ISSN 2395-1621

Alive Human Detection Robot Using Wifi

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ABSTRACT

Disasters like earthquake, tsunami, bomb explosion and floods often cause a loss of precious human lives. During such emergency situation, and especially in urban disasters, in order to prevent loss of life of people, various essential services like Policemen and medical assistance are deployed. Normally rescue operation are done by humans and trained dogs, often in very dangerous and risky area. Hence to make rescue operation more safe and effective, Wireless Robots been proposed which detect alive human beings and communicate with rescue team.This proposed system is to develop a wireless robot which will navigate in disaster prone area to detect the Alive human beings by using Passive Infrared sensor (PIR) and indicates to authorize people using alarm. Camera will continuously showing the visuality of surrounding od disaster prone area.

ARTICLE INFO

Article History

Received 21st March 2016

Received in revised form :

23rd March 2016

Accepted : 25th March 2016

Published online :

28th March 2016

Keywords: PIC Microcontroller, PIR Sensor, WIFI, Wireless Camera.

I. INTRODUCTION

Autonomous robotic system is an outstanding innovation of a modern technology. It has been able to provide significant support to mankind by accomplishing arduous tasks that are apparently infeasible for human beings to perform modern technology.The proposed wireless robotic system detects alive human body in the disaster area which is very helpful for rescue operation. Disaster like earthquake, tsunami, flood, etc. are not under control of human beings. During such calamities, various services are deployed for rescue operation. In order to increase the probability of saving lives of people, rescue operation need to be faster. But sometime s it is difficult for rescue personnel to enter into some affected area. In such cases, wireless robot have been proposed to help them and to perform task that cannot be perform by rescue team.

The proposed system is a wireless robot with a PIR sensor and a wireless camera, WIFI is use for wireless communication. PIR sensor is use to detect the human being which are alive and as detected it gives indicator to rescue team by alarm. Wireless camera is use to show the visualization of disaster area.

II. EXPERIMENTAL PROCEDURE

A. Literature Survey

In initial days dogs were used because of their high sensitivity to any slight motion or Human presence. But it was hard to totally depend on them since they predict the presence of living victim and dead victim and also they were not able to expose the exact situation of the human. One more drawback was dogs couldn't independently, they need assistance of a human. It means, the need is totally or partially independent to human factors but still depends on human.

Later techniques such as

1. Optical devices namely tactic pole utility system.
2. Acoustic devices like Microphones and Amplifiers were used but with limited applications.

Robots are now achieving good progress in many fields like Military, Industry, Medicine, etc. with proven efficiency. They are playing an important role in replacing human factor in almost all fields.

Purnima, Asst. Prof. Aravind, "Alive Human Body Detection and Tracking System Using an Autonomous PC Controlled Rescue Robot". In this proposed system they have used the PIR sensor which will detect the human body,

further the signal will be given to microcontroller, if microcontroller receives the signal from PIR sensor. It will send a message through GSM and GPS will receives the longitudinal and latitudinal value when the system detects the movement of the human body, it will send the location details to the rescue team.

Mauricio correa, Gabriel Hermosilla, "Human Detection and Identification by Robots Using Thermal and Visual Information in Domestic Environment". In these proposed system they have use thermal and visual information sourses that integrated to detect human, which further processed in order to verify the presence of humans and their identity using face information in the thermal and visual spectrum. In these face detection is used for verifying the person and face recognition is used to identify them.

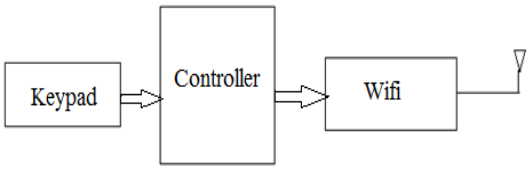
Shweta R, Dr. Chetan H K, "Automatic and manual controlled detection robot during disaster management". In these proposed system they have used PIR and IR sensor in which PIR is used to detect human body and IR is used to detect obstacle, AVR microcontroller is programmed to send the information to remote control place through the GSM.

B. Proposed System

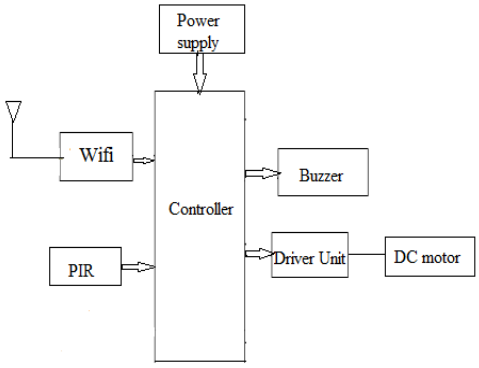
The rescue operation by the workers in the disaster area is very difficult because it involves large area and hence it is time consuming. This system proposes a wireless robot consisting of PIR sensor and a Camera which will navigates in the disaster area to detect the human body.

III. FIGURE

Remote Section:



Robot Section:



Camera Part:

Microcontroller:
PIC16F877A is the microcontroller used in this system. Signals from PIR sensor are given to the microcontroller will convert the signals and send forward and then the appropriate action will be taken by controller.

PIR Sensor:
The PIR sensor will detect a human body moving around 10m from the sensor. As live human body emits thermal radiation it is received and manipulated by PIR Sensor to detect human. The PIR sensor are pyroelectric device that detects motion by measuring changes in heat level emitted by body.

WIFI Module:
This system uses wifi module(esp8266) for the wireless communication between transmitter section and receiver section. The ESP8266 is a low cost wifi chip with full TCP/IP stack and microcontroller capability. This small module allows microcontrollers to connect to wifi network and make simple TCP/IP connections using hayes-style commands.ESP8266 uses the Cadence Tensilica LX106 microcontroller.
Features : 32-bit RISC CPU running at 80MHz.64 Kb of instruction RAM and 96 Kb of data RAM.IEEE 802.11 b/g/n WIFI.UART on dedicated pins, plus transmit only UART can be enabled on GPIO2.1 10 bit ADC.

Wireless Camera:
Camera will be located on the top of the robot which will navigate in the disaster pron area.Camera will continuously visualize surrounding and records footage in the disaster pron area.So we can easily find live human body in the targeted area.

DC motor and motor driver IC :
DC motor helps the robot to navigate the robot in the disaster area by controlling its motion.The circuit made by using the driver IC acts as a bridge between the controller and DC motors.Motor driver IC has amplification circuitary inside it which will help to amplify voltage and current levels upto the requirements of the motors.DC motors has polarity and direction of rotation which depends on direction of the current.

IV. ADVANTAGES

1.System is secure, accurate and reliable as WIFI module is used.
2.The system is safe even for the user because of robotics and no manual work.
3.The system saves time by which we can more human lifes.
4.This system is effective and a safe system ensures that there are no humans left behind in a rescue operations.

5.This system simple and easy to use and hence it has more applications.

V. APPLICATIONS

1.Natural and Man made calamaties
2.Disaster pron areas
3.Military applications
4.War fields
5.In Industries

VI. CONCLUSION

The wireless robot will navigate in the disaster area,the PIR sensor will help to detect the live human being as detected it will be indicated by buzzer and camera will give continuously give visual of surrounding area.The robot can be improved by adding some sensors like fire and gas.

ACKNOWLEDGEMENT

On our behalf we would like to thank the previous writers for sharing their ideas and helping us to achieve our goals.

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