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# NETWORK SECURITY ENABLED ARDUINO DEVICES FOR EFFICIENT COMMUNICATION

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**ABSTRACT:**

The project is designed to send secured message by using a secret code from a computer keyboard connected to the transmitting unit via ZIGBEE technology. The message is retrieved at the receiver end only upon entering the secret code used by the transmitter. Thus, complete secrecy is maintained in this communication process. For example in military operations, secrecy is of paramount importance. So when there is a need for sending any secret message, one can type the message through a computer keyboard interfaced with the system comprising of a microcontroller and a ZIGBEE transmitting module. This project has a unique feature of tagging the message with a secret code as selected by the sender. The message is then transmitted through the ZIGBEE transmitting module. At the receiver end the signal is received by the ZIGBEE receiver module. The message is then retrieved only if the secret code is known to the receiving personnel. Once the secret code is entered, then message is displayed on the receiving unit on the LCD display.

***Keywords:Zigbee, LCD display, WSN, keypad***

## INTRODUCTION

Military Assistance and Surveillance System is a concept model of an IOT based wearable device for military purposes. This idea can fulfill several use cases in the military. MASS is likewise an upgraded adaptation of Battlefield Management System – BMS (a framework intended to incorporate data securing and preparing to improve order and control of a military unit). This framework additionally underpins the popular IKC2 Movement (Integrated Knowledge based Command and Control), a framework intended to incorporate data securing and preparing to upgrade order and control of a military unit. MASS makes it easy for the soldiers to know several parameters such as their location, surrounding conditions, health conditions, sending messages to base station, etc. it provides a simple to use interface they can get assistance from the base through the wearable device and at the same time a log is created about those parameters which is the main function of Military Assistance and Surveillance System. MASS makes it easy for the soldiers to know several parameters such as their location, surrounding conditions,

health conditions, sending messages to base station, etc. it provides a simple to use interface .they can get assistance from the base through the wearable device and at the same time a log is created about those parameters which is the main function of System Military Assistance and Surveillance System. The ongoing human body location is basic for different fields like home security frameworks, observation frameworks, correspondence frameworks and more. Basically the reconnaissance frameworks are developing with various cameras which are set in various edges of view to track human items. The progression of the cutting edge Internet of Things (IoT) makes the probability of interfacing PC automated control structures for remote watching and brisk reaction to occasions requiring continuous taking care of. Previously, an offices supervisor needed to physically take care of a control framework regularly making a postponement in real life prompting harms.

## LITERATURE SURVEY

Shweta Shelar, Nikhil Patil, Manish Jain, Sayali Chaudhari, Smita Hande, In this paper, they have focused on helping the soldiers by providing medical assistance at the battlefield. They have considered the soldier's health in terms of heart beat and body temperature of the sensor. For providing this type of facility GPS is used for tracking the soldiers. In case if soldier is injured then by using the GSM modem attached to the device an SMS will be sent to hospitals in the vicinity or to the base station to provide help [1]. M. V. N. R. P. Kumar, G.R. Vijay, P.V. Adhikrao and B.S. Vijay kumar, In this paper they found their idea from the mountaineers as mountaineers uses wrist watch for tracking their position, to know the temperature of their surroundings, to know the direction [2].

Govindaraj A., Dr. S. Sindhuja Banu, In this paper, they had focused on tracking the position of the soldier and measuring the various health parameters using different biomedical sensors. The main aim of using GPS is to track the position of the soldier so that the personnel at the base could guide them at the war field and side by side could check the body temperature of the soldier. Keypad is used for giving any type of input if needed [3].

Shruti Nikam, Supriya Patil, Prajkta Powar, V. S. Bendre, In this paper, they mentioned that infantry soldiers face the most fundamental problems like

establishing communication with the base station and tracking their position whether they are on the correct path or not, due to this many soldiers either get lost their lives or get stuck in the enemies trap. With the help of this gadget soldiers will be able to make communication with base station, also will be able to find the right path by the guidance that would be provided by the team at the base. This help in reducing the losses of lives of our soldiers. The military personnel will exchange the information through wireless communication and with the help of biomedical sensors, GPS and GSM all this will be possible [4].

S. Kurhe, S.S. Agrawal, In this paper, it is possible to transmit the data which is sensed from remote soldier to the base station's PC by using wireless transmission device like GSM. The accuracy of this system may affected by some factors such as weather, environmental conditions around the soldier's unit and GPS receiver. The future works in this system may include the optimization of the hardware components, by choosing a suitable and more accurate GPS receiver. By improving the routing algorithm can be make this system more powerful and energy efficient. Upgrading this system is easy which makes it open to an advanced future [5].

Prof. Pravin Wararkar, Sawan Mahajan, Ashu Mahajan, Arijit Banerjee, Anchal Madankar, Ashish Sontakke, In this paper, they had proposed an idea of tracking the position of soldier as well as to give the health status of the soldier, which enables the army base station to plan the strategies according to current situation during war. Use of GPS tracking device and RF transceiver module provide the wireless system to monitor the health parameters and location tracking of soldiers. By using this system, the army base station will come to know the position of soldier and the health parameters such as body temperature and blood pressure of soldiers [6].

The health monitoring and tracking system can be implemented by using RF module and GPS tracking system. By using GPS device, we will able to give proper location of soldier and also can monitor the heath parameters by temperature sensor and heart beat sensor. Thus, we can help the soldiers in panic condition from army control room by communicating with them during war [6].

Hock Beng Lim, Di Ma, Bang Wang, Zbigniew Kalbarczyk, Ravishankar K.

