# TRACKING & MONITORING OF SOLDIER

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***Abstract :*** In today's world, enemy warfare is an important factor in any nation's security. One of the important and vital roles is played by the army soldiers. There are many concerns regarding the safety of soldiers. So for their security purpose, many instruments are mounted on them to view their health status as well as ammunitions present with them .Bio-sensor systems comprise various types of small physiological sensors, 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 and firearms, and some militaries such as the Israeli 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. RF module can be used for High-speed, short-range, 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 equipments we are trying to implement the basic life- guarding system for soldier in low cost and high reliability.

***Keywords*** –.GPS, Tracking, Biosensors, Navigation

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## I. INTRODUCTION

In this urban life transportation is very common. A lot of mishappenings occur on the road every day .Therefore the need of security and monitoring is developed. To resolve such problems, a system is developed using GPS technology. 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 are currently 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 integrated combat systems. Alongside vast improvements in protective and weaponry subsystems, another major aspect of this technology will be the ability to provide information superiority at the operational edge of military networks by equipping the dismounted soldier with advanced visual, voice, and data communications. Helmet mounted visors, capable of displaying maps and real-time video from other squad members, ranges of physiological sensors monitoring heart rate, core body temperature etc. These devices will improve situational awareness, not only for the host, but also for collocated military personnel who will exchange information using wireless networks. 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 power. Around the world, various research programs are currently 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 integrated combat systems. Alongside vast improvements in protective and weaponry subsystems, another major aspect of this technology will be the ability to provide information superiority at the operational edge of military networks by equipping the dismounted soldier with advanced visual, voice, and data communications. Helmet mounted visors, capable of displaying maps and real-time video from other squad members, ranges of physiological sensors monitoring heart rate, core body temperature etc. These devices will improve situational awareness, not only for the host, but also for collocated military personnel who will exchange information using wireless networks. 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 power.

## II. BASIC CONCEPT

This paper has an idea of tracking the soldier and navigation between soldier to soldier such as knowing their

Speed, distance, height as well as health status of them during the war, which enables the army personnel to plan the war strategies. Base station gets location of soldier from GPS. It is necessary for the base station 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 various biomedical sensor health parameters of soldier's are observed, the position and orientation of soldier is trapped using GPS.

