GPS BASED SOLDIER TRACKING AND HEALTH INDICATION SYSTEM

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Abstract-In today's world the security of the nation is depends up on the enemies' war fighting and so the safety of the soldiers is considered as very important role in it. About the soldiers safety there are many instruments to view their health status. In soldiers security, bio-sensors systems gives different types of small body-structure-related sensors, (the study of how life and medicine work together) sensor , transmission modules and processing abilities, and can this way help low-cost wearable (almost hidden/not annoying) solutions for health watching/supervising. GPS used to log the (how far east or west you are) and (how north or south you are/freedom to make decisions) so that direction can be known easily. RF module can be used for High-speed, short-range, soldier-to-soldier wireless communications that will be needed/demanded to relay information on (related to what is happening around somebody or something) (knowing about something), strategical instructions, and secret (secretly recording/watching people) related data during special operations information gathering and other missions .So by using these equipments we are trying to put into use the basic life- guarding system for soldier in low cost and high reliability.

Keywords: Tracking, GPS, Biomedical sensors

I.   INTRODUCTION

The infantry soldier of tomorrow promises to be one of the most smart modern war fighting has ever seen. Around the world, different research programs are now being conducted, such as the United States' Future Force Warrior (FFW) and the United Kingdom's Future Infantry Soldier Technology (FIST), with the aim of creating fully combined (with other things) combat systems. Helmet mounted visors, capable of displaying maps and real-time video from other squad members, ranges of body-structure-related sensors watching/supervising heart rate, core body temperature etc. These devices will improve, not only for the host, but also for placed together/correctly arranged military personnel who will exchange information using wireless networks. The challenge was to combine (with other things) these piece by piece parts/pieces into a lightweight package that could (accomplish or gain with effort) the desired result without being too (taking up a lot of space for its weight) and big (and awkward) or needing/ordering too much power. One of thebasic challenges in military operations lays that the soldiers are not able to communicate with control room station. Also, the proper (driving or flying a vehicle to somewhere/figuring out how to get somewhere) between soldier's organizations plays important role for careful planning and co-(process where people are made priests, rabbis, etc.). So in this paper we focus on watching and following the location of soldier from GPS, which is useful for control room station to know the exact location of soldier and in the same way/in that way they will guide them. Also High speed, short-range, soldier-to-soldier wireless communications to relay information to relay information on situational awareness.[3]

II.LITERATURE SURVEY

A.MICROCONTROLLER SELECTION

1. AVR 8 bit micro based on RISC architecture (Reduced Instruction Set Computer)
2. AVRs have 140 instructions which are mostly 1 cycle based
3. AVR executes more no of instructions per given time
4. Inbuilt analog to digital converter.
5. Inbuilt ISP

Fig: 1

B.MEDICAL PARAMETERS

Fig: 2

1.   *LM35*: The LM35 series are (high) quality electronic devices temperature sensors, whose output voltage is linearly (fair in amount, related to/properly sized, related to) the Celsius (Centigrade) temperature. TheLM35 this way has an advantage over linear temperature sensors adjusted (for accuracy) in Â° Kelvin. The LM35 is rated to operate over a aˆ '55Â° to +150Â°C temperature range, while the LM35C is rated for a aˆ '40Â° to+110Â°C range.

Fig: 3

2. Heart Beat Sensor: Heart beat sensor is designed to give digital output of heat beat when a finger is placed on it. It works on the way of thinking/basic truth/rule of light controlling/adjusting by blood flow through finger at each pulse[2].

C.COMMUNICATION

1. There are some ways in which the soldier can communicate with the base station.eg- Bluetooth, Zigbee modules etc.

2. Hence RF Module is a technology that can be used to communicate with the base station and it also has long range. Certain fancy (or smart) RF Module technologies can work even when there is fog or in a dense forests.[1]

1.1.*GPS:*

1. The Worldwide Positioning System (GPS) is a space-based worldwide (driving or flying a vehicle to somewhere/figuring out how to get somewhere) satellite system that provides reliable location and time information in all weather and at all times and anywhere on or near the Earth when and where there is an unobstructed line of sight to four or more GPS satellites.

2. This complete enabled GPS receiver provides high position, speed and time (quality of being very close to the truth or true number) performances as well as high sensitivity and watching and following abilities.

