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Military Health System using IOT

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Abstract: ***In today's world, Air-Force, Navy, & Army are three main factors for any Nations Security. But the vital role is played by army soldiers.There are many concerns regarding safety of soldiers. For their security purpose many devices were implemented with advanced technologies not only to view the health status but also ammunitions present with them. For this precaution, the biosensors are used to get health status as well as GPS to log the longitude & latitude so that the location of any soldier can be known easily. Also transmission modules are mounted for high-speed, short range & soldier-to-soldier wireless communication which will be required to relay information during special operations like reconnaissance and other missions too. Therefore by using such a safety technologies on situational awareness and utilitarian instructions to provide the basic life-guarding system for unobtrusive solution in military gives life saving & performance enhancemental benefits in low cost with high reliability.***

Keywords: IOT, Soldier unit, ESP8266 Node MCU, Biomedical sensors, Base station

I. INTRODUCTION

Nation's security is monitored by army soldiers. In military there are various methods of security of the soldiers but there is no proper connectivity between soldiers on battlefield and officiers at base station. Because of this, soldiers has to face many problems. Often they lose their lives in enemy warfare. India has already lost so many soldiers in war zone. The recent examples are Pulvama attack, URI attack, & so on…Because of this it is necessary to keep health backup and connectivity between base station and soldiers on battlefield who sacrifices their life for their country. All must be really concerned about soldiers safety. So we have decided to to build a project which will efficiently check the health conditions of the soldiers and his precise location to equip him with necessary medical treatments as soon as possible.. For monitoring health status biosensors are used which involves temperature sensor & heart-beat sensor.

The soldiers tracking can be done with the help of GPS. In this project the exact location & health parameters of soldiers in warfare can be sent to the base station so that the feasible actions can be taken in critical case. This technology helps to minimize the rescue, time & search operation efforts of army control unit. Since this is a wearable technology which is the most important aspect of our project.

II. LITERATURE SURVEY

Soldiers tracking is done using GPS & GSM also they are used to provide wireless communication system. For monitoring the health parameters of soldier we are using bio medical sensos such as temperature sensor & heart beat sensor. An oxygen level sensor is used to monitor atmospheric oxygen so if there are many climatic changes the soldiers will be equipped accordingly.[1]

The system uses GPS module and wireless body area sensor network to record all parameters
in real time and send it to the base station. The different types of sensors used in this system
are the humidity sensor, temperature sensor the pulse sensor which help in deciding the health status of the particular army official. This is a wearable technology which is the most important factor of this project.[2]

In this project we focus on the tracking the location of soldier from GPS, which is useful for control
room station to know the exact location of soldier and accordingly they will guide them.

Also Highspeed, short-range, soldier-to-soldier wireless communications to relay information on situational awareness, GPS navigation, Bio-medical sensors, Wireless communication.[3]

The project reports an Internet of Things (IOT) based health monitoring and tracking system for soldiers. The proposed system can be mounted on the soldiers body to track their health status and current location using GPS. These information will be transmitted to the control room through IOT. The proposed system comprise of tiny wearable physiological equipments, sensors, transmission modules. Hence, with the use of the proposed system, it is possible to implement a low cost mechanism to protect the valuable human life on the battlefield.[4]

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III. BASIC IDEA

A. Problem Statement

Nowadays Defense services are growing rapidly towards new researches and approaching advanced technologies. And the soldiers are defenders who protect our country from enemies, while doing this soldiers health is an important issue as getting injured even loses their life. Whenever any soldier entered in war field it is very vital for the army base station to know the health status as well as exact location of the soldiers. Problems are what kind of technology would be used so that above mentioned problem will overcome easily & accurately.