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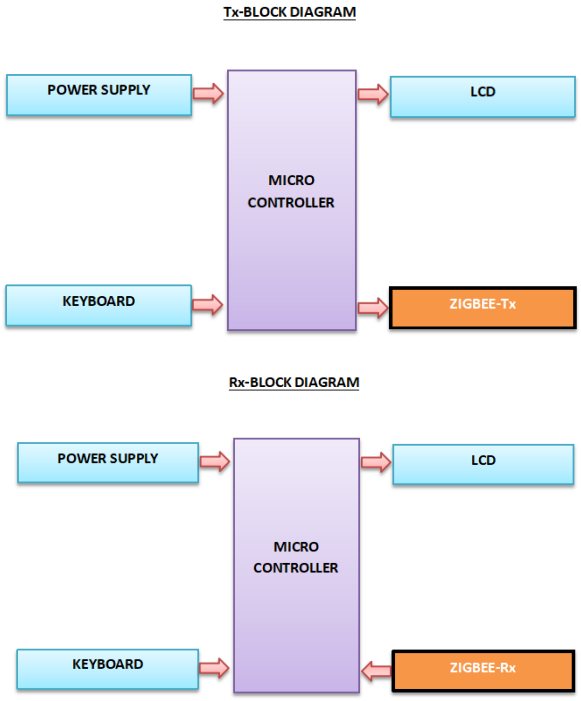
Iyer, Kenneth L. Watkin, In this paper, we have completed only an initial design of individual sensor nodes and developed a basic prototype of the system to collect the sensed data. In future, we will try to develop an integrated data management system and a web portal which will enable users to have easy access of data [10].

## PROPOSED SYSTEM

Military forces are very essential part of the security system of a country. During, wars and search operations, our soldiers get injured and many of them become lost. Soldiers are the savior of our nation who protects us from enemy attacks, terrorist activities and from many suspicious activities which can harm the civilians and the nation too. Thus, Soldiers health is very important to us. We have implemented a project which has an ability to track the location and monitor health of the soldiers in real time, who become lost and get injured in the warfield. This system will help to save the time, search and rescue operation efforts of army control unit. The location tracking and health monitoring of soldiers by army base station is done by using GPS module and wireless body area sensor networks (WBASNs), such as temperature sensor and heartbeat sensor. The data coming from Sensors and GPS receiver through microcontroller is transmitted wirelessly using ZigBee module. Also, a soldier can get help from army control room and can communicate with other fellow soldier present within the wireless transmission and reception range using Panic Switch in unfavorable conditions. The wireless communication network is created by ZigBee transceivers using ZigBee Mesh Topology.




**Working:**

The preferred block diagram of the Soldier Monitoring System Using Zigbee is given in Figure A. The whole device is divided into segment that are Transmitter Section and Receiver Section.

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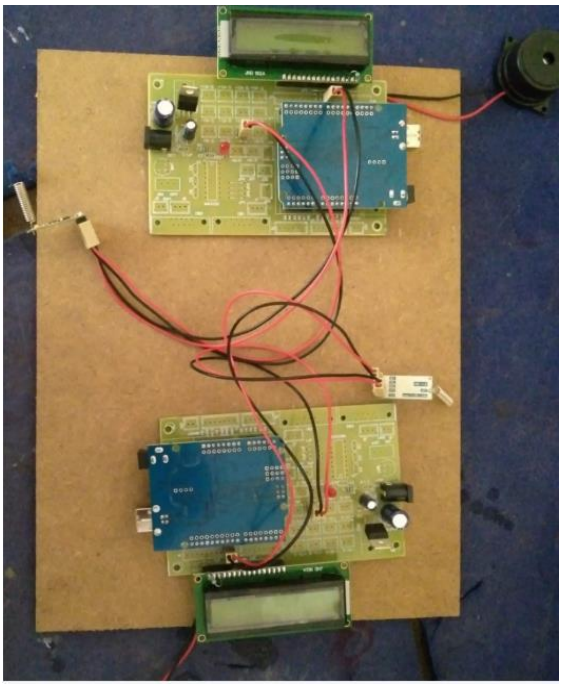
In the Transmitter Section the Temperature Sensor, Humidity Sensor and Heart Beat Sensor to display the soldier health & GPS is for location Detector. Temperature Sensor, Humidity Sensor & heart Beat Sensor sense the variations then it those signal fed to the Arduino Mega. In the Arduino Mega it compares with predefined values. If any variation in Temperature Sensor, Humidity Sensor & Heart Beat Sensor and co-ordinates which is received from GPS it's going to ship the to another receiving station through Zigbee that's in situation staff or Head office .Then signal is given to the output load for indication motive. In this gadget provide predefine message choice switches. This message like Ammunition, Help, backup, and many others. The Receiver Section act Control Base Station. The Control Base Station unit consists of a PC and a Zigbee transceiver. The Zigbee module will be linked to PC with the assist USB-to-Serial driver established in that PC. The records coming from Zigbee module will be displayed on PC screen with the assist of graphical person interface (GUI) coded using visual fundamental language.



## CONCLUSION

From this wireless embedded system, we can conclude that we are able to transmit data which is sensed from remote soldier, to army control room using ZigBee Mesh Topology through ZigBee transceivers as a wireless transmission technology. This system provides health monitoring for soldiers using heartbeat sensor to sense heartbeats and temperature sensor to sense body temperature of soldiers. This system is completely integrated and can track the location of soldier at anytime from anywhere on the earth using GPS receiver. Also, it helps the soldier to get help from army base station and from another fellow soldier in panic situation using Panic Switch. This system provides the location information and health

parameters of soldier in real time to the army control room. Due to use of wireless ZigBee technology, this system is very useful to military forces during wars, search and rescue operations, etc. as it can be used in warfield without any network restriction. Thus, this system provides high level security and safety to our soldiers

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