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# Soldiers Tracking and Health Mining System

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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. This project proposes the development of a cutting-edge Real-time Soldier Health Monitoring and Emergency mean click the emergency button the current GSM Location Alert System to controller room, designed to enhance the situational awareness and response capabilities of military units. This project gives an ability to track the location and monitor health of the soldiers in real time who become lost. It helps to minimize the time, search and rescue operation efforts of army control unit. This system enables to army base station to track the location and monitor health of soldiers using GPS module and wireless body area sensor networks (WBASNs), such as temperature sensor, heart beat sensor, etc.. The data coming from sensors and GPS receiver is transmitted wirelessly using GSM module. Also, a soldier can ask for help from control room and can communicate with other fellow soldier present within the wireless transmission and reception range.

**KEYWORDS:** - Arduino UNO , keil software , Embedded C++

## I. INTRODUCTION

In the modern era of military operations, ensuring the health, safety, and well-being of soldiers is a paramount concern. Soldiers often find themselves in challenging and dynamic environments, where their physical condition and precise location can be critical to mission success and, more importantly, their survival. This innovative project to revolutionize the monitor and respond to the health and security needs of their soldiers. By harnessing the power of cutting-edge technology, including real-time health sensors and GSM-based location tracking, this system offers a comprehensive solution to keep soldiers safe and healthy during missions. In our project we have come up with an idea of tracking the soldier as well as to give the health status of the soldier during the war, which enables the army personnel to plan the war strategies. By using the location sent by the GPS modem, the base station can understand the position of soldier and the panic button helps to communicate with other soldiers. Landmine detection is also used here to avoid some accidents during wars.

## II. RELATED WORKS

There have been various related works and technologies developed for soldier tracking and health monitoring system. Systems that use GPS technology for real-time tracking of soldiers' positions in the field, such as Blue Force Tracking (BFT) systems. Wearable devices and sensors that monitor soldiers' vital signs, including heart rate, body temperature, and blood pressure. Examples include the Nett Warrior system. Integration of sensors and communication devices into soldiers' uniforms, such as the U.S. Army's Integrated Visual Augmentation System (IVAS). Centralized databases and software for storing and analyzing soldiers' health data to monitor their overall well-being. Systems that allow soldiers to consult with medical professionals remotely, particularly in the field. Utilizing artificial intelligence to analyze data from various sensors to detect early signs of health issues or predict fatigue. Secure communication systems to ensure soldiers can relay their health status and receive guidance when needed.

Ongoing research into advanced materials and technologies for improving soldier health monitoring and tracking. It's important to note that the field of military technology is subject to classified and sensitive information, and advancements are often not publicly disclosed.

## III. EXISTING METHOD

There are many shortcomings are present in these existing systems. Some of these existing systems use GSM technology to transmit data wirelessly. The use of GSM technology is restricted in battlefield. Since, GSM protocol

stack can be hacked easily by any professional hacker. So, it becomes very easy for enemies to take out the information which will be communicating through GSM module. Therefore, for nation's security purpose, we have to keep our army control room's communications and information confidential, private and safe from enemies and hackers. And to achieve this, Network Jammers (CDMA, GSM AND GPRS Jammers) are used in the battlefields. When military war held in hilly area, or in mountain region or in desserts, then usually GSM technology have no network access and it became useless for data transmission, which is a very serious drawback of GSM technology.

#### IV. PROPOSED SYSTEM

In this proposed system consists of body area sensor networks such as temperature sensor and heart beat sensor. These sensors are used to sense the health parameters of soldiers. Temperature sensor will sense the body temperature of soldier and give that sensed data to microcontroller. The heart beat sensor will sense the heart beats of soldiers in beats per minute (BPM) and give it to the microcontroller to process. These sensed analog signals will be converted into digital signals using analog to digital converter and then compared with the normal condition signals. There will be a GPS modem is used to trace the location of soldiers at any moment from anywhere. The GPS receivers are space-based satellite navigation systems that provide location and time information in all conditions from anywhere on or near the earth. All the data coming from sensors and GPS modem are processed by arduino uno microprocessor embedded in microcontroller. A microprocessor is a single integrated circuit (IC), which is a multipurpose programmable device that takes digital data as input, processes it according to the instructions stored in its memory and provide results as output. Additionally, an alphanumeric LCD display is used to display the health parameters (i.e. body temperature and heart beats) and location information of soldier.

#### V. BLOCK DIAGRAM

This module will use a camera to record live streaming video, and the video input is regarded as an input source for text recognition. In this module, live streaming video is recorded and converted from 24 frames per second to 1 frame per second in order to extract images as frames. After segmenting the images from the converted video that was extracted from the input image, this module allows for the removal of background noise. The OCR object recognition method can be used to process the extracted images in the text recognition module in order to identify text characters and numeric characters. The text is transformed into voice after it has been identified. This module allows you to convert text to audio. For blind people to understand easily, voice alert is employed.



