Detection of Alive Human body in Military Area

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Abstract--The wireless communication technology are rapidly spreading to new areas such as data acquisition , building control , monitoring system and many more. These technology are also use in military area.Most of the military organization takes the help of robot for solving many risky jobs that cannot be done by the soldiers.The propose robotic system detect alive human body in military area. These system uses a specific set of sensors and a wireless camera. There are two modes where robotic system is worki.e manually operate mode and user controllable mode. Robot works in manually operated mode in which all sensor are functional for automatic action and in user controllable mode user sends the signal to robot using RF module and control it manually.

IndexTerms—Arduino single board microcontroller , set of sensor , camera ,RF module

Introduction

Military are forces authorized to used weapons to support and save the state and it's citizens . The task of military is usually defined as defence of the state and it's citizens and the prosecution of war against another state. During such military area , the human will suffer a lot. Many lose their life because of not begin treated in time. A timely rescue can only save the people who are buried and wounded. In such situation , rescue system must take fast decisions under pressure and try to get victims to safe location at their own risk. The rescue system must collect the location information and status of victims , stability of the structures as quickly as possible so that medics and team of people can enter the disaster area and save people. Usually the rescue operation is carried out by human along with the help of trained dogs. But it is not possible for highly complicated destructed area i.e. Military. Detection by rescue workers becomes time consuming and due to the vast area that gets affected it becomes more difficult. So, the Robotic system have propose that moves in Military area and helps in identifying the alive people. The main advantage of using Robot is that they never get tired or exhausted and also process well in the Military area.

The robotic system can be an outstanding innovation of a modern technology. It provide significant support to mankind by accomplishing arduous tasks that are apparently infeasible for human beings to perform. The proposed robotic system is a reprogrammable, multifunctional designed to move materials , parts, tools or specialize devices through variable programmed motions for the performance of a variety of tasks. Basically a robot consists of a mechanical structure such as a wheeled platform, arm or other construction , capable of interacting with its environment. Such proposed robotic system for alive human detection in Military is based on Arduino single board microcontroller. In the field of Military defence, soldiers needs a high security and backup force for his afterward attack and at the same time security office need a live data for the soldier who is in field for attack and his alive detection for the backup force attack. These microcontroller based robotic system for rescuing alive human robot may identify live human being under debris in Military and save the most valuable human life. The robotic system uses PIR sensor to detect the motion of human body and IR sensor to detect any obstacle on the way of robot. Having detected the sign of living humans , the set of sensors trigger the camera mounted on it. The camera captures a video scene of the environment and gives information about the status and location of trapped human lives.

Objectives:

1. *The main objective of the project is to detect alive soldier in war.*
2. *To provide instance back support or force if necessary.*
3. *To detect exact location or position of soldier during extreme condition.*

Review Of Literature:

The implementation of Microwave life detection system to locate human subjects under earthquake rubble or behind barrier was based on microwave beam of low frequency i.e 450 MHz so that the communication between human subjects and earthquake rubble or construction barrier was less.[1] In implemented system to detect victims with image taken by an IR (Infrared camera) in an intelligent way , the detection of an object in an image is so complicated so they used neural network method for recognition of the body of human in taken image.[2] [5]

The proposed a network system and an algorithm for a rescue robot to obtain its position under collapsed area used omnidirectional sensor which has certain area of coverage for reporting the observing quantity and temporary tag . Because of this , the system was construct temporary communication.[3] The designed robot to operate in outdoor environments such as disaster area was used wireless communication and due to limitation of wireless connection and the complexity of rescue operation , the full operation of robot can not be constantly supervised by human operator therefore they used autonomous robot.[4]

The proposed an autonomous robotic vehicle that moves in the earthquake prone area and helps in identifying the alive people and rescue operation was based on embedded PIC Microcontroller and Zigbee transmeter and receiver. In this system the battery backup for camera was weak so they has use a solar panel.[6] The proposed an autonomous robotic vehicle that moves in earthquake affected area used AVR microcontroller which is reprogrammable. But remote controlling was designed for limited distance. For this system, the battery backup was not sufficient. So they used GSM technology by adopting image processor which was more effectively.[7]

Proposed Work:

The proposed robotic system can be design to detect alive human body in Military area which is useful for rescue operation. These system is base on Arduino single board microcontroller. These system uses various sensors to detect alive human reliably. The block diagram of alive human detecting system is given in Fig.1

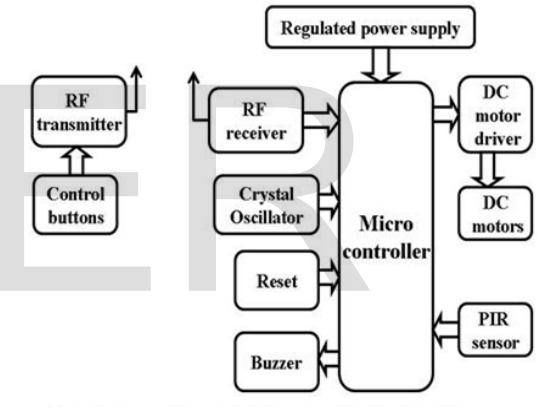

Fig 1: Block Diagram of Alive Human Detecting System

In this system the Arduinosingle-board microcontroller,PIR sensor , Heart bit sensor , crystal oscillator are used.

1. ***Arduino single board microcontroller :***
   Arduino is a single-board microcontroller, intended to make the application of interactive objects or environments more accessible. The hardware consists of an open-source hardware board designed around an 8-bit Atmel AVR microcontroller, or a 32-bit Atmel ARM.The Arduino platform was designed to provide an inexpensive and easy way for interaction withtheir environment

using sensors and actuatorsMost boards include a 16 MHz crystal oscillator.

2. ***Crystal oscillator:***
   A crystal oscillator is an electronic oscillator circuit that uses the mechanical resonance of a vibrating crystal of piezoelectric material to create an electrical signal with a very precise frequency. This frequency is commonly used to keep track of time to provide a stable clock signal for digitalintegrated circuits, and to stabilize frequencies for radio transmitters and receivers.
3. ***Sensors :***
   - *Heart Beat sensor :*
     Heart beat sensor is use to detect digital output of heart beat when a finger is placed on it. When the heart beat is detect , the beat LED flashes in unison with each heart beat. This digital output can be connected to microcontroller directly to measure the beats per minute (BPM) rate. Heart beat sensor is depend on light modulation by blood flow through finger at each pulse.
   - *PIR sensor :*
     Passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view. They are most often used in PIR-based motion detectors. A PIR-based motion detector is used to sense movement of people, animals, or other objects.
   - *IR Sensor :*
     It consists of two sections- transmitter and receiver. Transmitter continuously sends the IR signal and receiver receives the reflected light from the obstacle. So it is used as the obstacle detector. Whenever receiver receives reflected IR signal LED glows indicating obstacle is detected on it's path.
   - *Camera module :*
     The camera module is use as a web camera and it is placed on the robot. By using this camera the video signal is transmitted to the receiver at control room. This camera module will transmit the video coverage of the paths and this path to be taken by the rescue team. For this purpose ,high range camera module is to be used to get good clarity and good coverage of area.

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