

# Wireless Data Transferring of Soldier Health Monitoring and Tracking System

Krishnaveni R.S  
 Department of Electronics and communication Engineering  
 AVS Engineering college  
 Salem, TamilNadu, India  
[krishurfrnd90@gmail.com](mailto:krishurfrnd90@gmail.com)

Nandhini.D  
 Department of Electronics and communication Engineering  
 AVS Engineering college  
 Salem, TamilNadu, India  
[nandhuaari1@gmail.com](mailto:nandhuaari1@gmail.com)

Sowndarya.S  
 Department of Electronics and communication Engineering  
 AVS Engineering college  
 Salem, TamilNadu, India  
[sowndaryasalem@gmail.com](mailto:sowndaryasalem@gmail.com)

Sneka.H  
 Department of Electronics and communication Engineering  
 AVS Engineering college  
 Salem, TamilNadu, India  
[sneka8052002@gmail.com](mailto:sneka8052002@gmail.com)

Sowmya.A  
 Department of Electronics and communication Engineering  
 AVS Engineering college  
 Salem, TamilNadu, India  
[asowmya30720@gmail.com](mailto:asowmya30720@gmail.com)

**Abstract**— One of the important military operations lies in that soldier not able to communicate with control room station. We proposed a system on soldier’s body to track their health status parameter of soldier can be sent to be base station in real time so that the action can be taken in case of crisis. By using IOT the information will be send to the control room. The module we created is wearable one and also it has sensors, transmission modules. Hence, with the use of the components, we implement a low cost mechanism to protect the valuable human life on the Warfield.

**Keywords**— Microcontroller, Node MCU Microcontroller, Heartbeat Sensor, Temperature Sensor, Oxygen Sensor, GPS, ESP 32 CAM, LORA Transmitter-Receiver, IOT, Arduino IDE, CSS compiler, PIC KIT 2 Loader.

## INTRODUCTION

In today’s world, the science and technology is growing rapidly with new inventions. The soldiers are the important pillars of our nation. So many soldiers lost in war fields as there was no proper health backup and connectivity between the soldiers on the war fields and the officials at the army base stations. In this paper we focus on tracking the location of soldier from GPS, which is useful for control room station to know the health of the soldier and accordingly they will guide them. There are many concerns regarding the safety of the soldiers. So we created a module to protect them in future.

## LITERATURE SURVEY

### A. Wearable health monitoring system and its applications:

A wearable health monitoring system and its applications for long term monitoring are presented in this paper. The system, called a “button system,” It gives BPM, temperature & location and does not transmit the other details expect location. This is the main drawback of the system while we execute. The data is then sent to the host computer via a wireless transmitter. Heart rate variability (HRV) was then used as a quantitative marker of automatic nervous system activity. However, these systems are limited by their inability to handle variations in signing styles and the need for manual feature engineer

### B. Efficient monitoring system for cardiac patients using WSN:

The health monitoring system is one of the trendy research areas of WSN which helps the users, to use sensor strategy to sense signals, physiological events of the patients and alert the users. Traditional sensors have restrictions such as position, wired communication between the sensor modules provides the patients and also reduces the medical errors.

This also having a disadvantage to provide some of the information about the patients.

### C. An IOT based patient health monitoring system:

Nowadays health care environment has developed science and knowledge based on Wireless sensing node technology oriented. This system also shows patients temperature and heartbeat tracked live data with timestamps over the internet network. The transfer is done only through internet and it makes it difficult for it to transmit where there is no network.

