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IoT based Multifunctional Robot for War Assistance

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Abstract: Most of the Defense organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These robots used in Defense are usually employed with the integrated system, including video screens, sensors, laser gun, metal detector and cameras. The Defense robots also have different shapes according to the purposes of each robot. Here the new system is proposed with the help of wireless camera through we can trace out the intruders (unknown persons) and the robot will be employed with integrated systems, including video camera, sensors, gripper and a weapon. Thus the proposed system, an Multi-functional defense Robot using wireless network GSM through we can update the data to web page server. This is specially designed robotic system to save human life and protect the country from enemies.

Keywords: Defence, multifunctional, robot, wireless camera

I. INTRODUCTION

Most of the Defense organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These robots used in Defense are usually employed with the integrated system, including video screens, sensors, laser gun, metal detector and cameras. The Defense robots also have different shapes according to the purposes of each robot. Here the new system is proposed with the help of wireless camera through we can trace out the intruders (unknown persons) and the robot will be employed with integrated systems, including video camera, sensors, gripper and a weapon. Thus the proposed system, an Multi-functional defense Robot using wireless network GSM through we can update the data to web page server. This is specially designed robotic system to save human life and protect the country from enemies.

II. LITERATURE SURVEY

[1]IoT BASED MILITARY ROBOT USING RASPBERRY

The system proposed in this project consists of a single unit, which will monitor the environment in various hazardous conditions and provide live video feedback. Basics of robotics like sensors and actuators, gives an overview on robotic construction. The proposed system is also able to capture real-time videos which are useful for surveillance for a specific person or area. Controlling of Robot is done using a Raspberry Pi3 processor. This robot is more comfortable for military applications such as surveillance of interested area.

Advantage

It will provide tactical advantage during hostage situations or in hostile grounds. It is capable of walking on any surface and providing monitoring over an area.

Disadvantage

it comes with basic video surveillance and metal detection so that it can detect underground landmines etc

[2] IoT Based Vehicle Robot for Military Services

This paper presents a modern approach for surveillance at remote and border areas Tank, any heavily armed and armored combat vehicle. The aim is to control that tank using wireless media; In this project the goal is to use IOT for controlling a War Robot. Which was successfully in achieved here. This robot runs well and it can be controlled by Android Phone or any compute.

Advantage

The tank is being controlled using wireless media by replacing humans.

Disadvantage

this system require certain amendments which requires wide coverage range, monitor and control through internet and more utilizer cordial.

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[3] Vision Based Robotics System for Military Application-Design Real Time Validation

This paper presents the design, implementation and validation of a Digital Signal Processor (DSP)-based Prototype facial recognition and verification system. This system is organized to capture an image sequence, find facial features in the images, and recognize and verify a person. The current implementation uses images captured using a WebCam, compares it to a stored database using methods of Principal Component Analysis (PCA) and Discrete Cosine Transform (DCT).

Advantage

the proposed system can be applied to various applications which are impossible in conventional PC-based systems.

[4] 10T Based Multifunctional War Architecture Terror Bot

Most of the Defence organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These robots used in Defence are usually employed with the integrated system, including video screens, sensors, laser gun, metal detector and cameras. The Defence robots also have different shapes according to the purposes of each robot.

Advantages: Here the new system is proposed with the help of wireless camera through which we can trace out the intruders (unknown persons) and the robot will be employed with integrated systems, including video camera, sensors, gripper and a weapon. This is specially designed robotic system to save human life and protect the country from enemies.

Disadvantage: It does not use machine learning algorithm to auto detect humans.

[5] Wireless Multifunctional Robot for Military Applications

Abstract—This paper presents a modern approach for surveillance at remote and border areas using multifunctional robot based on current 3G technology used in defence and military applications. This robotic vehicle has ability to substitute the solider at border areas to provide surveillance. The robotic vehicle works both as autonomous and manually controlled vehicle using internet as communication medium. This multisensory robot used to detect human, bombs, harmful gasesand fire at remote and war field areas.

Advantages - This paper presents a modern approach for surveillance at remote and border areas using multifunctional robot based on 3G technology.

Disadvantages - system requires wide coverage range, monitor and control through internet and needs to be more user friendly.

