

# Soldier Health and Position Tracking System with Emergency Button Using IOT

**SAMEER. A , YASHVIN B S, PRAJWAL K R, SHAHIL D S**

Students, CSE Department, Sri Krishna Institute of Technology, B'lore-560090, India  
Faculty CSE Department, Sri Krishna Institute of Technology, B'lore-560090, India

## Abstract:

This project's basis as an IoT based system contains the secret to its success. IoT systems enable seamless data transfer across networks without the need for direct human or computer involvement by connecting diverse machines, devices, animals, and objects. In the context of Soldier Navigation and Health Monitoring, IoT plays a vital role by enabling the real-time transmission of soldiers' location and health data to the base station without any manual input required from the soldier. This IoT integration greatly enhances the efficiency and speed of the monitoring process, enabling prompt decision-making in critical situations.

## I. Introduction

The armed forces of tomorrow swear to the newest technology in the modern world which we have ever observed. The Military Services are quickly moving and approaching new inventions with more development now-a-days. Soldiers play a crucial role in warfare, serving as protectors of our nation. Their physical well-being is of utmost importance in ensuring their ability to fulfill their duties effectively. To safeguard their lives, it is vital for the base station to know their precise location and monitor their physical condition. In this project, we present an innovative solution that focuses on tracking soldiers' exact locations using GPS technology. This information allows the base station to plan and

strategize accordingly. The project combines hardware and software components to create an embedded system, offering flexibility in choosing the appropriate components to achieve speed and efficiency in performing the desired tasks. By utilizing this system, we aim to enhance the safety and effectiveness of our soldiers in the battlefield.

## II. Literature review

### 1. Human Health and location Tracking System

Author: V Akshita , Armarkar, Deepika J. Punekar, Mrunali V, kumari Sweta, Jayshree A. Shelk , Journal of Engineering Science and Computer, March 2017.

There are many consent regarding the safety of human. human are tracked by GPS and communicate wirelessly with GSM. To monitor their health, we use medical sensors like temperature and heartbeat sensors. A oxygen level sensor ensures soldiers are prepared for climatic changes. They have concluded that the communication hurdles between the soldiers and authorities at the base unit is overcome using GSM, the precise location and health parameters are known using GPS and wireless body area sensor (WBASNs) respectively and with the GSM modem all information is send to base so that field commander will take necessary action.

### 2. A system for human observing navigation and health measuring based on the IOT.

Author: KrutikaPatil, OmkarKumbhar, SakshiBasangar, PriyankaBagul, International Journal of Electrical, E&C (IJECS) ISSN (Online): 2347-

2820, Volume -5, Issue-1, 2017.

In the battlefield, it's crucial to medical team to accurately track the location and observe the health status of human. This system utilizes a combination of GPS model & wireless body area sensor to capture real-time data and transmit it to the base camp. The system incorporates various sensors, including humidity, temperature, and pulse sensors, which play a vital role in determining the health situation of each soldier. Wearable technology forms the core of this project, with the DHT11 sensor providing reliable readings of humidity and temperature, displayed on an LCD or the serial monitor. Additionally, the pulse sensor (SEN1154) was integrated using Arduino programming to measure the Beats per Minute (BPM) reading.

### 3. GPS Based human Tracking and temprature observing System

Author: Shruti Nikam, SupriyaP atil, Prajkta Powar, V.SBendre, International Journal of Advanced Research in Electrical, E&I Engineering, Issue 3, March 2013.

Effective navigation between military units plays a crucial role in meticulous planning and coordination. One of the fundamental challenges in military operations lays that the soldiers are not able to communicate

with control room station The main focus of this paper is the utilization of GPS for tracking soldiers' locations, enabling to base camp to guide them accurately. Additionally, we emphasize the importance of high-speed, short-range wireless communication among soldiers. This communication facilitates the exchange of crucial information related to situational importance, GPS , biomedical sensors, and general wireless communication. By employing GPS to locate soldiers' positions globally and

implementing a health monitoring system to track vital health parameters, this integrated approach significantly enhances the Protection and well-being. of soldiers.