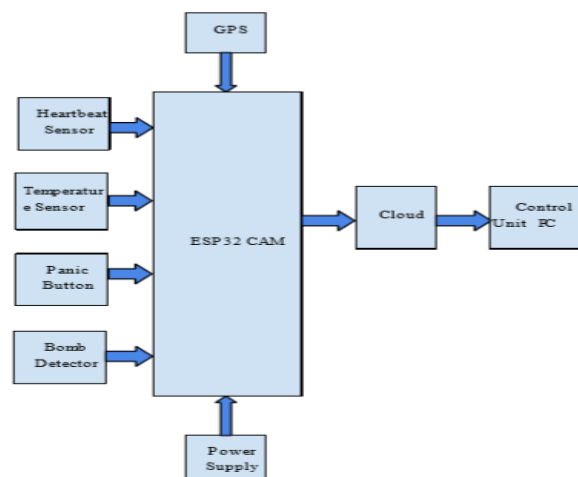
## I. METHODOLOGY

Here the methodology used not only performs the task of health care monitoring but also does the tracking of soldiers using IOT. The control room can acquire the details about the soldier from various sensors. The current status of the soldier using IOT as the different tracking parameters of the soldier get transmitted via wifi module.

The equipment are hold by the soldiers. This is the wearable one that make soldier very comfortable for them. So we have efficient method of delivery of this product.

## II. EXISTING SYSTEM

Here we are using ESP32 CAM a main one for delivering the output. It uses heartbeat and temperature sensors to measure the parameters of the person along with the GPS and bomb detector and sends those information to the ESP32. The panic button is used at the time of emergencies. The ESP32 CAM contains a small camera that records the surrounding environment and sends the details. All the collected data are regularly transmitted to the control unit using cloud.



### III. PROPOSED SYSTEM

The sensors are placed in the vests of the soldiers and they track the heart rate, oxygen level and temperature of their body. GPS and ESP32 CAM are placed to find their location and also to monitor their surrounding. The data gathered are transmitted using LORA transmitter in the kit and is sent to the nearby campsite and it acts as transmitting part. At the receiving part there is LORA receiver that receives the signals at the campsite. After receiving the signal the data is transmitted to the control unit using IOT. There is a constant monitoring of the health signals and the changes are updated with every changes in the movements and health of the soldiers.

### IV. BLOCK DIAGRAM

Fig. 1 shows the complete block diagram of the system, Here the PIC microcontroller are the main one the heartbeat sensor, temperature sensor, oxygen sensor, GPS, ESP 32CAM, emergency button are the components that attached to PIC and LCD display and LORA transmitter are the major sources that transmits the information.

Fig. 2 shows the receiver side here we have Node MCU Micro controller and have a receiver, buzzer and display.

