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Regerative and Lora Based Conveying Unit for Armed Trooper Monitoring System in Shoe

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ABSTRACT: The Indian Army is the land-based branch. The advanced technology used here will be beneficial for our Country's safety. This proposed methodology is used for Long Range Radio (LoRa) based health monitoring and location tracking system. This system consists of tiny wearable physiological equipments, GPS, Sensor and transmission modules. This is also used to devise war strategies. It helps in minimizing the time, search and rescue efforts of Army control. It is possible to implement a low cost mechanism to provide needed help in the battle field. In case of death of soldier, the controller intimates to the camp office control along with soldiers location.

KEYWORDS: LoRa (Long Range Radio), Efficient for tracking and health monitoring.

I. INTRODUCTION

The LoRa is a proprietary low-power wide area network modulation technique. This is based on spread spectrum modulation technique that is derived from chirp spectrum technology. It has been developed by Cycleo of Grenoble. Which has low power characteristics like FSK modulation but can be used for long range communication. It can be used to link gateways, machines, devices, sensors, people, etc. An Embedded system is a combination of a computer processor, memory, input/output device. Modern Embedded system are often based on microcontrollers and microprocessors with integrated memory. We are using both the LoRa and Embedded technologies for ensuring the safety and health monitoring along with location tracking of a soldier. The software component used here is Arduino IDE. Arduino is a project that is open sourced to create microcontroller based kits for building digital devices and interactive objects that can sense and control physical devices. The project works on microcontroller board designs, produced by several vendors using various microcontrollers.

To design LoRa based health monitoring system to analyze and compute the soldier health smart device connected to the internet for communicating with each other. The main advantage of this is the soldier can get help immediately in case of emergency.

II. RELATED WORK

The components used in this project are Temperature sensor, Heart beat sensor, Piezoelectric sensor, Voltage sensor, GPS, Power supply, Battery, LoRa, Buzzer.

In integrated circuit, the sensor is used to measure the temperature with an electrical output proportional to the temperature (in OC). It is also used to measure temperature more accurately than using a thermistor. It generates high voltage output than thermocouples and may not require that the output voltage is amplified.

Pulse sensor is a specialized heart rate sensor for Arduino. The sensor clips into a finger or ear lobe into Arduino with some jumper cables and it also includes an open source monitoring app that graphs your pulse in real time.

The word piezoelectricity means electricity resulting from pressure. It was discovered in 1880 by French Physicists Jacques and Pierrie Curie. The piezoelectric effect is a reversable process for materials exhibiting directly and it also exhibit the reverse piezoelectric effect. Quartz and Rochelle salt exhibited the most piezoelectricity. The piezoelectric effect is closely related to the event of electric dipole moments in solids.

The features of voltage sensor powered from sensing input lines or from separate DC supply. The applications of this sensor will take place in power generation unit, industry and other applications.

Here soldiers health parameters such as heart rate and body temperature are continuously measured and transmitted wirelessly to the control room using GPS.

II. PROPOSED SYSTEM

To overcome the disadvantage mentioned above we propose an advanced prototype design in order to provide safety for soldiers. It is very vital for the army base station to know the location as well as the health status of the soldiers when they cross the allotted boundary. The portable remote soldier unit consists of Microcontroller, GPS, Temperature sensor and Heart beat sensor which monitor the health condition and location of soldiers. If they present any abnormal condition the controller will intimate about the health parameters along with the live location with the help of LORA communication Network to the control room Administrator along with a Buzzer alert. This will be very useful for the control room to take needed action in critical situation. Each soldier's show will have a unique ID which already contains all medical records of the soldiers. This helps the medical auxiliary to provide suitable medical treatment based on soldiers health condition. It also has a regenerative charging unit to power the shoes by using piezoelectric, while walking.

III. RESULTS

This project is introduced for the safety measures of the Indian army troopers. This will monitor their health conditions, will track their current location and convey to the emergency control room. This will have a buzzer alert for the indication of the emergency request of the soldier. The Heartbeat will also be Monitored using the Pulse Sensor. The battery will be charged using the Piezoelectric effect. When the soldier is in motion then the battery will be automatically charged with the voltage sensor. The temperature and the Heartbeat rate will be displayed in the LCD display.

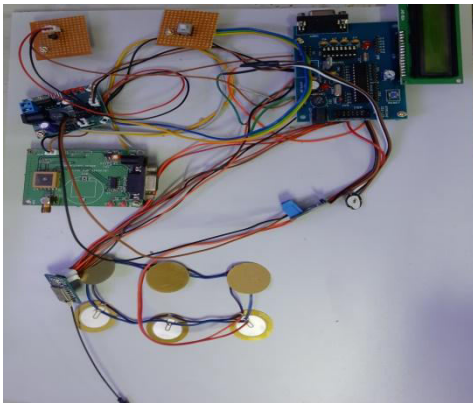


Fig.1. SOLDIERS SECTION

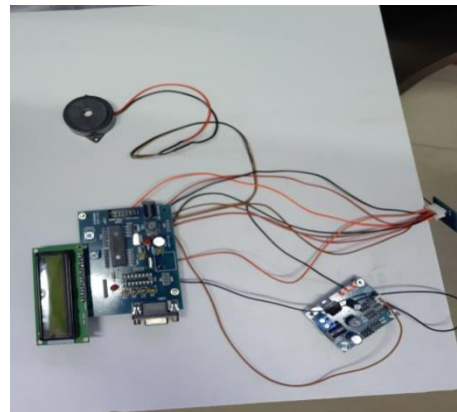


Fig.2. CONTROL ROOM SECTION

IV. CONCLUSION AND FUTURE WORK

The WSN are the collection of a large number of low cost, low power, multifunctional sensor nodes that are smaller in size and to communicate in short distance. This paper suggests a method to ensure the safety and dignity of each and every army personal of the armed forces of the world by providing them the device that constantly monitors the value of the pulse rate of the wearer, along with the aid of the GPS module present with the transmitter setup at the source. Thus it helps to track, observe and keep in mind where about of every soldier. This study will be extended to ensure the health care and well-being of the citizens of the world as well.

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BIOGRAPHY



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