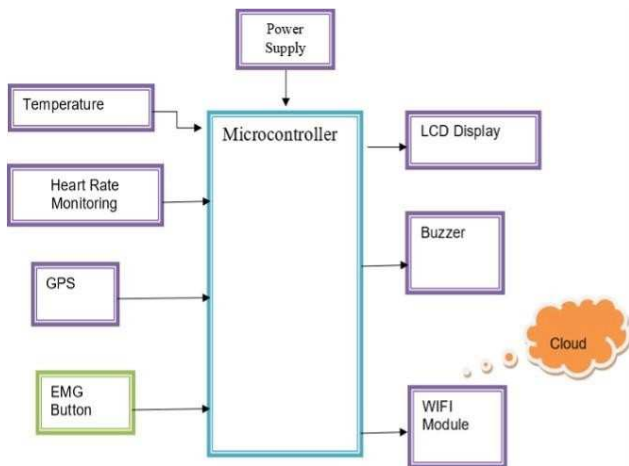
### 4.Health Monitoring and positioning System for Soldiers using IOT

Author: Niket patii, Brijesh Iyer, 2017

In recent decades, several technologies have been utilized for tracking soldiers' activities on the battlefield, including cable-based systems, RF transceivers, walkie-talkies, ZigBee, and GSM-based tracking systems. However, these methods have encountered challenges such as high installation costs, signal loss, excessive noise, and cumbersome equipment. To address these issues, this paper introduces an innovative approach— A human health observing and positional system utilizing IOT technology. By mounting the system on the soldier's body, their health status and real-time location can be accurately tracked using GPS technology. The collected data is then sent to a base room through devices connectivity. The system comprises compact wearable physiological equipment, advanced sensors, and efficient transmission modules. This cost-effective solution provides a valuable mechanism to safeguard the lives of soldiers on the war zone. In the future, further advancements may include the enhancement of portable handheld sensor devices with expanded sensing capabilities to further assist soldiers. Ultimately, this system provide a lifeguard, ensuring the well-being of army personnel worldwide.

### 5. GPS And IOT Based Human position & Health Indication System

Author: Akshay , ShamleePandita, wagh Suchita  
 Jasvinder Singh ,International Research Journal of  
 Engineering : 2395 -0056 Volume: 04 Issue: 06  
 June-2017.



The main challenge we faced was integrating various instruments into a lightweight pack that achieved the desired results without adding excessive bulk or power requirements. Communication with the base camp emerged as a fundamental challenge in military operations, while proper navigation within soldier organizations played a crucial role in planning and coordination. This paper primarily focuses on GPS-based soldier tracking, enabling the control room to precisely locate soldiers and provide guidance. Additionally, we address the challenge of high-speed, short-range wireless communication between soldiers, facilitating the exchange of information on situational awareness, biomedical sensors, GPS navigation, and general wireless communication. Our approach allows for continuous communication, with a less complex circuit and lower power consumption. By utilizing ARM processors and power-efficient peripherals, we reduce the overall power usage of the system. The compact size and lightweight nature of the modules ensure easy portability. The integration of GPS positioning and temperature

observing systems enables the Protection and well-being of soldiers.

### III. SYSTEM ARCHITECTURE

System architecture mainly focuses on detailed specification of elements like data., process, user, input and output of the system. It uses a list of requirements to design a model. It also describes how proposed system is to be built and shows movement of data between process and databases.

Fig 5.1 System diagram of hardware process

### IV. Implementation

#### SYSTEM MODULES

System modelling is supported throughout both requirements engineering and system design by a cohesive set of tools designed to assist relevant software process activities such as analysis and design workbenches.

**1.Location Tracking:** This module is responsible for tracking the real-time location of soldiers using GPS or other location tracking technology. It includes functions to read location data from GPS sensors, calculate the distance and speed of soldiers, and transmit this information to other modules in the system.

**2: Health Monitoring:** This module is responsible for observing the temperature of humans by collecting data on their vital signs such as heart rate, blood pressure, temperature, etc. It includes functions to read data from health sensors, analyses the data to detect abnormalities or potential emergencies, and transmit this information to other modules in the system.

**3: Emergency Button:** This module is responsible for detecting when a soldier has pressed the

emergency button and triggering the appropriate response. It includes functions to read data from the emergency button, generate alerts to commanders or other support personnel, and provide feedback to the soldier that the emergency request has been received.