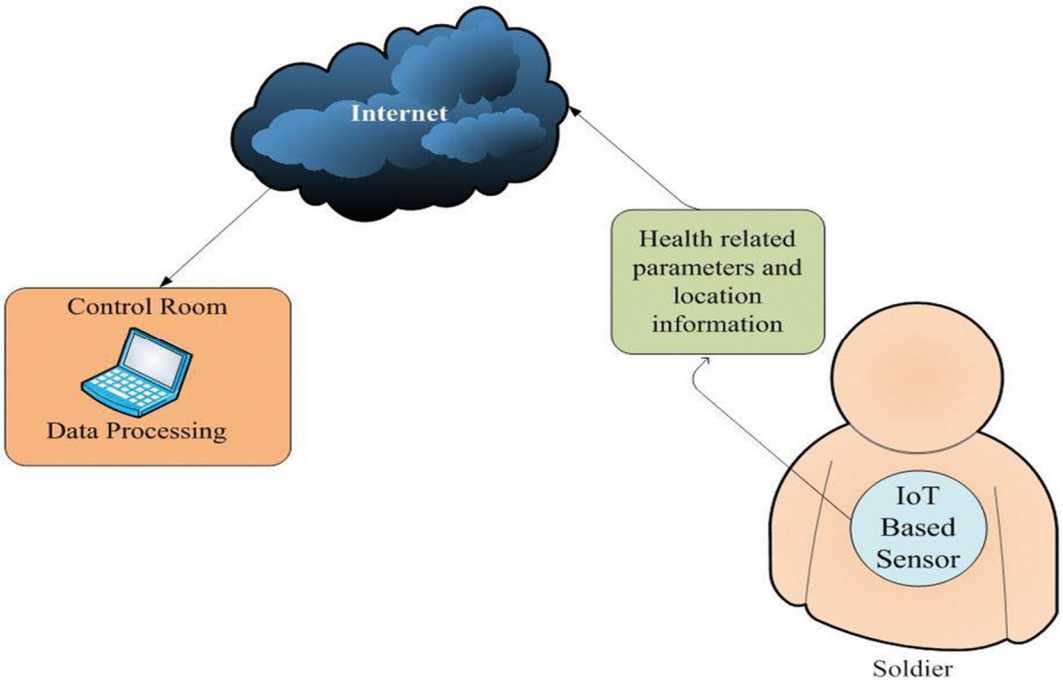
B. Motivation

Due to lack of real time information of soldiers health and his accurate location in the warfare, it becomes hard to decide the war strategies. So with the help of our project we are motivated to solve above problem by using IOT. Our motive is to contribute our project to "Make in *India*".

IV. PROPOSED SYSTEM

The military health system using IOT allows base station to track the current position of soldier also view their health parameters including body temperature & heartbeats of the soldier. This system also consist extra features with the help of that soldier can ask for help manually or send adistress signal if he is in need. GPS module sends longitude & latitude position to base station with link pattern through which base station can track exact position of the soldier. Also system is helpful for getting information about health of soldier to provide instant help. In this way the control room can acquire the details about health & precise location orientation from GPS. Even in case of losing their direction , it is responsibility of control room to guide them to correct their direction. That means the base station can access the current status parameters & tracks position of them which is transmitted via., Wi-Fi module. These information will be stored on cloud and can be extracted by the PC of control room. Based on these information, the authorities can initiate immediate action by deploying a medical, rescue team or any backup force for their sudden help. The proposed system is divided into two units i.e.,