Fig 1. Flow diagram for proposed method

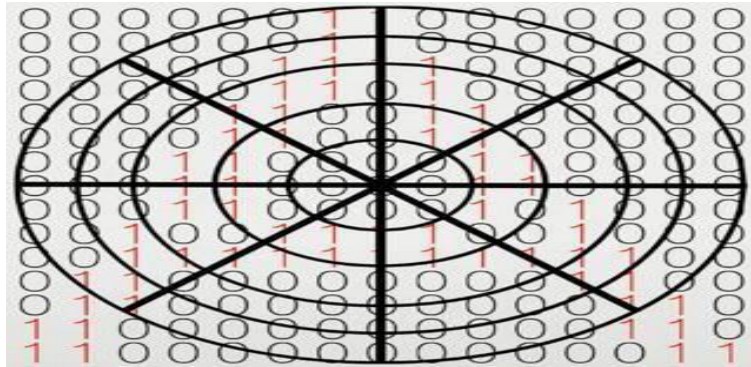


Fig 2. Sample of binary matrix

we convert the image of the character into a binary matrix where white pixels are 0s and black pixels are 1s as shown in the following image 2. Then, by using the distance formula, we can find the distance from the center of the matrix to the farthest 1.

## VI. EXPERIMENTAL RESULTS

The output of the project showing the reading of temperature, BPM, latitude and longitude. This information is being useful regarding the health condition of the soldier in the battlefield. If the readings shown in the LCD screen is higher than the permissible limit, the necessary first aid is been given to the soldier at the instant.

The above output shown in the LCD screen contains the information of pulse rate and the temperature of the soldier. The output shown in the mobile screen or Desktop at the base station in the form of text message is shown below:

## VII. FUTURE SCOPE

The future scope for health monitoring system is promising, with potential advancements in technology and healthcare. **Wearable Technology:** Integration of more advanced wearable devices for real-time monitoring of vital signs, location, and environmental data. **IoT and Sensors:** Expanding the use of Internet of Things (IoT) devices and sensors for comprehensive data collection, including body temperature, hydration levels, and more. **AI and Machine Learning:** Implementing AI algorithms for predictive health analytics, enabling early detection of health issues and personalized care. **Mobile Apps:** Developing user-friendly mobile apps for soldiers and medical personnel to access and analyze health data. **Data Integration:** Improving interoperability to enable seamless data sharing between different branches of the military and allied forces. **Augmented Reality (AR):** Implementing AR for on-site medical guidance and training, especially in challenging environments. **International Collaboration:** Partnering with other countries to share best practices and technologies for soldier tracking and health monitoring.

Overall, the future of soldiers' tracking and health monitoring systems will likely involve a combination of cutting-edge technology, data analytics, and global cooperation to enhance the well-being and safety of military personnel.

## VIII. CONCLUSION

From above proposed system, we can conclude that we are able to transmit data which is sensed from remote soldier to army control room using a wireless transmission technology. The system is completely integrated and can track the location of soldier at anytime from anywhere on the earth using GPS receiver. This system helps to monitor health parameters of soldier using heart beat sensor to measure heart beats and temperature sensor to measure body temperature of soldier. This system provides the location information and health parameters of soldier in real time to the army control room. This system is very useful to military forces during war as it can be used in battlefield without any network restriction. Thus, this system provides security and safety to our soldiers.'

## REFERENCES

1. Hock Beng Lim, Di Ma, Bang Wang, Zbigniew Kalbarczyk, Ravishankar K. Iyer, Kenneth L. Watkin, "A Soldier Health Monitoring System for Military Applications", 2010 International Conference on Body Sensor Networks, 978-0-7695-4065-8/10/\$26.00 © 2010 IEEE, DOI:10.1109/BSN.2010.58, pp: (246-249).
2. William Walker, A. L. Praveen Aroul, Dinesh Bhatia, "Mobile Health Monitoring Systems", 31st Annual International Conference of the IEEE
3. EMBS, Minneapolis, Minnesota, USA, September 2-6, 2009, 978-1-4244-3296-7/09/\$25.00 © 2009 IEEE, pp: (5199-5202).
4. M. Pranav Sailesh, C. Vimal Kumar, B. Cecil, B. M. Mangal Deep, P. Sivraj, "Smart Soldier Assistance using WSN", International Conference
5. on Embedded Systems - (ICES 2014), 978-1-4799-5026-3/14/\$31.00 © 2014 IEEE, pp: (244-249).
6. P.S. Kurhe, S.S. Agrawal, "Real Time Tracking and Health Monitoring System of Remote Soldier Using ARM 7", International Journal of Engineering Trends and Technology, ISSN: 2231-5381, Volume 4, Issue 3, No. 1, March 2013, pp: (311-315).
7. Shruti Nikam, Supriya Patil, Prajka Powar, V. S. Bendre, "GPS Based Soldier Tracking and Health Indication System", International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, ISSN: 2278-8875, Volume 2, Issue 3, March 2013, pp: (1082-1088).
8. Prof. Pravin Wararkar, Sawan Mahajan, Ashu Mahajan, Arijit Banerjee, Anchal Madankar, Ashish Sontakke, "Soldier Tracking and Health Monitoring System", The International Journal of Computer Science & Applications, ISSN: 2278-1080, Volume 2, No.02, April 2013, pp: (81-86).
9. Govindaraj A., Dr. S. Sindhuja Banu, "GPS Based Soldier Tracking and Health Indication System with Environmental Analysis", International Journal of Enhanced Research in Science Technology & Engineering, ISSN: 2319-7463, Volume 2 Issue 12, December 2013, pp: (46-52).

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