# Soldier Tracking and Detection System

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*Abstract—* It becomes vital task for every country to save the lives of their soldier. In order to do so, many countries like U.S. and U.K. are doing research & have aim of creating fully integrated combat system. Also the real time information about the soldier who is at war should get known to control room so that they can well plan against enemy. 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.
*Key words:* 8051 Microcontroller, Heartbeat Sensor, GPS module, GSM module

## I. INTRODUCTION

Security is major task for every country in 21st century. Army is the force who battles on ground level. So to provide security to these soldiers is also important. In the war field the location of the soldiers are being tracked using radio line which may be not an efficient method to track the location & status of the soldier. We also read in the newspaper about missing of soldier during the war time.

In our project we have come up with an idea of tracking the soldier as well as to give the health status of the soldier during the war, which By using the location sent by the GPS modem, the base station can understand the position of soldier.

Heart rate sensor will continuously observed and monitor and send to destination. It will check the heart beat and accordingly we will decide whether the soldier or common man is suffering problem or injured. We also think aliveness of soldier at that position. [1][2]

## II. HISTORY

In past decades, such system was not available. For finding the soldier during war time, it becomes more difficult to search it. Because military system uses Wacky talky, it's not sufficient in this time. As technology invented they uses GPS for detecting a position of soldier. Instead of this we will easily find it along with area and position. This system is invented on the basis of certain disaster was occurred, by taking these aspect more beneficial in naxalite area like Garchiroli, Chhattisgarh etc. They will also measure the physical parameter of soldier but not embedded in single system. To overcome the old system we design system embedded on it. Soldier detection and tracking system avoid the confusion an ambiguity in tracking and detection during rescue operation.[[1][2]

## III. LITERATURE SURVEY

It is very recent news of Hon. Lance Hanuman Thappa. He is the person who is there at 19600ft close to LOC & it was very difficult task to track him. To avoid such incident our project helps them Real-time tracking and management of vehicles has been a field of interest for many researchers and a lot of research work has been done for tracking system. Recently the various anti-theft modules like steering wheel locked equipment, network tracking system and traditional electronic alarm are developed along with client identification and real time performance monitoring.[4]

## IV. PROBLEM STATEMENT

During the war in the area where dense forest, mountains or snow fall occurs, it becomes very difficult to trace our soldiers. Also after the end of war, we can't say anything about how many soldiers are died if few out of them are missing. we even have to try hard to find out missing soldier. To solve above problems, this system helps to great extent with additional benefits like information about health status of soldiers.

## V. PROPOSED SYSTEM
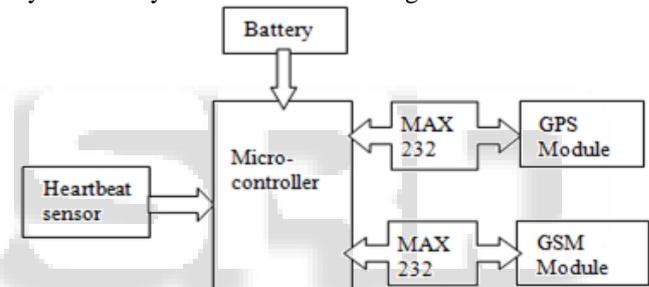
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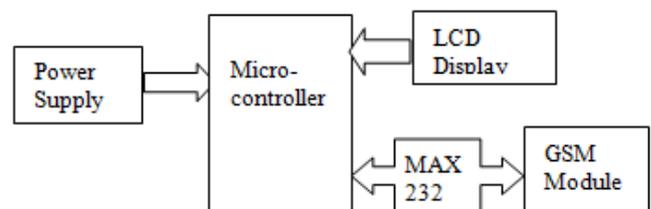


Fig. 1: Block Diagram at Soldier Side



Fig. 2: Block Diagram at Base Station Side

### A. Block Diagram Explanation

#### 1) Battery

We use battery for providing power supply at soldier site. The size of the battery bank needed depends on the storage capacity required, the maximum discharge rate, the maximum charge rate and the minimum temperature at which the battery will be used.[9]

#### 2) Microcontroller

Microcontroller 8051 used in our system has 8-bit data bus and 8-bit ALU. It has 16-bit address bus and 64KB-bit of RAM and ROM. In this microcontroller built in reset timers with brown out detection and on chip oscillator is present. microcontroller requires 5V dc, 100mA current for operation.[7]

*3) GPS Module*

It is a Standalone GPS receiver providing a solution that high position and speed accuracy performances as well as high sensitivity and tracking capabilities in urban conditions. Just Power the module with 5V, you will get GPS data in Standard NMEA Protocol format with current time, date, latitude, longitude, altitude, speed and travel direction/heading among other data. The module can support up to 66 channels. The GPS solution enables small form factor devices.[6]

*4) GSM Module*

GSM is the most popular standard for mobile telephony systems in the world. The GSM Association, its promoting industry trade organization of mobile phone carriers and manufacturers, estimates that 80% of global mobile market uses standard. GSM differs from its predecessor technologies in that both signaling and speech channels are digital, and thus GSM is considered a second generation (2G) mobile phone system. [6]

*5) LCD Display*

LCD screen is such a display module and a 16x2 LCD module is very commonly used. These modules are replacing seven segments and other multi segment LEDs for these purposes. The reasons being LCDs are economical, easily programmable.

*6) Heart Beat Rate Sensor*

Heart beat sensor is designed to give digital output of heart beat when a finger is placed on it. When the heart beat detector is working, the beat LED flashes in unison with each heart beat. This digital output can be connected to microcontroller directly to measure the Beats per Minute (BPM) rate. Heart rate is the number of heartbeats per unit of time.[1]

*7) MAX232*

The MAX232 is a dual driver/receiver that includes a capacitive voltage generator to supply TIA/EIA-232-F voltage levels from a single 5-V supply.

## VI. SYSTEM PERFORMANCE

It consists of base station and soldier site. Heart beat sensor is designed to give digital output of heart beat when a finger is placed on it. Heart beat sensor senses the livingness and alertness of soldier. Microcontroller will provide information about soldier, its position, area etc. using GPS and GSM module to base station.

At base station, received information is displayed on LCD screen. Whenever the enemy will try to remove kit, it will suddenly inform to a base station. The system faithfully works for finding position and aliveness of soldier.[1][5]

## VII. SYSTEM OVERVIEW

*A. Advantages*

1) Useful in detection and tracking of soldier.
2) Small space required to implementation.
3) Power consumption of the circuit is very less.
4) Very less expenditure on maintenance.
5) This will provide safety & reliability to people.

*B. Disadvantages*

1) It will be difficult to use where network is not available.
2) It will affected by atmospheric conditions.
3) Power supply is based on battery only.

*C. Applications*

1) We will use that system in naxalite prone area
2) We will use the system in tour.
3) We also use same system in military purposes.

*D. Future Scope*

1) We implement this project for multiple users by interfacing keypad for collecting information about multiple soldiers.
2) We also kept record of previous soldiers.
3) We make the system more reliable to all people instead of only soldier.

## VIII. CONCLUSION

This project is based on concept of GPS and GSM. The system can get all real time vital information about soldier. A successful implementation of the A soldier detection and tracking system is carried out in this paper. The fabricated unit was also tested and inserted practically. Security and safety for soldiers: GPS tracks position of soldier anywhere on globe and also health system. Monitors soldiers vital health parameters which provides security and safety for soldiers.

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