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WIRELESS DATA ENCRYPTION AND DECRYPTION FOR SECURITY IN ARMY APPLICATIONS

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ABSTRACT:

Security of data in army stations is very important issue. In early systems, at the time of information transmission between two army stations, it can be hacked by terrorists, spies and enemies. Communication plays vital role in day to day life .There are two types of communication such as wired and wireless. Basically wireless communication is mostly preferred over wired .But sometimes we need a secured wireless communication in case of industries, companies etc. Data security is very important especially from defence point of view. There are various techniques for transmission of data securely. In military area secure communication is required. The messages send or received should not be hacked. For this controller base wireless communication system is used for secure message transmission. In this we used half duplex encrypted system so messages in this system cannot be hacked. For security special trans-receiver is used namely HC-12 which uses special AT commands for providing security. The messages can be sending from any module and there is the choice that the message is either broadcast or can send to specific module.

Keywords: GSM, GPS, Switch, Buzzer.

1. INTRODUCTION:

Everyone in this world wants to be safe and secure. When it comes to the safety and security of Multinational companies, Military, Army, the situation becomes more complicated. Even a common man puts his maximum efforts to protect his data. The popular methods to protect the data in a secure way is to encrypt the data while sending and receiving , decrypt the data to retrieve the original message. Before transmitting the data, the data will be converted into an unreadable form and will be sent. At receiver side the opposite operation of encryption is carried out to recover back the original message. Thus the data will be protected in every way by following the encryption and decryption standard formats. Wireless makes this project more flexible. Some of the software's are needed to be installed into the system before using them and hardwired connections. The hardware connections and cabling can be completely eliminated in this project. In the Military area secure communication is required. The information shared between them is very confidential. The message send or receive should not hacked. For

the secure communication system a controller based wireless communication system is used for secure message and data transmission and reception. There are two types of communication- Half duplex and full duplex. This project is based on secure/Encrypted half duplex system. The messages in this system cannot be hacked. In communication systems transmission of data from one place to another place is important. These helps in monitoring wide control systems as well as the management network. In top level managements some information and decisions are secret. Also, the secret data from one place to another should be sent without any interruptions. The country to county communication, the communication between the prime minister and the defense minister requires to be kept very secret. Various types of communication means are used for achieving this purpose. Some people use encryption and decryption methods i.e. some erratic data is added at the transmitter end and the mix signal is transmitted. At the receiver end the added signal is removed in order to get the original signal transmitter. If the signal is tapped and tried to decode it is not possible due to encryption. And thus, the protection against such a risk is provided. But this are the old methods used in previous types. Now a days, the decoding / encoding phenomenon's are done as in previous one but the communication media is modernized. The wireless communication is preferred. RF modules with digital communication are very accurate and reliable for wireless communication. These modules have the range up to 1.5 km and the obstacles don't cause any communication failure this way these modules are popular. Microcontroller is used for encoding/decoding purpose. Our project is encoding and decoding techniques for data transmission. These use the PIC microcontroller at both sides and make it feasible to send the data from one place to another place. It is beneficial and cost effective as far as the application importance is considered.

2. LITERATURE SURVEY

1) The role of communication in day to day life is very important .Communication can be of two types which are wireless or wired. Basically wireless communication is mostly preferred over wired .But sometimes we need a secured wireless communication in case of industries, companies etc. This paper helps in enabling the user for transmitting data wirelessly through ZigBee with encrypting data to provide security. In the paper it consists of two sections they are transmitter and receiver .The data can be sent to microcontroller through pc by using software called hyper terminal, this software is used for serial communication. The microcontroller after receiving the data it forwards the data to the ZigBee transmitter which is connected to the microcontroller. The data is encrypted and then transmitted to receiver. ZigBee transceiver does data transmission. Encryption does conversion of plain text to cipher text. Original data is Plain text whereas the modified data by using operations so that only authorized person can decode is called as Cipher text. Decryption does conversion of Cipher text to Plain text. The received data is decrypted and is displayed on pc which requires some password to open the data. So by this the data cannot be hacked and is secured.[1]

2) Security of data in army stations is an important issue. In early systems, at the time of information transmission between two army stations, it can be hacked by terrorists, spies and

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enemies. Cryptography is a very important system employed for this purpose. There are various types of algorithms available for encryption and decryption of data and new algorithms are evolving. Polyalphabetic substitution cipher is a strong algorithm used for security of data in army stations. In this paper, various techniques of security of data and one the algorithm using polyalphabetic substitution cipher are discussed.[2]

3) In earlier security systems, data transmission between two army stations was being hacked by terrorists, enemy nations and even spies. Hence, data security is very important especially from defense point of view. There are various techniques for transmission of data securely. Cryptography is a one of the technique which can be used for secured transmission of data. There are numerous algorithms available for encrypting and decrypting data and many algorithms are being discovered. Poly alphabetic cipher algorithm is one of the strongest algorithms used for securing data in army stations. In this paper, poly alphabetic cipher algorithm is discussed for wireless data transmission between army stations using arm7 processor.[5]

4) Stealthiness can be described as a disposition to be sly and to do things surreptitiously. This paper presents a new architecture for flexible and secure networking in battlefields that enables stealthy and covert communication in the presence of node mobility. Our architecture is based on the combination of optical (fiber) and wireless links. Our objective is to be able to carry on undeterred communication without the attack/eavesdropping nodes being able to detect the presence of any communication. This objective is not only crucial for successful completion of the operation, but also for the safety of our mobile nodes, by not giving out their locations. We combine the advantages of optical links, such as high bandwidth, low delays, low error rates, good security, with the advantages of wireless links, such as mobility and flexibility, along with directional antennas for communication. From security point of view, we also assume presence of red zones, which are the ones controlled by the adversary or where the adversary can trace wireless activities.[6]