## III. BLOCK DIAGRAM

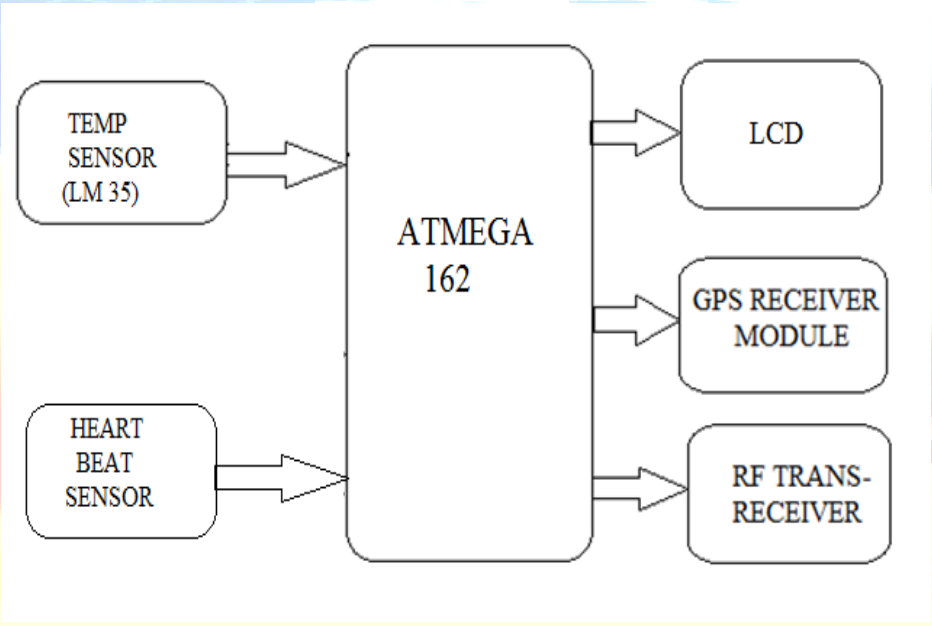



Figure 1.block diagram of soldier unit

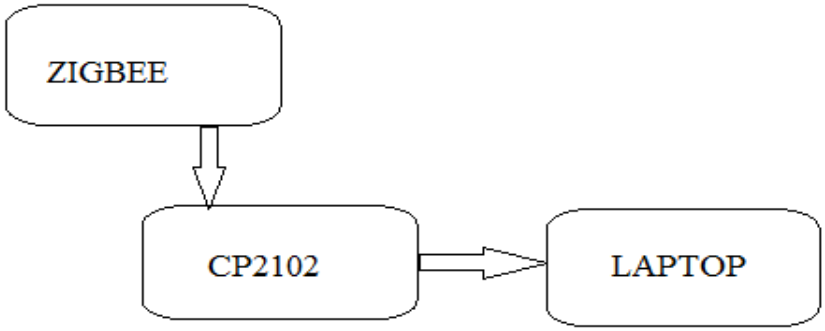



Figure 2.block diagram of base station unit

It consists of two units one is transmitting side (soldier unit) and other one is monitoring side**.**

1. **Description of transmitting unit:**

**1.1GPS**

GPS modules are popularly used for navigation, positioning, time and other purposes. GPS antenna receives the location values from the satellites. GPS gives information about position at a time.

**1.2 Microcontroller**

The system uses a CMOS 8- bit microcontroller. It is based on RISC architecture. It comprises of

16k bytes of flash program memory, 1K byte internal SRAM and 512 bytes EEPROM. Here in the Fig.1 the block of soldier unit associated with the location of the soldiers during the war zone. For providing exact location of position of the soldier to controller we used the GPS module in our system [3].

The location of the soldier using the GPS module is get to the soldier unit. It is necessary for the base station 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.

