

Soldiers Health Monitoring and Tracking System

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Abstract: In today's world the nation security depends on enemies' warfare. So, the life of our soldier is very important. There are many risks occur in warfare region. Risks such as hazardous gas, snow slides, heavy snow fall, and variation in their body temperature may affect their health condition, sudden heart problems may also lead to problems in warfare. One of the main problem for soldier is not able to communicate with control room. In this project we are proposed to find the exact location and the health parameter of the soldier in real time so that the action should be taken quickly.

Keywords: Hazardous, real time, warfare.

1. Introduction

In the now-a-days, the protection of a nation is that the important factor and also the safety of nation depends on the military. Without the soldier it's impossible to safeguard a nation. The soldier sacrifices their life for his or her country. Soldier entering their enemies border they lose their life due to lack of connectivity. Already India lost many soldier because of lack of medical backup and lack of tracking system. The lifetime of our soldier is extremely important so we've proposed a project called soldiers health monitoring and tracking system. Using this soldier health monitoring and tracking system we'll discover the health status of the soldier still because the precise location of the soldier. So this paper concentrate on tracking true of soldier from GPS, which is useful for room station to grasp the placement of soldier. Also we use biomedical sensors for monitoring the health parameters from the sensors used, get values like sign, pressure, altitude, heart pulse rate presence of the hazardous gases, accelerometer and gyroscope values. Similarly, we find latitude and longitude values using GPS (Global Positioning System) module. The collected details are send to the control station via GSM module. Thus, when any soldier has any serious issue are going to be rescued easily from the most points collected from the varied sensors via wireless technologies like GPS and GSM (Global System for Mobile Communication) techniques which can be a wireless technology.

2. Need of Work

This system in army has many problems in rescuing their lost

soldiers in warfare and snowy regions so it takes many days to rescue them. Hence proposed a true time autonomous health monitoring and tracking system for soldiers which is incredibly much helpful in rescue operations of the soldiers in risky regions by locating them by using GPS and GSM techniques. It also monitors their health parameters like temperature, heart rate. Altitude can also be measured using altitude sensor. All the knowledge will be transmitted using GSM module to the room of the military officials.

3. Objectives

- To detect the guts rate of the soldier
- To detect the vital sign of the soldier
- To detect the air quality of the environment
- To detect the body position of the soldier
- To trace the placement of the soldier
- To send alert message to the room when soldier is in danger

4. Methodologies

Introduction: To develop this Soldier's health monitoring and tracking system, several theoretical and technological surveys are made with previous papers.

1. Soldier Health and Position Tracking System: Soldier's tracking is done using GPS and GSM is used to provide wireless communication system. For monitoring the health parameters of soldier by using bio medical sensors such as temperature sensor and heart beat sensor. An oxygen level sensor is used to monitor atmospheric oxygen so if there are any climatic changes the soldiers will be equipped accordingly.
2. IoT based Soldier Navigation and Health Monitoring System: This system uses GPS module and wireless body area sensor network to record all parameters in real time and send it to the base station. The different types of sensors used in this system are the humidity sensor, temperature sensor and pulse sensor which help in deciding the health status of that particular army official. This is a wearable technology which is the most important factor of this project.
3. Health Monitoring and Tracking System for Soldiers Using

Internet of Things (IoT): The paper reports an Internet of Thing (IOT) based health monitoring and tracking system for soldiers. The proposed system can be mounted on the soldier's body to track their health status and current location using GPS. This information will be transmitted to the control room through IoT. The proposed system comprises of tiny wearable physiological equipment's, sensors, transmission modules. Hence, with the use of the proposed equipment, it is possible to implement a low cost mechanism to protect the valuable human life on the battlefield.

4. GPS and IOT Based Soldier Tracking & Health Indication System: Soldiers can communicate anywhere using RF, DS-SS, FH-SS which can help soldier to communicate among their squad members whenever in need. Less complex circuit and power consumption. Use of ARM processor and low power requiring peripherals reduce overall power usage of system. Modules used are smaller in size and also lightweight so that they can be carried around. Security and safety for soldiers: GPS tracks position of soldier anywhere on globe and also health system monitors soldier's vital health parameters which provides security and safety for soldiers.

Proposed System: The proposed system assesses most of the parameters including health related data. Data transferred to the central system over a large range. Requires no additional features for the transfer of the info. the info is transferred to the central system frequently between defined time intervals. Assess health parameters, surroundings environment details, track the placement of the soldiers, panic buzzer altogether by using this proposed system.

