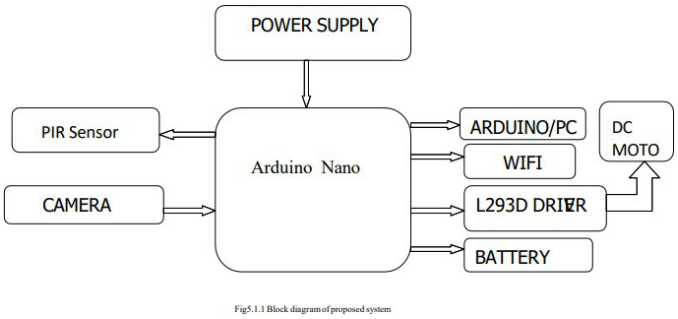

Fig5.1.1 Block diagram of proposed system

A Arduino operating system-based spy robot platform with remote monitoring and control algorithm through Internet of Things (IoT) has been developed which will save human live, reduces manual error and protect the country from enemies. The system comprises the Arduino (small single-board computer), camera, PIR sensor and shooting gun. The Arduino is the brain of the system. Android app control the moving to a specific direction and camera for live streaming videos of required areas for tracing and attacking. And the PIR sensor are activated depend on external stimuli via IoT. The user is able to access the system with control buttons on the android app from control room. SITS, B.E. (Electronics and Telecommunication Engineering) 2015 Course.

VI. CONCLUSION

We know the real time condition of the border area without using any human source. The surveillance robot gives us live streaming video, according to that we can give the command. This proposed design used for security purpose can operate effectively in order to collect various types of information that required by users. The surveillance robot was designed with Arduino pi. It monitors and secures a place among the adversaries that can be made by surveillance robots all the time with great accuracy. Camera is used which continuously monitors the robot surroundings and sends the information to the control station.

VII. FUTURE SCOPE

We need to include distance measurement and temperature along with night vision. We want to make this system as advanced system and compatible with all features. The project future scope has numerous openings that could be prosecuted for various future applications for monitoring and control, etc. This robot can also be used in times of environmental catastrophes where the robot detects whether a living human being is present in that region. In domestic applications such as home security can also be implemented using this method

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