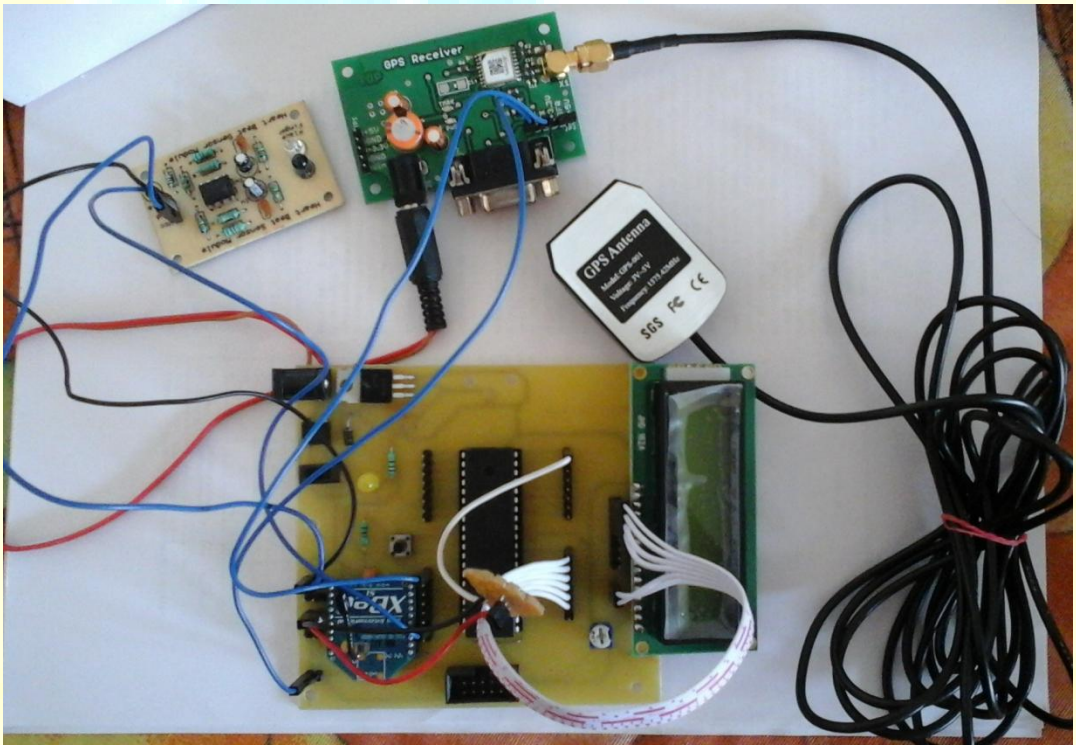
### 1.3 Biosensors

Using various biomedical sensor health parameters of soldier's are observed. We used temperature and the heart beat sensors as the biosensors.

## 2. Monitoring Side

The monitoring side consists of the Zigbee module, CP2102, and laptop. The location of the soldier in the war zone and the temp and heart pulses are displayed on the laptop using the Zigbee communication.

