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Multifunctional War Field Robot using IOT

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ABSTRACT: *This paper presents a modern approach for surveillance at remote and border areas using multifunctional robot based on IOT used in defence and military applications. In Modern world, Automation robot is used in many of the fields such as defence, surveillance, medical field, industries and so on. This robot is electromechanical as well as artificial intelligent machine controlled by computer programming. It is designed to replace human beings in various hazardous areas. The control signal from transmitter is sent to the receiver which is connected to an object or device or vehicle that is to be remotely controlled. Similarly, this project mentions about a wirelessly controlled commando robot controlled using IOT.*

INTRODUCTION:

Military police must deal both with normal dangers associated with policing and those encountered on the battlefield. When not serving on base, they work in harsh environments and live in rough, undesirable conditions. This kind of environment cause death of human.

Humans can be replaced by robots to decrease the death rate in military. At border different tanks, missile, guns, land mines etc. are used by enemy. A land mine is an explosive device concealed under or on the ground and designed to destroy or disable enemy targets, ranging from combatants to vehicles and tanks, as they pass over or near it. When army people try to find these mines there are many chances of losing their life. Gun is the basic weapon used to kill and it is difficult to observe position of enemies who are shooting. It is difficult for a human to do all the operations perfectly without losing life in military. Humans can be replaced by robots. If a robot is destroyed it can be recreated but loss of a human cannot be replaced with anything.

A robot can be operated in all the directions using various wireless communication modes such as Bluetooth, Wi-Fi, Radio Frequency, Zig Bee., but these wireless controls has limitations in its control distance. To overcome this limitation, Mobile Controlled Robot is designed to add long distant wireless controllability to our robot. We are using IoT for communication with robot which has a long range transmission. Few applications are added to

the robot such as shooting enemies using a laser gun, observing the surroundings of the robot using camera, detection of fire encircling robot and bullet fired on robot is detected using metal detector.

Literature Survey:

Unmanned multifunctional robot zigbee adopter network for defence application [1], the control of the robot from remote location is done with a computer. The information to the computer is carried out by the advanced technology named Zigbee Technology. When control signal is given from computer it is transmitted with the help of Zigbee. In this system, the robot is monitored using the CMOS camera. Video receiver receives the video signals from camera. The entire control is resided with the microcontroller. In addition to this, bomb detection, bomb diffusion, gas leakage detection, live human body detection and pressure gun are included. In this, the robot can move through the rugged surfaces also the system contains temperature detection which is being carried out by detecting environmental temperature.

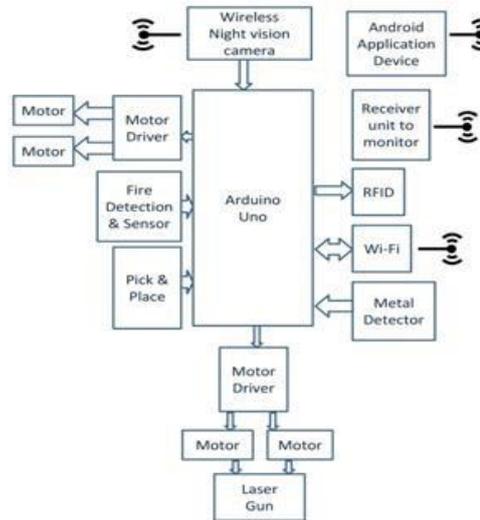
Robots for surveillance in military applications [2], the receiving antenna receives the signal sent from the transmitter and directs it to the Xbee transceiver. The Xbee forwards the received signal to the microcontroller unit. Depending on the commands received from the transmitter the microcontroller gives commands to the motors to perform certain mechanical actions like move forward, reverse, left, right. There is also a PIR (passive infrared sensor) sensor which senses any human activity in the vicinity of the receiver and notify the controller. The camera present on the receiver side transmits the signal or the feed wirelessly through the antenna which is viewed on a portable TV.

Wireless Surveillance Robot with Motion Detection and Live Video Transmission and Gas Detection [3]. The robot is adaptable in the environment where humans cannot enter. It also can detect motion in any unstructured environment. Robot also has gas sensor, fire sensor and metal detector because of these sensors, any poisonous gas, smoke in that environment must come under the knowledge of user.

Bluetooth Technology Based Wireless War Field Robot with Night Vision Camera was developed [4]. Projects main idea is to develop a robot which will provide security for war field & military purpose. In practical scenario there are many situations where human beings cannot deal with such problems like bomb detections etc. in this case there is a need to use robot. It's very safe and less risk. This project works on a concept where robot is controlled using radio frequency which will work on gesture application. Our project is based on wireless operation with night vision camera. In this, camera is connected to tank which will track the locations of the surrounding area. Information captured by camera can be seen in TV and robot is captured remotely.

Zigbee Controlled Multi-Functional Surveillance Spy Robot for Military Applications [6]. This multifunctional robot has disseminated into modules which have their own functionality. Due to advancement in technology, these surveillance robots are advent to use in remote and defence areas. The power supply will be given to the following modules such as microcontroller, communication module, and sensing module and followed by the driving module. This is the overall proposed system of the multifunctional robot. The main aim is to make the robot to act as a defence soldier, bomb detector, also make the robot for the purpose surveillance in border areas.

Proposed Methodology:



The robot is basically electro-mechanical machine or device that is controlled by computer program or with electronic circuit to perform variety of physical tasks.

In the proposed system, A robot is designed in such a way that it can move in all the four directions, and operated by a single person through a mobile handset. The communication can be done with the help of IOT (Internet Of Things). The term Internet of Things generally refers to scenarios where network connectivity and computing capability extends to objects, sensors and everyday items not normally considered computers, allowing these devices to generate exchange and consume data with minimal human intervention. In this system, the robot is monitored using night vision wireless camera which can stream and record surroundings of the robot. Wireless security cameras are battery-powered, making the cameras truly wireless from top to bottom.

The robot has a fire sensor which alerts soldiers with a buzzer as soon as it senses fire and metal detector which indicates when robot is attacked by bullets. A RFID module is used to identify authorised soldiers. RFID is an acronym for “radio- frequency identification” and refers to a technology whereby digital data encoded in RFID tags or smart labels are captured by a reader via radio waves. Laser gun which having horizontal and vertical movement is provided to fire at enemies. Pick and place arm is appended which helps in picking land mines and collecting required objects in hazardous area where humans cannot enter.

Conclusion:

In this project, the model of robot can be described to build a robot with night vision wireless camera run by android application and the people can learn about developing android application in order to control the robot through wireless application. The robot has reduced the human effort. The robot is designed with high accuracy in movement section. All the objectives of the project were accomplished with high accuracy, camera result was complimentary in that respect is always a way for betterment in any task.

More features can be summed in the robot to make it useful. The robot can be made more enhanced by adding features like gas sensors and bomb defuse kit. Future scope of this project is to make the robot move in asymmetrical land, ability to turn off fire as soon as it senses fire, self-balancing to get into small places.

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