3. METHODOLOGY

Existing system:

In Existing system in enabling the user for transmitting data wirelessly through ZigBee with encrypting data to provide security. In the paper it consists of two sections they are transmitter and receiver .The data can be sent to microcontroller through pc by using software called hyper terminal, this software is used for serial communication. The microcontroller after receiving the data it forwards the data to the ZigBee transmitter which is connected to the microcontroller. The data is encrypted and then transmitted to receiver. ZigBee transceiver does data transmission. Encryption does conversion of plain text to cipher text. Original data is Plain text whereas the modified data by using operations so that only authorized person can decode is called as Cipher text. Decryption does conversion of Cipher text to Plain text. The received data is decrypted and is displayed on pc which requires some password to open the data. So by this the data cannot be hacked and is secured

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PROPOSED SYSTEM:

To design a soldier tracking system using wireless system for monitoring the parameters of soldier are as Body temperature & Temperature. Biomedical sensors: Here to find the health status of soldier we are using a body temp sensor to measure body temperature as well as pulse rate sensor. These parameters are then signal conditioned and will be stored in the memory. One of the fundamental challenges in military operations lays in that the Soldier not able to communicate with control room administrator. In addition, each organization needs to enforce certain administrative and operational work when they interact over the network owned and operated by other organizations. Thus, without careful planning and coordination, one troop cannot communicate with the troops or leverage the communication infrastructure operated by the country troops in the same region. The purpose of this investigation was to test the components of the Soldier Tracking and Performance Measurement System against the statement of requirements as found in the Request for Proposal. Secondary aims of this investigation included gathering data that will allow potential users of the system to understand its capabilities and limitations, as well as allow efficient planning of both time and resources necessary to ensure efficient and productive use of the system for training the solider.

A robust accurate positioning system with seamless indoor and outdoor coverage is highly tool for increasing safety in emergency response and military operation. GPS-based positioning methods mainly used to field rescue. The position and orientation of the rescuer and the trapped is acquired using GPS chip. Using the GPS data of both the units the relative distance, height and orientation between them are calculated from the geometric relationships based on a series of formulas in Geographic Information Science (GIS). Using this technology, we are doing the navigation between two soldier .the data will be send wirelesslyby RF Transceiver. This device can do accurate coordination via wireless communication, helping soldier for situational awareness. GPS module have serial interface. Receiverinformation are broadcast via this interface in a special data format. This format standardized by the National Marine Electronics Association (NMEA) .

PHYSIOLOGICAL SIGNALS AND BIOSENSORS With recent advances in technology, various wearable sensors have been developed for the monitoring of human physiological parameters. The various sensing technologies are available, which can be integrated as a part of health monitoring system, along with their corresponding measured physiological signal. The measurement of these vital biosignal and their subsequent processing for feature extraction, lead to collection of real time gatheredparameter which can give an overall estimation of health condition at any real time There are a number of medical parameters of soldier that can be monitored, like ECG, EEG, Brain Mapping, etc. But these require complex circuitry and advanced medicalfacilities and hence they cannot be carried around by the soldier. The entire system would become bulky for the soldier.

Results explanation:

The system detects accident from vehicle and send message through GSM module. The message is received by another GSM module. Google Map Module It displays Google map show u exact location of accident and it details. It gets detail SMS from accident location. Hence there is small variation in the coordinates, initial value of latitude and longitude are same but fractional value changes with small difference.

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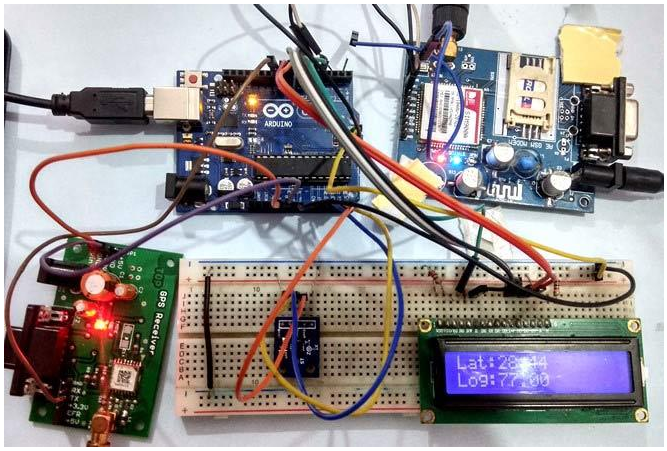

Fig.1. Hardware kit image.

Fig.2. Output results with location.

CONCLUSION

From the above implementation we came to the following conclusion: Security and safety for soldiers: Using GPS we can tracks position of soldier anywhere on globe and also the health parameters which provide security and safety for soldiers. Effective 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 and emergency. Less complex circuit and less power consumption. Since ARM processor require less power to operate So power consumption is less. Also the modules used are small in size, so complexity is also reduced.158

Future Scope:

We are finding the shortest path based on the distance of nearby hospitals but there may be chance that the traffic will be more in that path. So we need to come up with some algorithm which gets the nearby hospitals with minimal distance and traffic. We may add some modules which will also let the system know about the traffic details and then find out which node will take less time to reach from the accident spot. Another thing which we may add is 'first aid kit' for emergency medical treatment at the scene itself. We can also add some modules which will measure the injuries level or some additional information like blood group, heart beats, current glucose level which may be send to the hospitals in advance before the victims reaches the hospitals hence improvise the performance of the proposed system.

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