A. Soldier unit
B. Control room unit



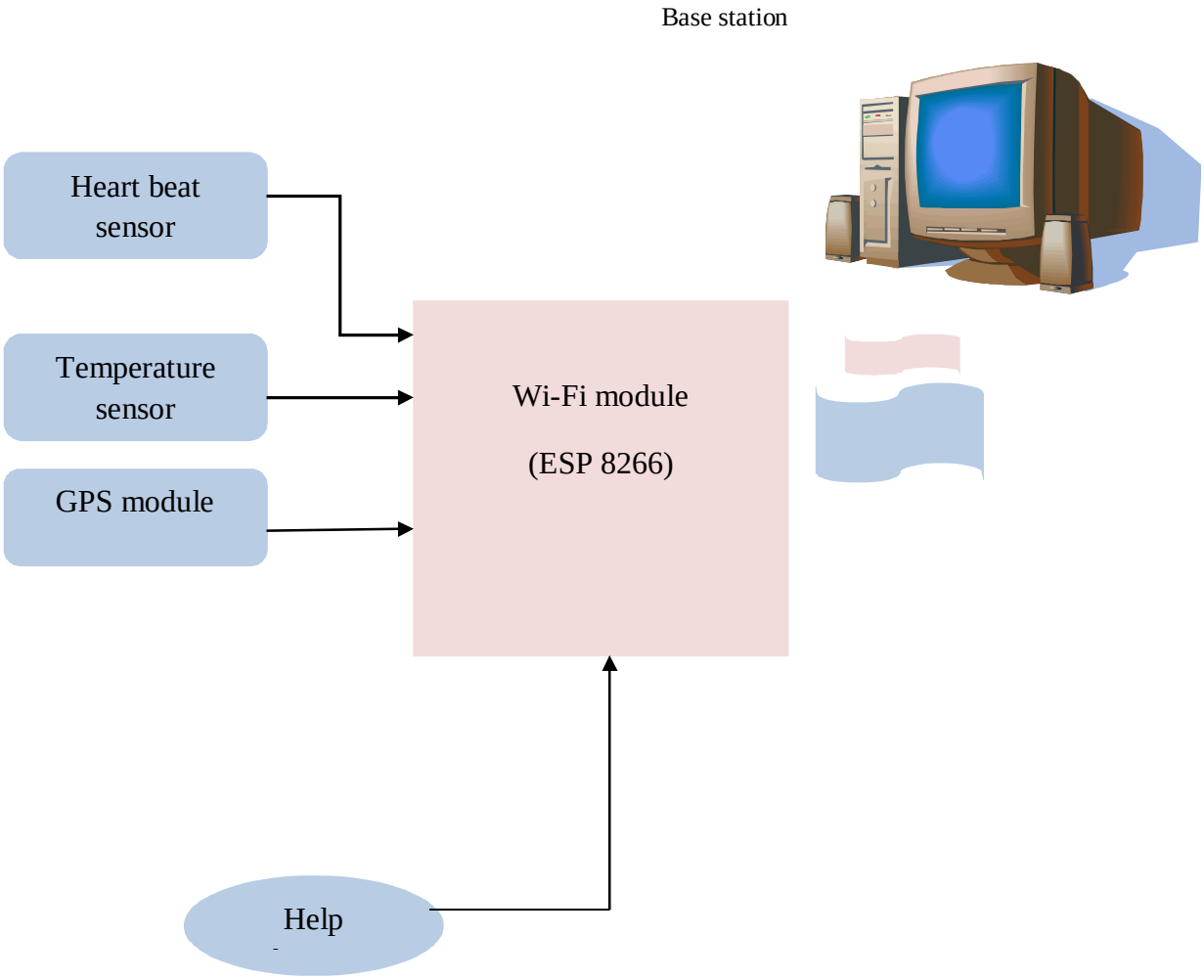
Fig(4. 1): Soldier health monitoring & location tracking system

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V. WORK IMPLEMENTED

A. *Block Diagram*



Fig(5.1): Block diagram of soldier unit

B. *Working Principle*

Soldier unit consist of biomedical sensors as temperature sensor (LM35) & heart beat sensor to access the health parameters of soldier as well as GPS module to get exact location of soldier. This unit has additional feature for panic situation is help button. These sensors are mounted with Wi-Fi module(ESP8266) which gives access of node MCU arduino to the wi-fi network. Also it is capable of either hosting an application or offloading all wi-fi networking functions from another application processor. All details are sent over cloud to control unit including PC where authorities get continuous information of soldier to provide immediate help in crisis.

C. *Algorithm*

1) Login to the system for accessing information.
2) Track the location with the help of GPS.
3) Check the values of heartbeats & body temperature using bio-sensors.
4) Compare those values with predefined(threshold) values stored in PC.
5) If values from soldier unit crosses threshold value then send notification to the BS otherwise repeat step 2 & step 3 simultaneously.

