

# System for Heartbeat and Temperature Monitoring with Location Tracking for Soldiers

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## ABSTRACT

In extremely dangerous situations soldiers not only deal with the physical threat, but also stress caused by protracted operations or lack of sleep. So for the security purpose of soldiers, we need a tool which will be used in health monitoring and tracking the location of the soldier. So in this project a tool will be implemented using arduino microcontroller and bio-sensors like heartbeat sensor and temperature sensor for health monitoring purpose . Also to track the location of the soldiers we have to use a GPS system. Additionally a ESP8266 Wi-Fi module will be used to send all the values continuously to the military center for continuous analysis of soldiers.

**Keywords :** Atmega328 Microcontroller, GPS, LM35 Temperature Sensor, Heartbeat Sensor, Battery.

## I. INTRODUCTION

To receive the information from the control station or from the superiority, the soldier must be integrated with advanced voice and data communication devices. The soldier needs wireless network for displaying maps and to communicate with military center or military personnel. Apart from the nation's security, the soldier's security is also important in protecting himself with advanced weapons and it is necessary for the army base station to monitor the health status of the soldier.

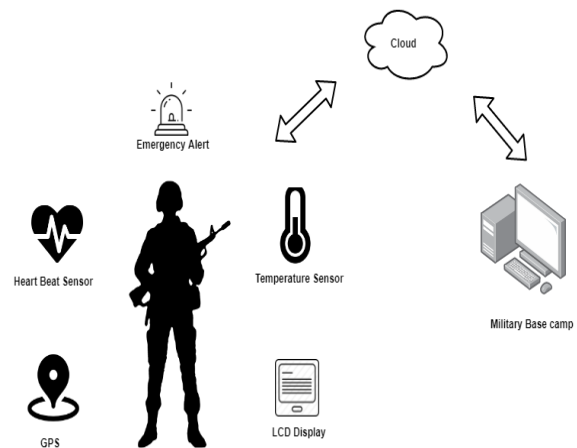


Fig 1. Overall System

## II. PROBLEM STATEMENT

Many other jackets existing in the market can provide both cooling and warm service with the jacket. The different climatic conditions such as very cold and very hot temperatures could be dangerous to health. In very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Hence, we have proposed a smart army

jacket for the soldiers as soldiers play a very important role to protect our country in extreme conditions.

The smart army jacket could monitor health, internal temperature, track location as well as send emergency notification in the form of short message service for the soldier.

### III. LITERATURE SURVEY

Soldier Security and Health Monitoring Thanga Dharsni, Hanifa Zakir, Pradeep Naik, Mallikarjuna, Raghu. 2018, the proposed framework can be mounted on the warrior's body to track their wellbeing status and current area utilizing GPS. Through distributed computing these data will be transmitted to the control room. The proposed framework involves small wearable physiological equipment's, sensors, transmission modules. Consequently, with the utilization of the proposed hardware, it is conceivable to execute a minimal effort component to ensure the important human life on the war zone. GSM is used which is irrelevant and excessive use of sensors[1].

Health Monitoring and Tracking System For Soldiers Using Internet of Things (IoT) Niket Patil 2017, the paper reports an Internet of Thing (IoT) based health monitoring and tracking system for soldiers. The proposed system can be mounted on the soldier's body for tracking their health status and current location using GPS. This information will be transmitted to the control room through IoT. The proposed system comprises of tiny wearable physiological equipment's, sensors, transmission modules Only hardware approach and no use of software systems[2].

Wearable Systems for soldiers Monitoring the Health Condition: Review and Application Petr Volf, Slavka Viteckova, Pavel Smrcka 2017, systems for measuring of medical data for the diagnostics of physical and psychological state have significantly spread. This study, examines the current technologies and usage of