III.BASIC CONCEPT

This project has come up with an idea of watching and following the soldier and communication between soldier to base station, health status along with knowing their exact location.The control room gets location of soldier from GPS. It is the responsibility of the GPS to guide the soldier on correct path if he is lost in the battlefield. The base station can access the current status of the soldier which is displayed on the PC. And hence can take immediate action by sending help for the soldier or sending backup for threat ahead. Using different (the study of how life and medicine work together) sensor health limits/guidelines of soldier's are watched/followed.

IV. BLOCK DIAGRAM
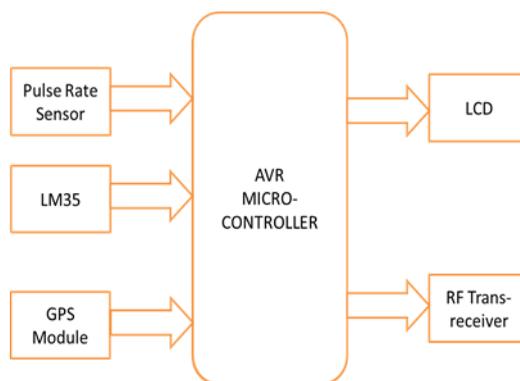
Fig:4
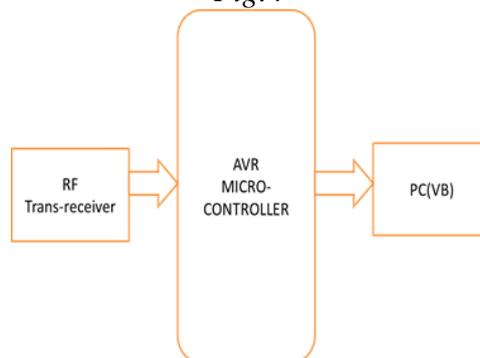
Fig:5

The block diagram of GPS based soldier watching and following and health indication system is shown in fig. it consist of two units soldier unit and base station unit. As it needs/demands high speed communication it is meant to use AVR processor which is based on a 8 bit Cash machineEGA16 CPU with real-time (copying/desire to copy and exceed) and embedded trace support, that combines the microcontroller with 512 Kb of embedded high speed Flash memory. Biosensors such as Body temperature and pulse rate are combined (with other things) to AVR processor to watch (for changes, unusual things, etc.) the health status. The GPS receiver is used to log the (how far east or west you are) and (how north or south you are/freedom to make decisions) of soldier, which is stored in microcontroller memory. GPS Receiver receives and compares the signal from orbiting GPS satellite to decide/figure out (land-area-based/location) position. Using keypad we can send messages to other unit.

RF Transceiver gets the (how north or south you are/freedom to make decisions) and (how far east or west you are) 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 limit/guideline 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 statio

V. SOFTWARE REQUIREMENT

1.1ALGORITHM
1. Power on
2. Initialize LCD

3. Display welcome message
4. Read data from GPS receiver and display on
LCD
5. Read soldier body temperature status
6. Read soldier heart rate
7. Send GPS location, temperature status and heart rate to base station using zigbeecommunication.

1.2 Network Simulator
A methodology is a collection of methods, techniques, tools and documentation aids which help the system developers analyze, design and implement a software system. This section, describes the methods used to conduct the research and the fact finding techniques. Various research techniques can be used to gather data and analyze WSN routing protocols. NS-2 has emerged from the VINT project. It is written and developed in C++ and TCL. It is widely used network simulator. It provides extensive support for simulating TCP/IP, routing and multicast protocols over wired and wireless networks. Its object oriented design, mix of C++ and TCL increases the complexity of the software. NS-2 is a discrete event simulator targeted at networking research. NS-2 provides substantial support for simulation of TCP, routing, and multicast protocols over wired and wireless (local and satellite) networks. NS-2 can run either in Fedora version of Linux Operating Systems or in the surface used Windows XP with Cygwin. Ns are licensed for use under version 2 of the GNU General Public License.[5]

VI. APPLICATION

1.Vehicle watching and following system.
2.Fuel watching and following system.
3.Digital Heart Rate monitor
4.Patient Watching/supervising System
5. Bio-(reactions or responses to something/helpful returned information) control of robotics and application

VII. COCLUSION

The Watching and following System can be put into use by using RF module & GPS system. By using GPS, we can give proper location of soldier & also we can monitor the heath limit/guideline by temperature B sensor and heart beat sensor. This way we can help the soldier in panic condition, as control room people can communicate with during war.

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