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D. Flowchart

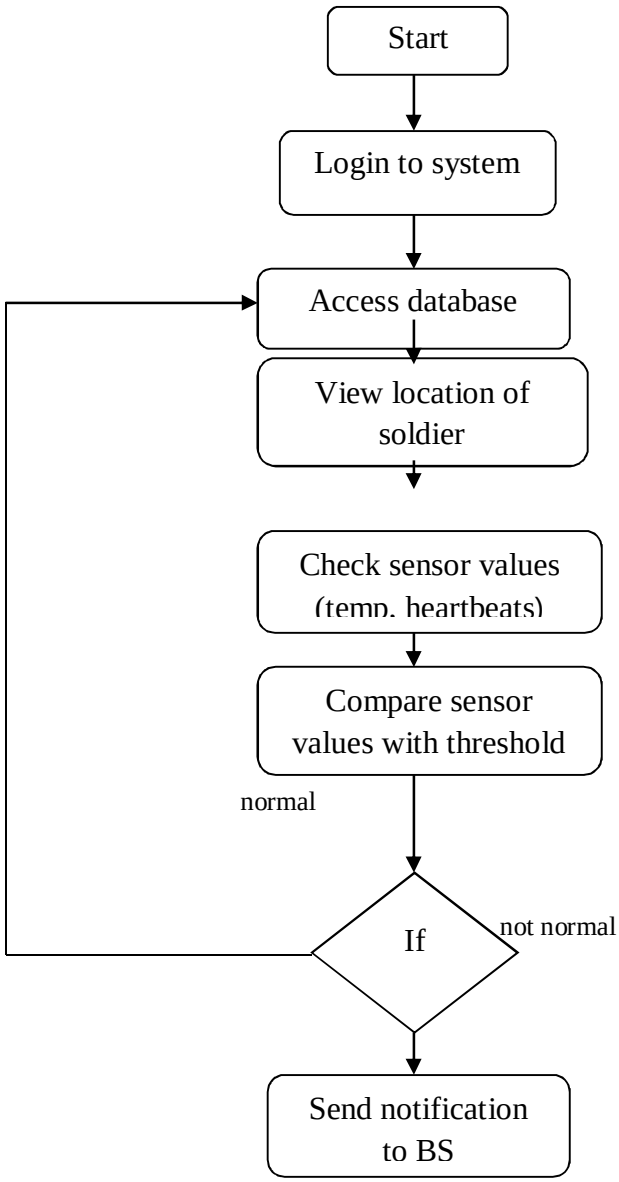
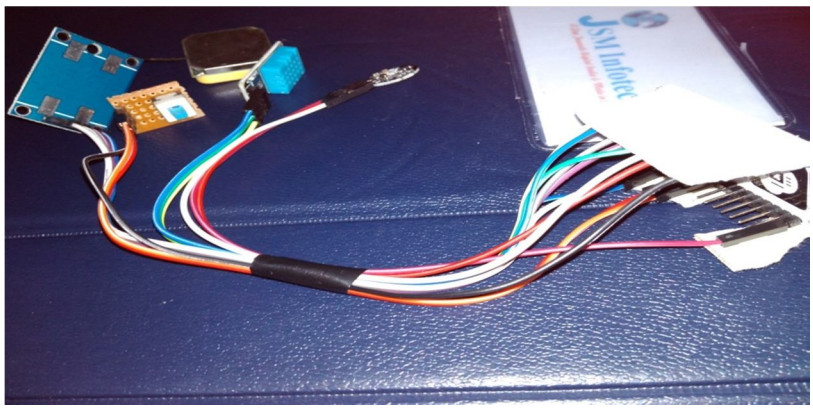
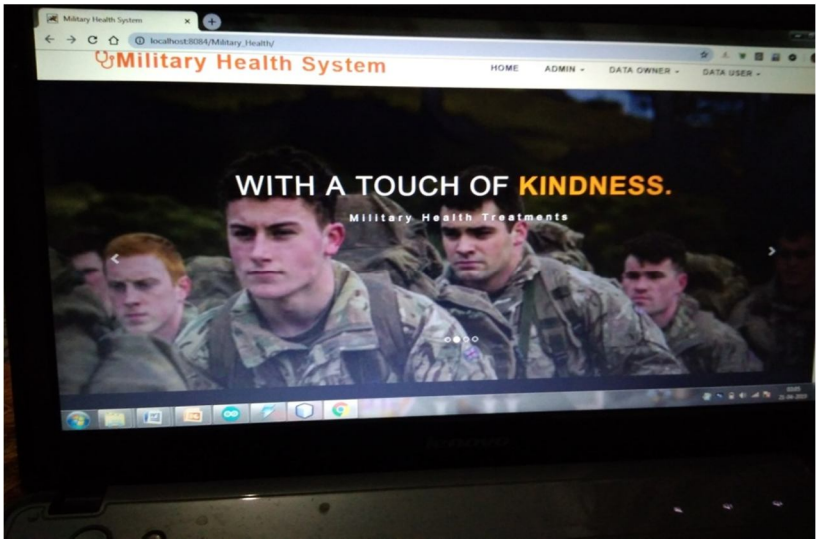


