

## SOLDIER HEALTH MONITORING SYSTEM USING IOT

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### ABSTRACT

To enhance the convenience of life, Internet of Things (IOT), the current advanced technology plays a major role. In this project we develop IOT based system to measure health condition and location of soldier. The Wearable IOT Device is a wireless sensor node system can be mounted on the soldier's body to track their health status and current location using Global positioning system. These information will be transmitted to the control room through internet of Things. The system comprise of tiny wearable physiological devices, sensors, transmission modules.

**KEYWORDS:** Internet of Things (IOT), *GSM*, *GPS*, Sensors, Micro Controller, AWS, Control room, Soldier.

### I. INTRODUCTION

The Internet of Things (IOT) is the inter-networking of physical devices buildings, and other items embedded with electronics, software, sensors, and network connectivity that enable these objects to collect and exchange data. The Internet of Things refers to the ever-growing network of physical objects that feature an IP address for Internet connectivity and the communication that occurs between these objects and other Internet-enabled devices and systems. Soldier health monitoring is a System of finding the health status and location by electronic devices with reducing human involvement to a minimum. A soldier health monitoring system consist of two main components the first part is all the biological sensors and GPS connected to the arduino board second part is GSM that has appropriate interface to sensors and GPS and update all the information to cloud server AWS through wireless technology. Proposed system of Soldier monitoring and location tracking system have a vital role in reducing time required to check soldier on war field.

### II. METHODOLOGY

#### 2.1 Monitoring Module :

##### ➤ Temperature Sensing Module :

This function performs the task of measuring the body temperature of the soldier and display message in terms of degree (temp<sup>o</sup>c) Celsius here we use LM35 semiconductor Sensor that measures temperature in between - 55°C to 150°C.

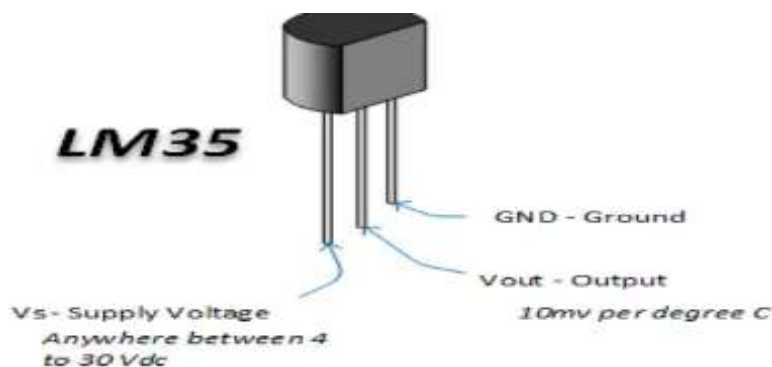
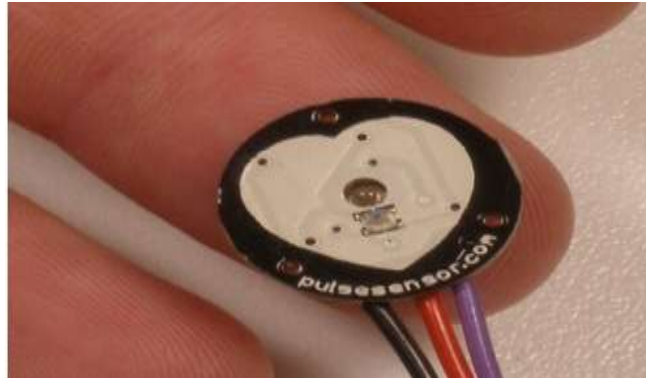


Fig-1: Temperature Sensor

➤ **Heart Rate Sensing Module:**

This function used to determine pulse timing instant moment of the heartbeat, and display number of pulse rate per sec/minute. Measured at fingertip blood circulation i.e. proportional to hear beat.



**Fig-2:** Heart Beat Sensor

➤ **Toxic Gas Sensing Module:**

This function determines the amount of toxic gases around the body of the soldier, here we use MQ-6 sensor where coil gets heated up if it detects any toxic gas around and cools down if no gas around.