the wearable monitoring systems in military. The article can be used as a guide for choosing suitable and affordable systems of quantitative evaluation of physical and psychological conditions of soldiers Wearable system but with higher costs. High end simulation software required[3]. Wireless detection system for Health and military application Yallalinga, Nirmalkumar S. Benni 2017, upon detection of fall/collapse the sensor system transmits the information wirelessly, which will be received by the care-taker's mobile. The sensor is a belt shaped wearable device consisting of accelerometer (tri-axial) and gyroscope. These sensors are used to classify the posture and dynamics of the user. The main aim of the project is to develop efficient algorithms to detect falls and distinguish between falls and non-falls using these sensors. GSM is outdated. Zigbee is used for wireless communication and it has many limitations such as a range and obstacles in the communication channel[4]. Monitoring of Soldier's Health and Transmission of Secret Codes Zeeshan Raza, Kamran Liaquat 2016, in this paper, we are going to design a smart device for soldier using modern technologies and techniques. This device will be carried by a soldier in warfare. The device will be able to sense heartbeat and body temperature of soldier and transmit the reading on base station where the cumulative data will be displayed. For storage of readings a small database is organized. As well as the Soldier can send a secret message on the base station. A formula is designed in order to make the reading accurate and precise, which is a correlation of body temperature and heartbeat. Hardware approach, LCD is not necessary to use if we use software interfaces. No cloud processing. Secret codes are already implemented[5]. Heart Rate, Skin Temperature, Skin Humidity and their Relationship to Accumulated Fatigue Decho Surangsrirat, Songphon Dumnin and Support Samphanyuth 2016, the objective of this study is to monitor the heart rate, skin temperature and skin humidity of the new recruited soldiers during the last week of multiple weeks training period in high temperature where

accumulated fatigue is expected. The measurements are collected during their sleep. In multiple participant, experimental results show an increasing trend of the average resting heart rate. In one participant there is an increasing trend of skin temperature, the data also show consistently high skin humidity for this participant[6].

#### IV. PROPOSED SYSTEM

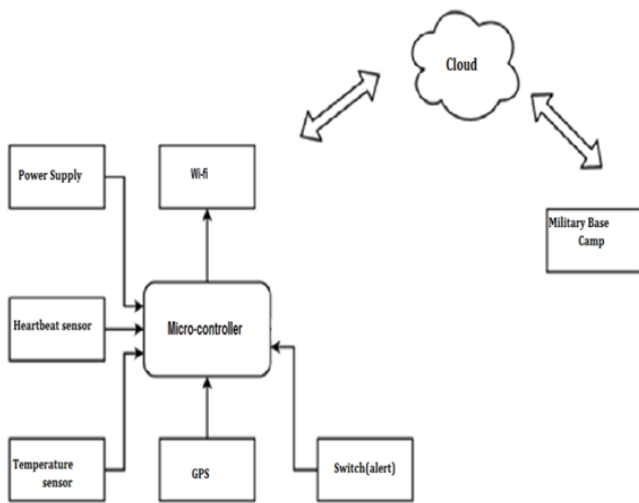


Fig 2. System diagram

We have proposed a smart army jacket as an important resource for the army soldiers as soldiers play a very important role to protect our country in extreme conditions.

The proposed smart army jacket will monitor the heartbeat and internal temperature of the soldier and will also send emergency notification in the form of short message service for safety of the soldier.

We are going to use arduino microcontroller and bio-sensors like heartbeat sensor and temperature sensor. Also we are using GPS system to track the location of the soldier as shown in fig.2.

**Hardware Used:** Controller, Temperature Sensor, Heartbeat Sensor, GPS, Buzzer.

#### V. CONCLUSION

The proposed system is an effective security and safety system which will be made by integrating the advancements in wireless and embedded technology. It could help in a secret mission. This system can be used in critical conditions. Provides safety and security for soldiers: GPS tracks position of a soldier anywhere on the globe and health monitoring system monitors soldier's vital health parameters which provide security and safety for soldiers.

#### V. REFERENCES

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Dumnin and Support Samphanyuth 2016  
10.1109/BIOSMART.2019.8734230(Bio Smart)

**Cite this article as :**

Anuradha Ramapure, Dimpal Lunkad, Nikita Ingale, Prerna Satpute, Prof. Vandana Chavan, "System for Heartbeat and Temperature Monitoring with Location Tracking for Soldiers", International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), ISSN : 2456-3307, Volume 4 Issue 8, pp. 51-54, September-October 2019.

Journal URL : <http://ijsrcseit.com/CSEIT194813>