SOLDIER HEALTH MONITORING AND TRACKING SYSTEM USING IoT

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Abstract: Nowadays, the security system of the nation depending upon the enemy's war and so the security of the soldiers is considered as an important role in it. Concerning the safety of the soldiers, there are numerous tools to observe the health condition of the soldiers .The proposed system uses GPS to track the direction of the soldier in the form of latitude and longitude values. So that direction can be found easily. The proposed system can be mounted on the soldier's 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 equipment's, sensors, transmission modules. Hence, with the use of the proposed equipment, it is possible to implement a low cost mechanism to protect the valuable human life on the battlefield. Designing of this system using GPS and GSM gives a wireless system for tracking the location of the soldier and observing the heart beat rate and body temperature of the soldier.

Keywords: Soldier health, GPS, Node MCU, AES, IoT, etc

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I INTRODUCTION

The nation's security is monitored and kept by army, navy and air-force. The important and vital role is of soldiers who sacrifice their life for their country. There are many concerns regarding the safety of the soldier. Soldiers entering the enemy lines often lose their lives due to lack of connectivity, it is very vital for the army base station to known the location as well as health status of all soldiers. India has already lost so many soldiers in warfields as there was no proper health backup and connectivity between the soldiers on the war-fields and the officials at the army base stations. Recently on 29 September 2016, a military confrontation between India and Pakistan began, Indian soldiers conducted a surgical strike against militant launch pads across the line of control in Pakistani-administered Azad Kashmir, and inflicted "significant causalities". Indian soldiers are mainly known for their courage, in spite of scarce ammunitions and safety measures, they have many triumphs to their credits. All must be really concerned about the safety of the soldiers, so we have decided to build a project which will efficiently keep a check on the health status of the soldier, and his precise location to equip him with necessary medical treatments as

soon as possible. Soldier's tracking is done using GPS and GSM is used to provide wireless communication system. For monitoring the health parameters of soldier we are using bio medical sensors such as temperature sensor and heart beat sensor it is essential for the base station to determine the exact location and the health status of the soldier and hence more emphasis should be given to navigation and health monitoring technology for the soldiers in the war torn zone. In this project the exact location and the health status parameters of the soldier can be sent to the base station in real time so that the appropriate actions can be taken in case of crisis. This technology helps to minimize the rescue, time and search operation effort of army rescue control unit. This is a wearable technology which is the most important factor of this project.

II LITERATURE SURVEY:

1.Soldier Health and Position Tracking System, Akshita V. Armarkar , Deepika J. Punekar , Mrunali V. Kapse, Sweta Kumari, Jayshree A. Shelk, International Journal of Engineering Science and Computing, March 2017

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to provide wireless communication system. For monitoring the health parameters of soldier we are using bio medical sensors such as temperature sensor and heart beat sensor. An oxygen level sensor is used to monitor atmospheric oxygen so if there are any climatic changes the soldiers will be equipped accordingly.

2.IoT Based Soldier Navigation and Health Monitoring System, Krutika Patil, Omkar Kumbhar, Sakshi Basangar, PriyankaBagul, International Journal of Electrical, Electronics and Computer Systems (IJEECS) ISSN (Online): 2347-2820, Volume -5, Issue-1, 2017

This 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 and pulse sensor which help in deciding the health status of that particular army official. This is a wearable technology which is the most important factor of this project.

3.GPS Based Soldier Tracking And Health Indication System, Shruti Nikam, SupriyaP atil , Prajkta Powar , V.S.Bendre, International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering Vol. 2, Issue 3, March 2013

In this paper we focus on 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.

4. HEALTH MONITORING AND TRACKING SYSTEM FOR SOLDIERS USING INTERNET OF THINGS(IOT), NIKETPATII ; BRIJESHIYER, 2017 INTERNATIONAL CONFERENCE ON COMPUTING, COMMUNICATION AND AUTOMATION (ICCCA), IEEE.

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 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 equipment's, sensors, transmission modules. Hence, with the use of the proposed equipment, it is possible to implement a low cost mechanism to protect the valuable human life on the battlefield.

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

Continuous Communication is Possible: Soldiers can communicate anywhere using RF,DS-SS,FH-SS which can help soldier to communicate among their squad members whenever in need. • Less complex circuit and power consumption. Use of ARM processor and low power requiring peripherals reduce overall power usage of system. Modules used are smaller in size and also lightweight so that they can be carried around. • Security and safety for soldiers: GPS tracks position of soldier anywhere on globe and also health system monitors soldier's vital health parameters which provides security and safety for soldiers.
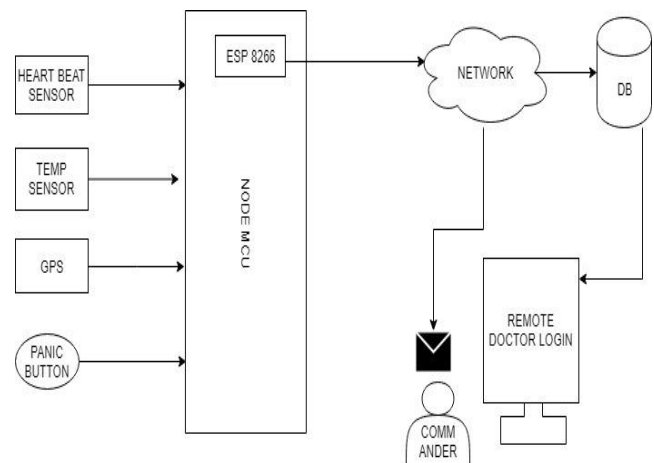
III PROPOSED SYSTEM:

FIG:SOLDIER HEALTH MONITORING & TRACKING SYSTEM USING IOT

Figure 1 : Solder Health Monitoring & Tracking System Using IoT

Algorithm:

AES is used to encrypt the database.

The encryption process uses a set of specially derived keys called round keys.

These are applied, along with other operations, on an array of data that holds exactly one block of data, the data to be encrypted.

This array we call the state array.

STEPS:

- Derive the set of round keys from the cipher key.
- Initialize the state array with the block data (plaintext).
- Add the initial round key to the starting state array.
- Perform nine rounds of state manipulation.
- Perform the tenth and final round of state manipulation
- Copy the final state array out as the encrypted data (cipher text).

IV CONCLUSION:

The paper reports an IoT based system for the health monitoring and tracking of the soldiers. Arduino board is used which is a low cost solution for the possessing purpose. Biomedical sensors provides heartbeat, body temperature, and environmental parameters of every soldier to control room. This technology can be helpful to provide the accurate location of missing soldier in critical condition and overcome the drawback of soldiers missing in action. The addressing system is also helpful to improve the communication between soldier to soldier in emergency situation and provide proper navigation to control room. Thus we can conclude that this system will act as a lifeguard to the army personnel of all over the globe. In future, a portable handheld sensor device with more sensing options may be developed to aid the soldiers.

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