**Fig-3:** Toxic gas sensor

➤ **Motion Tracking Sensing Module :**

This function determines whether soldier is moving or not. Here we are using LM393 a vibration sensor it has a comparator chip to give an digital output based on vibrations.



**Fig-4:** Motion tracking sensor

## 2.2 GPS Module :

This function display the exact location of the soldier, this GPS is directly connected to the satellite gives location based on the latitude and longitude here we use EG25A1 GPS that is connected to the serial port of the arduino.

### 2.3 Server Module :

In this module, the server contains the current data and previous data about soldiers. Server should be connected to the internet to access data and it has a IP address. The server needs an valid username and password to get login to see all the message in the PC sent by the GSM.

### 2.4 Processing Module:

#### ➤ **Arduino Board**

- ✓ The analog output from the Sensors is sent to Arduino board to convert it into digital data.
- ✓ This Digital data from Arduino is fed to GSM.
- ✓ GSM sends all the data and upload it in Amazon web server (AWS) server.
- ✓ The most common programming approach is to use the Arduino IDE, which utilizes the C programming language. This gives you access to an enormous Arduino Library.

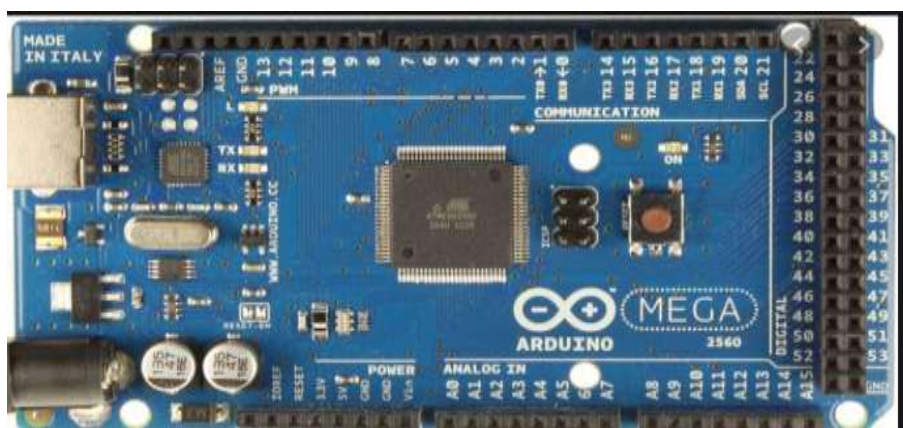


Fig-5: Arduino at Mega 2560

#### ➤ **GSM Modem :**

A GSM modem is specified type of modem which uses a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. From the mobile operator point of view, a GSM modem resembles just like a mobile phone. A GSM modem can be a dedicated modem device with a serial or USB connection, or it could be a mobile phone that provides GSM modem capabilities.

### 2.5 Display Module :

This module mainly displays the resulting BPM (Beat per Minute) on a LCD screen, since it is the most flexible way of displaying the output. The LCD displays the heartbeat rate and the temperature, and location of soldier, vibration, toxic gas detection.

#### ➤ **LCD :**

Liquid Crystal Display (LCD) is a display device used to display values on any electronic device. We have used 16x2 LCD.

## III. RESULTS AND DISCUSSION

The main application of this system is it helps the army officials to know the status of soldier health and their location in the war field. The proposed system works wirelessly to give all the information of soldier health and also reduces the searching time of soldier in the war field. All the information is displayed on the PC that is secured with email-id and password Army officials can see this information by getting log in by providing required details. For all these process to happen there must be strong Internet connection.

