

Wireless Data Transmission and Acquisition for Alive Detection

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ABSTRACT: Wireless sensor network have a broad range of application in the category of detection and monitoring. Data acquisition plays an important role in the field of modern industry control .In any cases remote data should be transferred to monitor center which is far away from the manufacturing field .Traditional data acquisition system by means of wires could not satisfy the requirement,as there is rapid development of embedded system, wireless communication technology and depend on 3G as wireless data transmit terminals will be in use widely in industry. This paper presents a new data acquisition and analyzing system based on 3G technology .In this paper the problem of soldiers is alive or not is considered and a comprehensive framework is proposed for the use of wireless sensor network for real-time jawan's detection and monitoring .

This paper presents a development platform of pulse sensor ,capable of transmitting pulse rate via wireless technology to the control room where the set up has been made to receive these pulse rate data .The device would make the acquisition of pulse data through pulse sensor/heartbeat sensor ,easy to obtain and sent. The goal of work reported in this paper was to build a system to benefit and facilitate relative detection wirelessly.

Today is the age of automation and centralized control of processes ,where emphasis is more and more towards coalescing of techniques to form a unified entity that can support itself without much intervention from external agents .Automation eliminates human errors, while achieving better productivity and optimum utilization of resources with lesser requirement of time.With innovative and creative bent of mind, man comes out with solution for every problems.The use of wireless data transmission provided by wearable system is also interesting to avoid wires that could limit the movement of subjects in studies . The goal of work reported in this paper was to build a system to detect and monitor .without much human efforts by using our circuit we can monitor the generating units in alive detection and control the performance automatically.

I. INTRODUCTION

In the field of Military defence, jawan needs a high security and backup force for his afterward attack and at the same time security office need a live data for the jawan who is in feild for attack and his alive detection for the backup force attack. For example 100 soldiers are fighting in field of war from our side and how many of them needs help and alive this exact data weneed so we designe a network for such reason to know alive detection of a our jawan(soldiers) of Indian army



In the field of modern wireless communication network, there are mainly some technologies that provide solutions to the wireless data transmission network, such as: GSM, CDMA, 3G, Wi-Fi. These solutions make network work with high efficiency and good quality, but still with high cost. So it was difficult in popularizing in with low cost and at the circumstance of infrastructure less or infrastructure destruction. According to this situation, in this paper, the key components of the information terminal and the wireless receiving modules on the data collection and wireless transmission network were designed with the principle of transceiver nRF905 and series of single-chip computer as the core hardware, besides, combining with the current technology on the wireless ad hoc networks, a short-range wireless data sampling and transmission network was put up, which provides a low-powered and high-performance wireless data communication system.

II. EXISTING TECHNIQUES

“Wireless Data Acquisition and Transmission System Design”. In this paper the key components of the information terminal and the wireless receiving modules on the data collection and wireless transmission network were designed with the principle of transceiver nRF905 and series of single-chip computer as the core hardware, besides, combining with the current technology on the wireless ad-hoc networks, a short-range wireless data sampling and transmission network. Through software and hardware debugging and actual measuring, this system based on solution had work well, reached the expected goal and been already successfully applied to wireless vehicle system.

“The Design of Wireless Data Acquisition System Based on STM32 and Virtual Instrument.” In this paper the process of short distance data collection, there have some problems, such as the duplication of work, the complexity of cable connection, the requirement of real time data processing and the electromagnetic interference and so on, so the author design the system of data acquisition based on STM32 and virtual instrument. The system uses Cortex-M3 core ARM processor to accomplish the data acquisition of the closed environment, use the Bluetooth serial port module to implement the wireless data transmission, and use the virtual instrument to handle the received data in the host computer.

“Wireless data acquisition system applied in aircrafts' detection” The paper gives a method that is applied for the wireless data real-time transmission of aircrafts' detection, and supplies detailed design of the system. The wireless data acquisition system is based on embedded structure, and it employs industrial ARM core processor of 32bit. In order to improve fast response, the system can transplant real time OS. The system supports 16 analog input channels and 32 digital input channels, and the analog input's resolution is 16bit not only for DC signal but for AC signal. The system transmits data via GPRS network.

Alive Human Detection by Robot :

A new approach for detecting alive human beings in natural and man-made disasters using a specific set of sensors, ATMEGA16 Microcontroller, existing GSM technology and PLC systems. Many areas of world are getting affected due to sudden natural calamities like earthquakes, floods, wild-fires, storms and human induced disasters industrial and transportation accidents and one of the threatening to humans that is terrorists' attacks. In this project Plc logical Programming and GSM technology is used to detect the human nature or human being. It will be a great help indeed to rescuers in detection of the human beings at the disaster sites. This is also user friendly, economical, semi-autonomous and efficient device by software programming interfacing for detection.

