

Gps Based Health Monitoring System

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ABSTRACT

In today's world the security of the nation is depends up on the enemies' warfare and so the safety of the soldiers is considered as vital role in it. Concerning the soldiers safety there are many instruments to view their health status as well as ammunitions on the soldiers. In soldiers security, bio-sensors systems gives different types of small physiological sensors, Biomedical sensor , transmission modules and processing capabilities, and can thus facilitate low-cost wearable unobtrusive solutions for health monitoring. GPS used to log the longitude and latitude so that direction can be known easily. These devices are being added to weapons, firearms, and militaries such as the Israeli an Army which are exploring the possibility of embedding GPS devices into soldiers vests and uniforms so that field commanders can track their soldier's movements in real time.GSM module can be used for effective range of high-speed transmission, short-range and soldier-to-soldier wireless communications that will be required to relay information on situational awareness, tactical instructions, and covert surveillance related data during special operations reconnaissance and other missions .So by using these equipment's we are trying to implement the basic lifeguarding system for soldier in low cost and high reliability.[2]

Keyword: - Health monitoring, Location Tracking.

1. INTRODUCTION

The infantry soldier of tomorrow promises to be one of the most technologically advanced modern warfare has ever seen. Around the world, various research programs. The challenge was to integrate the piecemeal components into a lightweight package that could achieve the desired result without being too bulky and cumbersome or requiring too much power. Communicating with the base station become the fundamental challenges in military operations also the proper navigation between soldier's organizations plays important role for careful planning and co-ordination. So this paper focus on tracking the location of soldier from GPS, which is useful for control room station to know the exact location of soldier and accordingly they will guide them Also High-speed, short soldier wireless

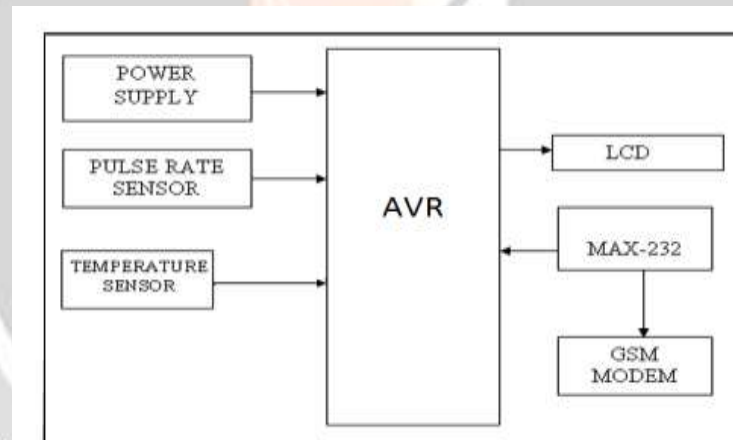
Communications to relay information on situational awareness, such as Bio sensors, GPS navigation, Wireless communication. The infantry soldier of tomorrow promises to be one of the most technologically advanced modern warfare ever seen. Around the world, various research The challenge was to integrate these piecemeal components into a lightweight package that could achieve the desired result without being too bulky and cumbersome or

requiring too much Communicating with the base (control room)station become the fundamental challenges in operations also the proper navigation soldier's organizations plays important role ordination. So this paper focus on tracking the location of soldier from GPS, useful for control room station to know then accordingly they will -range, soldier-to soldier wireless communications to relay information on situational awareness, such as Bio-medical sensors, GPS navigation, Wireless communication.

1.1 EXISTING SYSTEM

1. Wrist Watch for Mountaineers: The idea for our paper was taken from the wrist watch used by mountaineers. The watch displays position, direction, surrounding temperature, and it also acts as altimeter. Soldiers carry walkie-talkies, which are bulky. So we are developing an alternative system using headphones which will guide the soldier.
2. Radio Collars with GPS Tracking: Recently in the US and Australia some of the Indian students were forced to have a Radio Collar strapped to their ankles, so that their movements can be tracked by the officials. We use a similar technology which will display the soldier's current location on a map at the base station.
3. Tracking of Tigers: Recently India announced plans to use a new tiger tracking system in order to crack down on "lazy" wildlife guards. The new tracking system involves fitting tigers with radio collars. A GPRS (general packet radio service) device, along with the M-STRIPES software, will be used to track the movement of the tigers.