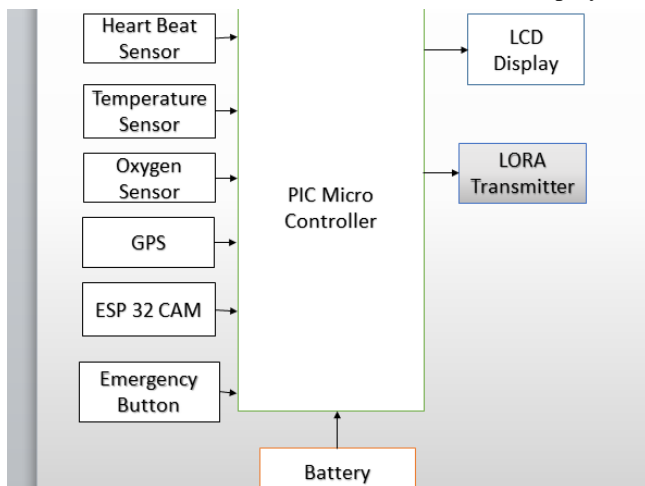


Fig. 1. Transmitter block diagram

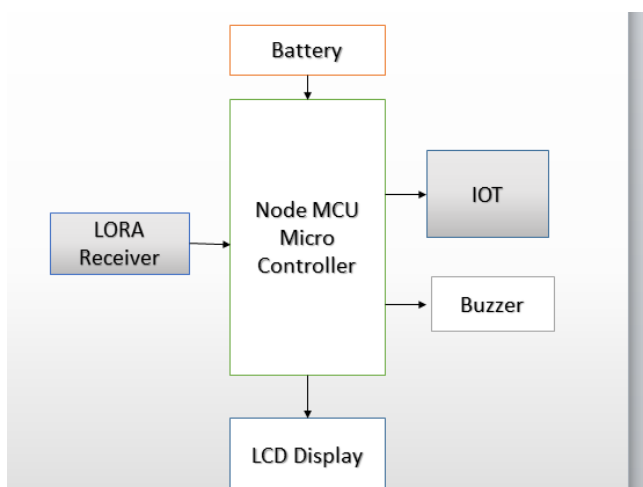


Fig. 2. Receiver block diagram

### V. HARDWARE REQUIREMENT

#### A. PIC Microcontroller

These are sensors that measure the degree of bending of the fingers. In this system, flex PIC Microcontrollers are meant to enable simple programming and interfacing in embedded system design. The Harvard Architecture used by PIC Microcontroller. Peripheral Interface Controller (PIC) is used in the development of electronics, computers, robotics and similar devices. It is the very smallest microcontroller in the world that can be designed to carry out a huge range of tasks.



#### B. NodeMCU Microcontroller

Node MCU is a microcontroller development board with wifi capability. Node MicroControllerUnit is an open-source software and hardware development built around an inexpensive system-on-chip (SoC) called the ESP8266. Node MCU has 128 KB RAM and 4 MB of flash memory to store data and programs. Its high processing power with in-built wifi/Bluetooth and deep sleep operating features make it ideal for IoT projects.



#### C. Heartbeat, Oxygen and temperature sensors

Heart rate monitors are devices that detect and measure your heart or pulse rate. As a result of advances in technology these devices are small, wearable and many use sensors that are very accurate. Temperature sensors work by providing readings via electrical signals. They convert input data into electronic data to record, monitor, or signal temperature changes. Oxygen sensors are responsible for providing the oxygen level available in the nearby environment.



#### D. ESP32 CAM

The ESP 32 CAM is a small size, low power consumption camera module based on ESP32. It comes with an OV2640 camera and provides an on-board TF card slot. This can be widely used in intelligent IoT applications such as wireless video monitoring, WiFi image upload, QR identification and so on. ESP 32 CAM is a low cost ESP32 based development board with on-board camera, small in size. It is an ideal solution for IoT application, prototypes, constructions and DIY projects.

system



#### E. LORA transmitter and receiver

LoRa stands for Long Range is a physical proprietary radio communication technique. LoRa is the de facto wireless platform of Internet of Things. Semtech's LoRa chipsets connect sensors to the Cloud and enable real-time communication of data and analytics that can be utilized to enhance efficiency and productivity. As with all frequency bands there are 8 channels in the 868 MHz LoRa band. These 8 channels are spread over frequencies starting at 865.20MHz and ending at 868 MHz.



### VIII. RESULTS

This device helps in monitoring the health conditions of the people regularly and it gives the changes in the data at every instance. This can be used not only in the military service but also it can be used in our day to day life and can be modified according to the person that we need to contact at that movement. This can be used to monitor a person who has a low health condition which is not serious as to be admitted and this device does the required monitoring of the person accurately.

### IX. CONCLUSION

With the advances in information and communication technologies have opened new horizons have been opened regarding the modification in traditional health care systems, which should be solved by collaboration between engineers and medical professionals. Through this research a simple yet innovative wireless healthcare monitoring system have been developed for critical patient using sensors. Through this system, patients's family can be benefited in terms of time and energy to care and monitor their patients health.

### X. REFERENCE

- [1] IOT and GPS Based Soldier Position Tracking and Health Monitoring System by
- [2] Monika V. Bhivarkar, Anuja G. Asole, P. B. Domkondwar (2018).
- [3] IoT-based Healthcare Monitoring System for War Soldiers using Machine Learning by
- [4] Aashay Gondaliaa, Dhruv Dixitb, Shubham Parasharc, Vijayanand Raghavad, Animesh Senguptae (2018).
- [5] Health Monitoring and Soldier Tracking System using IOT by Puneeth Kumar D N ,
- [6] Archana Padikar A, Cinmayee C K, Chaithra E, Chethan1 (2020).
- [7] Real-Time Health Care Monitoring and Tracking