Alive Human Detection Using Camera:

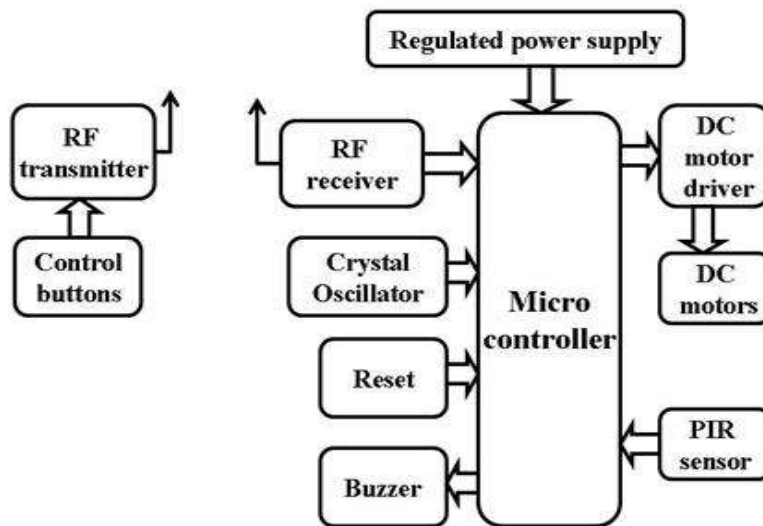
In this paper, a new approach for detecting alive humans in destructed environments using an autonomous robot is proposed. Human detection in an unmanned area can be done only by an automated system. Alive human body detection system proposed a monitoring system using ultrasonic sensors and camera to record, transmit and analyze conditions of human body. The task of identify human being in rescue operations is difficult for the robotic agent but it is simple for the human agent. In order to detect a human body, an autonomous robot must be equipped with a specific set of sensors that provide information about the presence of a person in the environment around. This work describes an autonomous robot for rescue operations. The proposed system uses an ultrasonic sensor in order to detect the existence of living humans and a low-cost camera in order to acquire a video of the scene as needed. Additional, other sensors include PIR and CO2. Metal detector works as bomb sensor to detect the presence of bomb in Warfield and in rescue operations. Having detected a blockages, the ultrasonic sensor Triggers the camera to show live scene. The video is then displayed on the screen on PC or LAPTOP and processed through MATLAB. This approach requires a relatively small number of data to be acquired and processed during the rescue operation. This way, the real-time cost of processing and data transmission is considerably reduced. This system has the potential to achieve high performance in detecting alive humans in devastated environments relatively quickly and cost effectively.

Alive Human Activity from Voxel Person Using Fuzzy Logic:

As part of an interdisciplinary collaboration on eldercare monitoring, a sensor suite for the home has been augmented with video cameras. Multiple cameras are used to view the same environment and the world is quantized into non-overlapping volume elements (voxels). Through the use of silhouettes, a privacy protected image representation of the human, acquired from multiple cameras, a three-dimensional representation of the human is built in real-time, called voxel person. Features are extracted from voxel person and fuzzy logic is used to reason about the membership degree of a predetermined number of states at each frame. Fuzzy logic enables human activity, which is inherently fuzzy and case based, to be reliably modeled. The proposed soft-computing activity analysis framework is extremely flexible. Rules can be modified, added, or removed, allowing per-resident customization based on cognitive and different logic.

III. CONTRIBUTION

For creating a wireless jawan alive detection network using the Arduino. 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 8051, AVR microcontroller, or a 32-bit Atmel ARM. Current models feature a USB interface, 6 analog input pins, as well as 14 digital I/O pins which allows the user to attach various extension boards. And the Wireless module RF module An RF module (radio frequency module) is a (usually) small electronic device used to transmit and/or receive radio signals between two devices. In an embedded system it is often desirable to communicate with another device wirelessly. This wireless communication may be accomplished through optical communication or through Radio Frequency (RF) communication. For many applications the medium of choice is RF since it does not require line of sight.



Block diagram of live human detecting system.

RF communications incorporate a transmitter and/or receiver. Several carrier frequencies are commonly used in commercially-available RF modules, including those in the industrial, scientific and medical (ISM) radio bands such as 433.92 MHz, 315 MHz, 868 MHz, 915 MHz, and 2400 MHz. These frequencies are used because of national and international regulations governing the use of radio for communication. Sensors for the alive detection are heart bit sensor for detection. And one force help call button which will be press by jawan for his help by himself, if he is able to press it. Otherwise the heart bit sensor will let you know that is e alive or not. And that data will upload in your system receiver.

IV. CONCLUSION

As per the proposed system and sensor nodes that have been designed, it is investigated that wireless sensor network can be effectively applied to detect human habitat monitoring. In addition, wireless sensor technology has a broad application in the field of real-time data acquisition and transmission. To monitor Temperature, motion and the heartbeat of soldier/human in the war in a more timely and precise way, this work pointed out unique advantages of safety in data transmission. Flexibility in building the network, low cost and inexpensive for alive detection monitoring system based on a arduino and RF technology that is designed here.

The Network topology structure of the system is of RF module. In other words, here proposed system is as a first attempt and complement to alive human detection monitoring and prevention methods. It provides a solid basis in terms of hardware for the application of advanced wireless sensor network technology. Although it required the knowledge of network communication but once it implemented then it's easy to understand. Arduino as data acquisition board make the system more robust and facilitate the proper utilization of detecting parameters for monitoring.