## IV.HARDWARE IMPLEMENTATION




## V.SOFTWARE IMPLEMENTATION

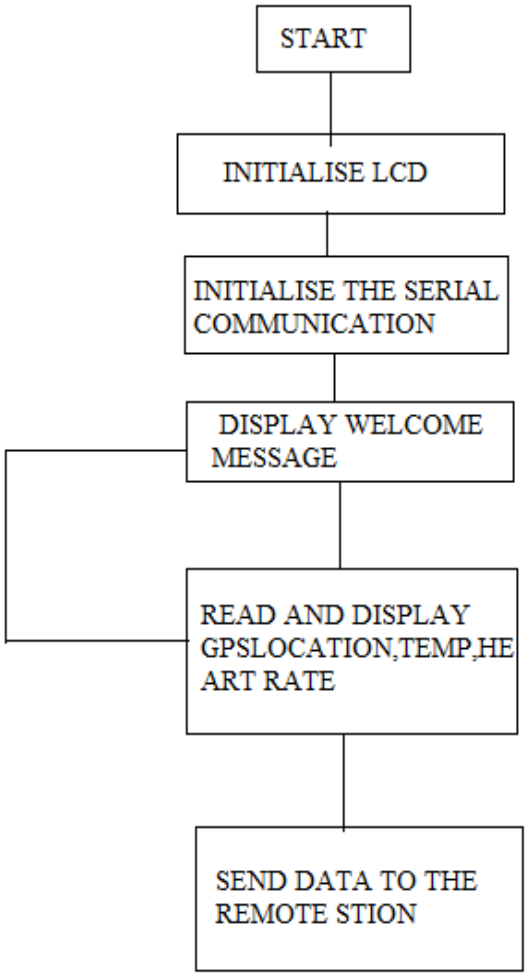



Figure 3.Flow chart of soldier unit

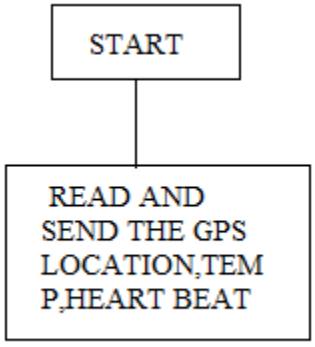
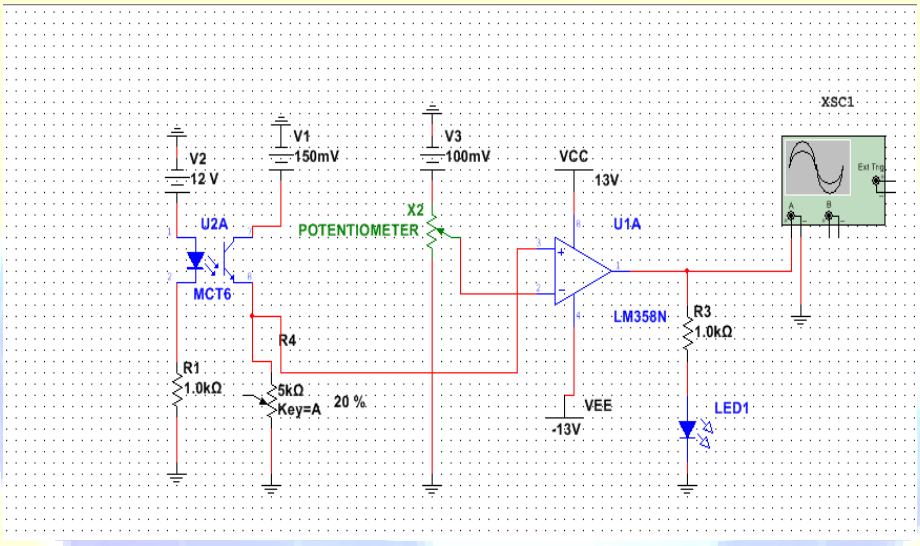


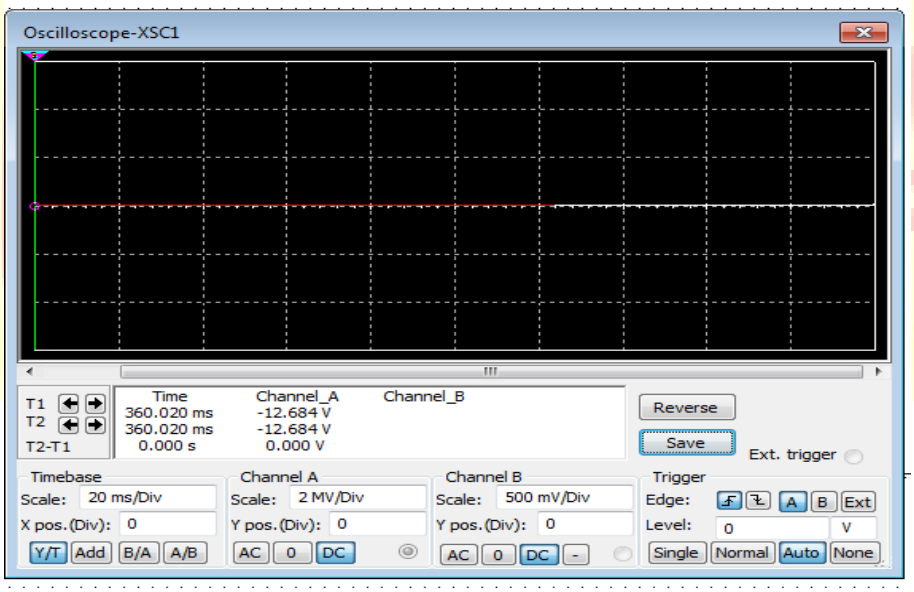

Figure 4.Flow chart of monitoring side

The software programming is done in 'C 'language. Data (co-ordinates) received by GPS from

The satellites are defined in the software.

We are done with the simulation of the heart beat sensor in the multisim which is shown in below:



## VI.APPLICATION

The project that we have proposed to design has a very crucial role to play in telemonitoring field. It can be used at:

1) Highly restricted areas such as nuclear stations, R&Dcenter, defence arena etc.
2) It can be a best suited system that can be used in mine detection system.
3) This system is used for the vehicle tracking.
4) The system is used for the medical application for monitoring the health of the patients.

## IV. CONCLUSION

We have tried our level best to design a system that will complement the tracking and the health monitoring of the soldiers and an effective security and safety system which is made by integrating

The advancements in wireless and embedded technology. The most significance in this system is implementation of M-health.

The system is still in developing stage and hope to implement the system with equal success rate.

## V. FUTURE SCOPE

This project can be further enhanced by the use of camera and by developing a mobile based

application to get the real time view of the vehicle instead to check it on PC, which would be

more convenient for the user to track the target.

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