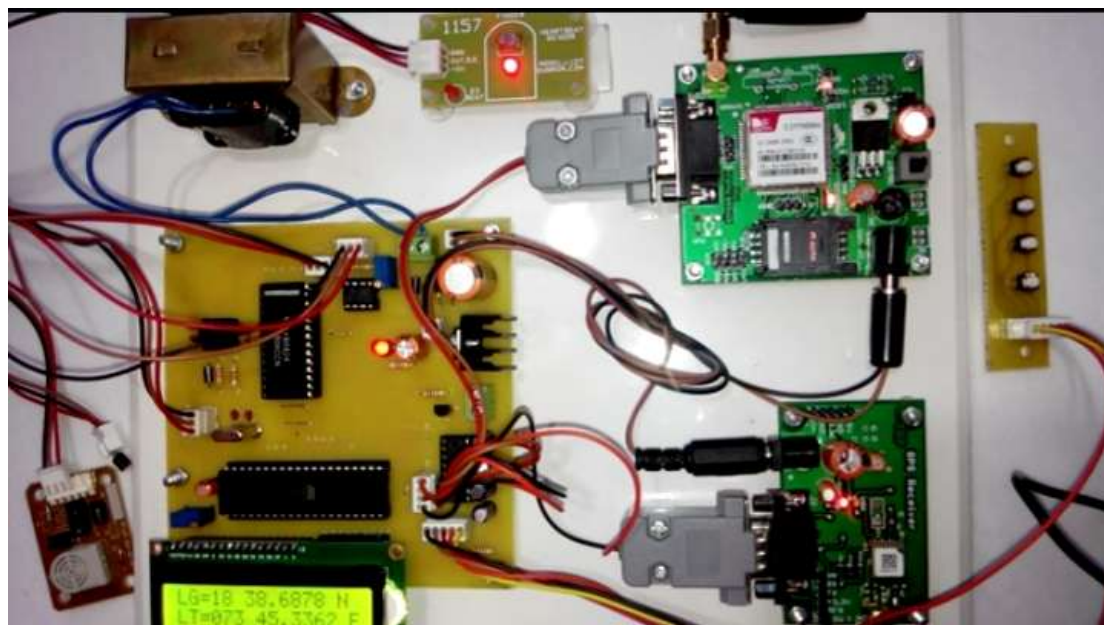


Fig-6: Snapshot of the Project

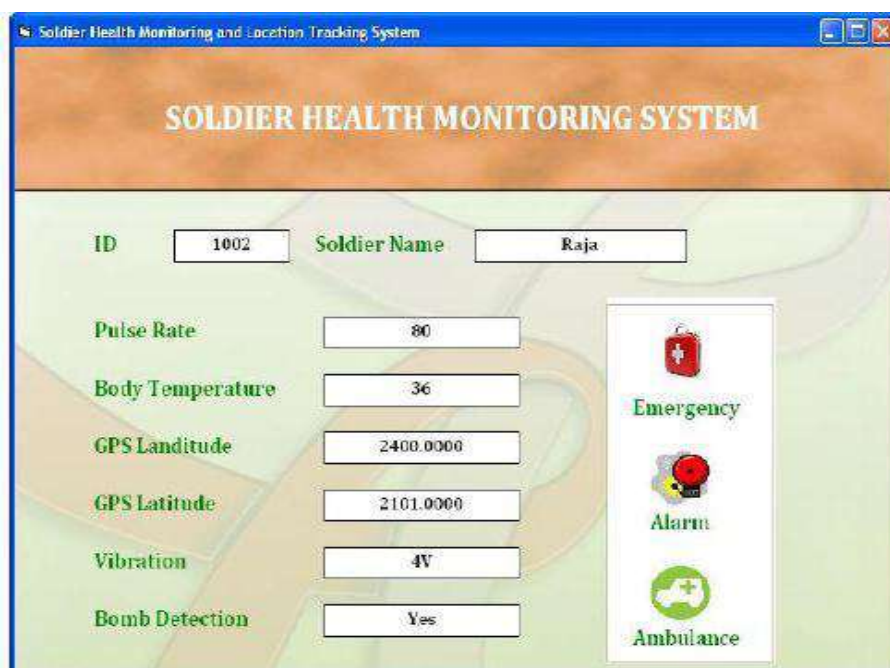


Fig-7: Output Display on PC in the Control Room

#### IV. CONCLUSION

In this paper we have presented the system entitled "SOLDIER HEALTH MONITORING SYSTEM USING IOT". This system helps the army officials to know the current health status of the soldier through various biological sensors and their location on the war field through GPS. This system helps to safeguard soldier life on the war. This system is very much secured because only army officials can see the information sent by GSM by providing valid Email-id and password with proper internet connection.

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