**4: Data Storage and Integration:** This module is responsible for storing all data collected on soldiers' health and location for future analysis. It includes functions to save data to a database or other storage system, retrieve data for analysis, and perform data backup and recovery. This module is responsible for integrating the Soldier Health & Position Tracking System with Emergency button using IoT with other military systems to provide a comprehensive view of the battlefield. It includes functions to exchange data with other systems, ensure compatibility between different technologies, and coordinate the overall system operation. Overall, the implementation module for the human temperature & location Tracking System with Emergency button using IoT would include a variety of functions and procedures that work together to ensure the system operates effectively and efficiently, providing critical support to soldiers and commanders in the field.

## V. Conclusion

- IoT Based Soldier Health Monitoring and Tracking system has an idea of tracking the soldier and navigation between soldier-to-soldier such as knowing their distance, as well as health status of them during the war, which enables the army personnel to plan the war strategies.
- This sophisticated system empowers the utilization of GPS technology for precise tracking of soldiers, made feasible through the application of M-Health. M-Health, a revolutionary approach to healthcare, encompasses the integration of mobile computing, cutting-edge medical sensors, and advanced

communication technologies to deliver enhanced healthcare services..

- This innovative device will not only enhance the experience for its users but also foster seamless communication among strategically positioned military personnel who will exchange vital information utilizing wireless networks, thereby ensuring optimal coordination and efficiency. One of the basic challenges in military operations lays that the soldiers are not able to communicate with control room station.
- The data which will be collected by the different sensor also can be viewed in mobile by using Thing Speak. The pivotal aspect of this project lies in the utilization of wearable technology.

## VI. Acknowledgement

We would like to thank , Lokesh H D & Dr. Shantharam nayak for their valuable suggestion, expert advice and moral support in the process of preparing this paper.

## References

- [1] Soldier Health and Position Tracking System, Akshita V. Armalkar , Deepika J. Puneekar , Mrunali V. Kapse, Sweta Kumari, Jayshree A. Shelk, International Journal of Engineering Science and Computing, March 2017
- [2] IoT Based Soldier Navigation and Health Monitoring System, Krutika Patil, Omkar Kumbhar, Sakshi Basangar, Priyanka Bagul, International Journal of Electrical, Electronics and Computer Systems (IJECS) ISSN (Online): 2347- 2820, Volume -5, Issue-1, 2017
- [3] GPS Based Soldier Tracking And Health Indication System, Shruti Nikam, Supriya P atil , Prajka Powar , V.S. Bendre, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering Vol. 2, Issue 3, March 2013
- [4] Health Monitoring and tracking system for soldiers using internet of things (IoT), Niket patil ;

Brijeshiyer, 2017 International Conference on Computing, Communication and Automation (iccca), ieeee.

[5] GPS And IoT Based Soldier Tracking & Health Indication System, Jasvinder Singh Chhabra, AkshayChhajed, ShamleePandita, SuchitaWagh, International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056 Volume: 04 Issue: 06 June-2017

[6] S. Sharma, S. Kumar, A. Keshari, S. Ahmed, S. Gupta and A. Suri, "A Real Time Autonomous Soldier Health Monitoring and Reporting System Using COTS Available Entities," Second International Conference on Advances in Computing and Communication Engineering (ICACCE), Deharadun-India, May 2015, pp. 683-687.

[7] R. Kumar and M. Rajasekaran, "An IoT based patient monitoring system using raspberry Pi,"

International Conference on Computing Technologies and Intelligent Data Engineering, Kovilpatti-India, Jan. 2016, pp. 1-4.

[8] R. Shaikh," Real Time Health Monitoring System of Remote Patient Using Arm7," International Journal of Instrumentation, Control and Automation (IJICA), vol. 1, no. 3-4, pp.102-105, 4, 2012.

[9] D. Kumar and S.Repal, "Real Time Tracking and Health Monitoring of Soldiers using ZigBee Technology: a Survey," International Journal of Innovative Research in Science, Engineering and Technology, vol. 4, no.7, pp. 5561-5574, Jul. 2015.

[10] G. Raj and S. Banu, "GPS Based Soldier Tracking And Health Indication System With Environmental Analysis".International Journal of Enhanced Research in Science Technology & Engineering, vol. 2, no. 12, pp. 46-52, Dec.2013.