Fig (5.2) : Flow chart



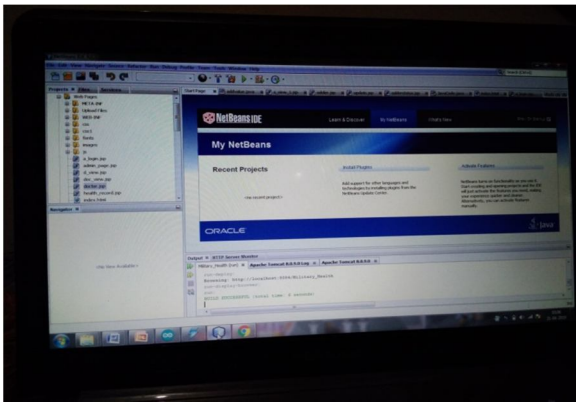
Fig(5.3): Soldier unit

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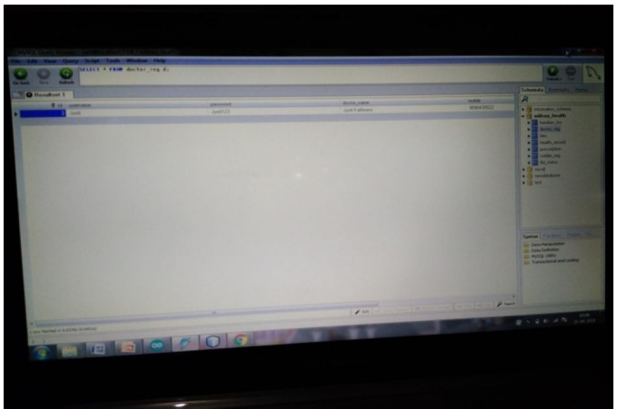
Fig(5.4): Home page for login to the system

In the case of control room unit it is necessary to login the system for acquiring details of all soldiers to provide immediately help. The data user (doctor or authority) & data owner (soldier) has unique username & password to access the system.



Fig(5.5): Netbeans IDE

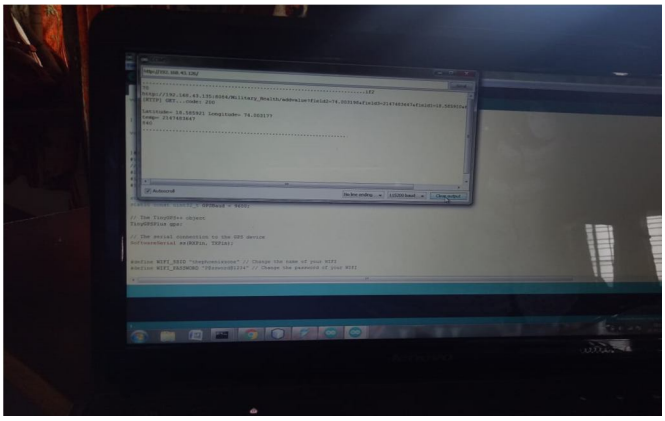
Netbeans is an integrated development environment for java which allows applications to be developed from wi-fi module(ESP8266).



Fig(5.6): MySQL

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MySQL is a database in which information of every soldier and authority who access the system is stored.



Fig(5.7): Result of the soldier unit displayed at base station

VI. ADVANTAGES & APPLICATIONS

A. No need to go on field.
B. Higher reliability.
C. Cost effective.
D. Fast & efficient.
E. There are number of ways in which the soldier can communicate with the **b**ase station .