[6] Mobile Operated Spy Robot

In the recent development and trend most of the Defense organization now takes the help of robots to carry out many risky jobs that cannot be done by the soldier. These robots used in Defense are usually employed with the integrated system, including video screens, sensors, metal detector and cameras. The Defense robots also have different shapes according to the purposes of each robot. Here the new system is proposed with the help of wireless camera through we can trace out the intruders and the robot will be employed with integrated systems Thus the proposed system, a Multi-functional Robot using Internet of Things with wireless network GSM through which we can update the data to web page server and control remotely. This is specially designed robotic system to save human life and protect the country from enemies.

Advantages - They have proposed a design where a robot which is operated with the help
of mobile phone calls based on Dual Tone Multi frequency (DTMF) code. Here they have DTMF decoder which decodes the frequency of the voice and commands the robot.

Disadvantages - The main drawback here is that there is chance of signals being interpreted

[7] Automatic Enemy Detecting Defense Robot by using Face Detection Technique

In this paper, an automatic defense robot with enemy detection using face detection technique is implemented by blending the powers of Arduino and Android. The mobile camera moves along with the enemy face with the help of Servos. Using an android mobile phone is advantageous as we do not have to separately use a camera module and the image detection and processing can be done on the phone itself. The proposed system uses Bluetooth module with arduino with the mobile wirelessly. We need to keep in mind that hazards like landmines can damage the robot either fully or the fragments of it might be lost to the blasts. A land mine may cause damage by direct blast effect, by fragments that are thrown by the blast, or by both. The name originates from the ancient practice of military mining, where tunnels were dug under enemy fortifications or troop formations. The Robot is equipped with a camera for monitoring the condition of the robot. The Wheeled robot here is inexpensive, and is helpful as a tool in for military for surveying and monitoring purpose. The robot is equipped with a robotic arm for the sake of diffusion.

Advantages: The use of the mobile camera enables the image detection and processing to be done on a single device.

Disadvantages: This robot is not designed keeping in mind the hazards of the landmines present in the area.

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[8]Wireless RF Based Surveillance Robot Controlled via Computer

This paper proposed a wireless RF based surveillance robot which monitors the surrounding environment and provides the feedback to the user. The system is equipped with a wireless camera to provide visual aid to the person operating it and the robot itself is controlled manually by the user. The novelty from this paper is that the user is controlling the robot through a computer using a GUI(Graphical User Interface). Radio Frequency (RF) technology is used as the communication medium between robot and the computer. When the robot meets an obstacle, it is sensed using IR sensors and the user is alerted of the same. The robot can move according to the instructions provided by the operator to get the needed information. Additionally, the robot also has the capability to sense the light. If the area around the robot is dark, the light in the robot turns on and the visibility through the camera is maintained.

Advantages: The robot can be controlled using a common computer, thereby reducing the extra equipment necessary to maintain the system and making this a cost effective product.

Disadvantages: The robot itself cannot detect any faces or do any image processing.

[9]MULTI FUNCTIONAL DEFENSE ROBOT

In this paper, the proposed system makes use of low power Zig-bee WSN(Wireless Sensor Network) to trace out the enemies using integrated systems that includes video camera, sensors, gripper and a weapon. This proposed system gives an exposure to design a simple robot that can be used in multiple ways in defense. Here, the robot is controlled manually from a control room which is located at a far distance from the robot. The system used Zigbee for the wireless communication between the control room and the robot and has limitations with respect to the range. The system mainly focuses on welfare infantry to minimize casualties and helps in remote bomb detonation and diffusion.

Advantages: The system proposes a single robot that enables multifunctional working and helps in different ways in military scenarios.

Disadvantages: The Zigbee used for the communication purposes only works up to the range of 30m.

III. CONCLUSION

When we consider Defense robots today, there has been a huge development as compare to those robots used in earlier times. Today, Defense ground robots & unmanned vehicles are used worldwide. However, the significant growth of the current Defense robots comes as the nature of combat changes in every region while the globally integrated enterprise replaces nationalistic dominance. It can be said that Defense robot automation of the defense process is the next wave of Defense evolution. This proposed system gives an exposure to design a simple robot that can be used to do multifunction in defense. Manual control is also employed to control the robot from the control room which is located far away from the border area. The system uses non-commercial WIFI standard for wireless communication since this provides access to the as-yet unpublished specifications and permission to create.

The Multifunction Robot for military application system using Raspberry Pi is very in expensive and it is very useful project for army applications for soldiers, With the help of GPRS we are keeping the database for the further analysis. The camera will providing instant information of the remote unit for the analysis.

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