1.2 PROPOSED SYSEM



2. WORKING

The block diagram of GPS based soldier tracking and health indication system is shown in above it consist of two units soldier unit and base station unit. As it requires high speed communication it is intended to use AVR. Biosensors such as Body temperature. Galvanic skin response and pulse rate are integrated to AVR processor to monitor the health status. The GPS receiver is used to log the longitude and latitude of soldier ,which is stored in memory. GPS Receiver receives and compares the signal from orbiting GPS satellite to determine geographic position. Using keypad we can send messages to other unit. RF Transceiver gets the latitude and longitude of other soldier unit and calculate distance, speed and height between them .it also sent the information to the army base station containing the health parameter and the location of soldier.

At Army Base station unit it gets the details of soldier unit through RF receiver ,the soldier location and health status displayed on PC at base station using software for Front end.

An Arduino board consists of an Atmel 8-bit AVR microcontroller with complementary components that facilitate programming and incorporation into other circuits Arduino have used the mega AVR series of chips, specifically

the ATmega8, ATmega168, ATmega328, ATmega1280, and ATmega2560. An Arduino's microcontroller is also pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory.

Medical Parameters

There are a number of medical parameters of soldier that can be monitored, like ECG, EEG, Brain Mapping, etc. But these require complex circuitry and advanced medical facilities and hence they cannot be carried around by the soldier. The entire system would become bulky for the soldier.

To find the health status of soldier we are measuring body temperature, pulse rate using sensors. We are using LM35 as it is a low cost temperature sensor and it does not require signal conditioning. Pulse rate sensor is used or pulse rate measurement.

LM 35 is a precision integrated circuit temperature sensor whose output voltage is linearly proportional to temperature. Pulse rate sensor gives digital output of heart beat when finger is placed on it. it works on the principle of light modulation by blood flow through finger at each pulse.

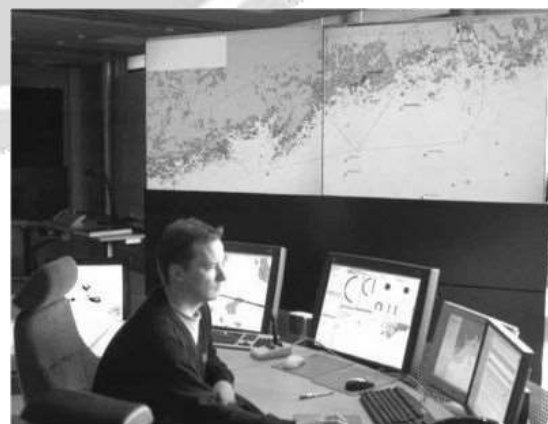
Sensor Survey

There are a number of temperature sensors like thermister, thermocouple, RTD, but all these sensors require signal conditioning and are difficult to calibre. The signal conditioning for these sensors increases the size of the kit, hence these are not to be use.

1. LM35: It is a low cost temperature sensor and it does not require signal conditioning, calibration is also done by software. Hence LM35 may be use.

2. Heart Beat Sensor: Heart beat sensor is design to give digital output of heat beat when a finger placed on it. When the heart beat detector is work in the beat LED flashes in unison with each heart beat. This digital output can be connected microcontroller directly to measure the Beats per Minute (BPM) rate. It works on the principle of light modulation by blood flow through finger at impulse.

3. Galvanic Skin Response: The Galvanic Skin Response (GSR) is defined as a change in the electrical properties of the skin. The signal can be used for capturing the autonomic nerve responses as a parameter of the sweat gland function. The measurement is relatively simple, and has a good repeatability. Therefore the GSR measurement can be considered to be a simple and useful tool for examination of the autonomous nervous system function, and especially the peripheral sympathetic system. Several terms are used for this phenomena, such as EDA (electro dermal activity), EDR(electro dermal response), EDL (electro dermal level), SCA (skin conductance activity), SCR (skin conductance response), and a lot more.



3. ADVANTAGES AND APPLICATIONS

- Faster communication in medical applications.
- Time to time monitoring
- Does not require human efforts once the system is set active
- Better response by machine interface , thus improving patient treatment
- Long Distance communication using server.
- In critical condition soldier surveillance.
- Time to time data acquisition irrespective of distance.
- Dedicated operation for simple information transfer.

4. CONCLUSIONS

The “GPS BASED HEALTH MONITORING SYSTEM FOR SOLDIER AND CIVILIANS” is an effective security and safety system which is made by integrating the advancements in wireless and embedded technology. It helps for a successful secret mission. This system can be used in critical conditions. The most significance in this is implementation of M-Health. By implementing this system we can improve the security of our country this also help to improve the safety of the soldier. This system also helps to provide real time video information. Using this system we can reduce casualties of war. It also helps to giving critical information's and warnings to the soldiers and can apply more of them to the current weak locations. This strengthens the defence system. Thus we can conclude that these kinds of devices are very helpful for ensuring security to the soldiers.

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