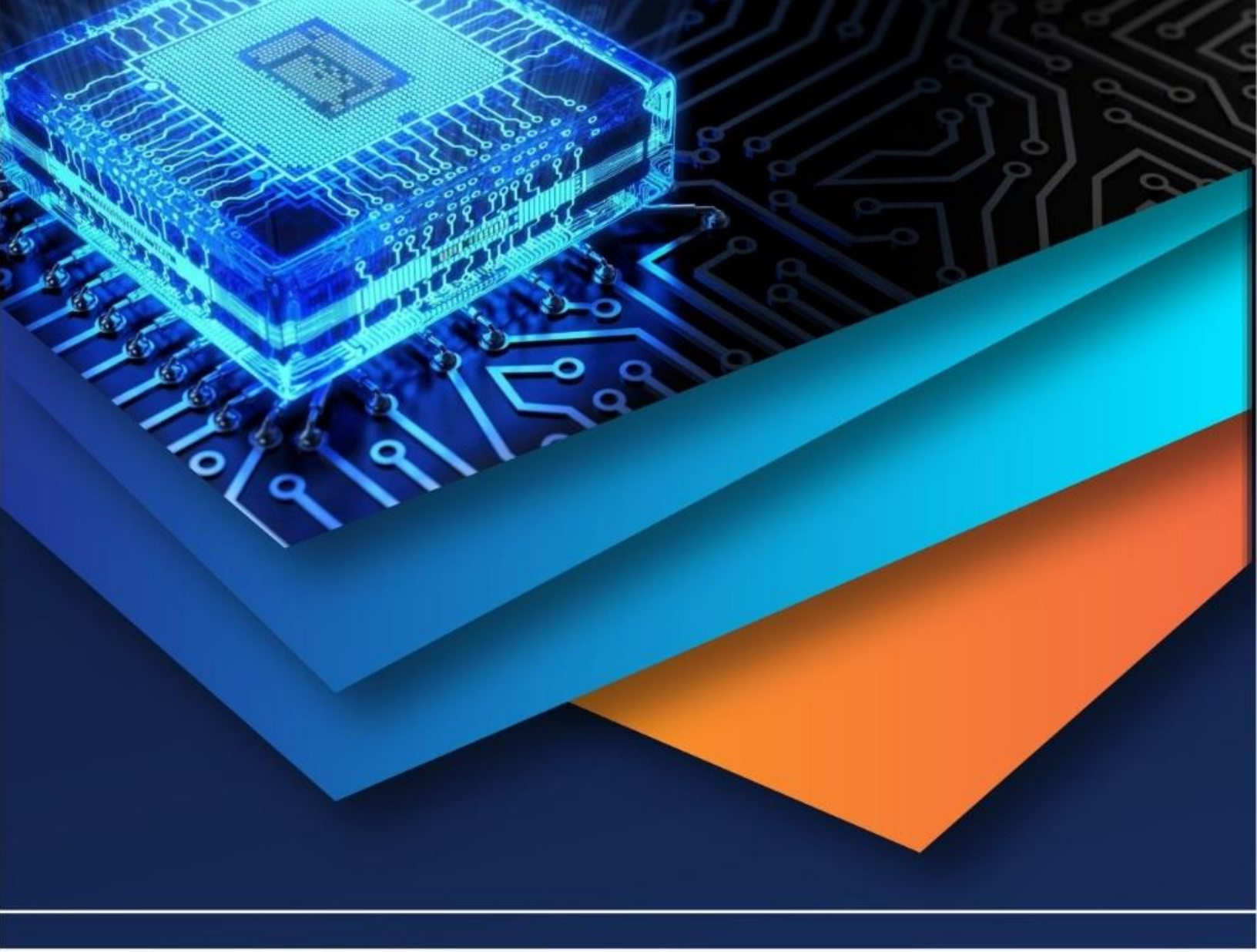
VII. CONCLUSION

We can dial an emergency call if all the soldiers health parameters crosses threshold values or soldier coordinates goes out of a certain or pre-decided track. Because of this emergency call control room unit is capable for providing immediate help to them in war one also in many life saving tasks.

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