The block diagram of Soldiers health monitoring and tracking system has been shown

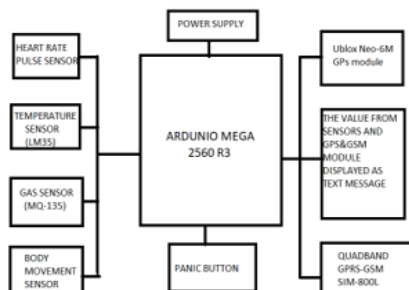


Fig. 1. Block diagram of proposed system

Working: Several sensors like pulse rate pulse sensor, LM35 (Linear Monolithic 35) temperature sensor, Hazardous sensor(MQ135). (In Chinese MQ stands for Mangan Qi which implies sensitive to gas), are wont to assess the health condition of the soldiers. Accelerometer and gyro sensor (MPU-6050), (MPU- Magnetic pickups), Pressure and Altitude sensor (BMP 280 I2C), (BMP- atmospheric pressure sensor) are wont to get the encircling environment details. The values from these sensors are integrated and displayed within the control room by using the GPS & GSM techniques.

Algorithm:

First initialize, all the devices display, Temperature Sensor, Heartbeat Sensor, Gas Sensor, Body Position, GSM, GPRS, Buzzer and then collect the sensor outputs which is displayed

on the LCD and check those sensor output values if the values are in normal range, send data to the cloud and to the mobile application or if the values don't seem to be in the range, send the message to the control room. And if so it sends the Alert message using GSM and repeat it again.

5. Results

Proposed system is fast, accurate and secure with the comparison of the existing system and the proposed system. Hence, the experimental results show that the proposed system is easy to assess the health parameters and the location of the soldiers precisely.

Existing System:

1. Only detect temperature and heart beat rate.
2. Delay in tracking location and reading parameters.
3. Use Internet of Things to detect the position and health parameters.

Proposed System

1. Detects more parameters like temperature, heartbeat, air quality, movement.
2. No delay in reading parameters and locations.
3. Use GSM and GPRS based system.



Fig. 2. Results displayed through LCD display

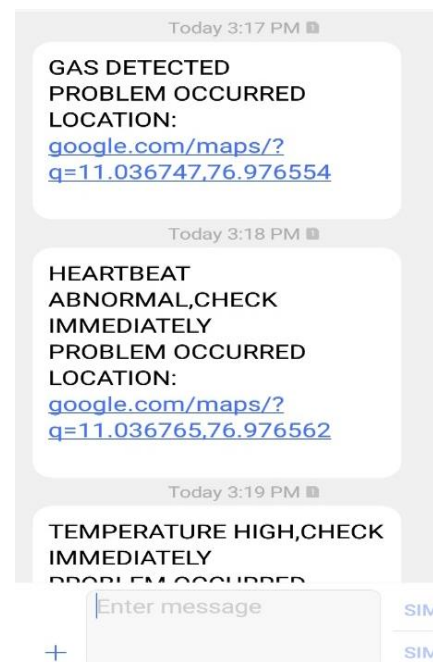


Fig. 3. SMS sent to the user mobile

The paper reports an IoT based system for the health monitoring and tracking of the soldiers. Arduino boards used which may be a low cost solution for the possessing purpose. Biomedical sensors provide heartbeat, blood heat, and

environmental parameters of each soldier to regulate room. This technology will be helpful to provide the accurate location of missing soldier in critical condition and overcome the downside of soldiers missing in action. The addressing system is also helpful to boost the communication between soldier to soldier in emergency situation and supply proper navigation to manage room. Thus we will conclude that this technique will act as a lifeguard to the army personnel of everywhere the world. In future, a portable handheld sensor device with more sensing options is also developed to assist the soldiers.



Fig. 4. Output displayed on thingspeak

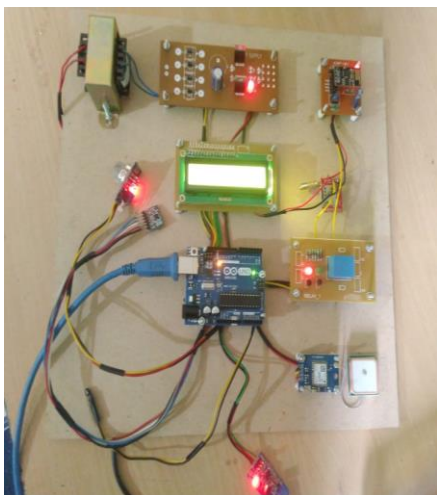


Fig. 5. Hardware implementation

6. Conclusion

The goal of safe guarding the lives of soldiers by implementing the different sensors to assess the health and monitor the location very precisely. Similarly, the system has

been completed in a cost efficient manner and also it is very easy to implement this system.

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