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Soldier Monitoring and Location Tracking System using IoT

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ABSTRACT: The Soldier Location Following Scheme allows military to track the presence of soldier current location in the survival area. The Scheme also consists extra feature that fighter can ask for help physically or send a suffering signal to military if he is in need. The GPS modem sends the latitude and longitude position with link design with the help of that control room can track the present place of the soldier and also provide the awareness of border limit. The system is very helpful for getting Location standing info of soldier and providing them prompt help.

KEYWORDS: GIS, GPS, IOT, Tracking System, Wireless technology

I. INTRODUCTION

In the current situation military services soldiers only have voice communication only. This is difficult to access needed information. There are many worries about the protection of these soldiers because refuge of nation mainly depends on army, navy, air-force. While soldiers enter the opponent lines it is important for the control station to distinguish the place as well as the standing of each and every soldier. In this plan, here we have come up with an new awareness of monitoring and following of the soldiers. By using GPS modem, the control service can know the place of soldier. This paper intentionally on behalf of the difficulties tackled by the soldier in the field & in order to support the soldier to get a better result. The Soldier Monitoring and Tracking system is made by integrating wireless & embedded advancements technologies. This device is an real refuge and protection scheme. It is used in critical situation and helps to attain successful secret mission using GPS location based on a series on geographic information science (GIS) relative distance height, distance & orientation between them are calculated. By using this technology, data will be sending by RF transceiver in wireless method. GPS Module has serial interface Information of the Soldiers are broadcasted via this interface in a special data format. Hence the soldier are protected.

II. METHODOLOGY

In the proposed system we implement the wearable IoT module for the soldiers. Here the IoT module is attached with a push button into the soldier vests or uniform so that field head can easily track their soldier's movement in actual period. Thus the soldiers can ask for help by pressing the push button and it sends a distress signal to the military if he is in need. It will send latitude and longitude position with link pattern with the help of that military and as well as other nearby commanders can trace path of the present location of the soldier.

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III. SYSTEM ARCHITECTURE

This section explains about design and architecture methodologies for the development of tracking device. The block diagram of this project includes GSM module, Wi-Fi IOT module, and PHP web server.

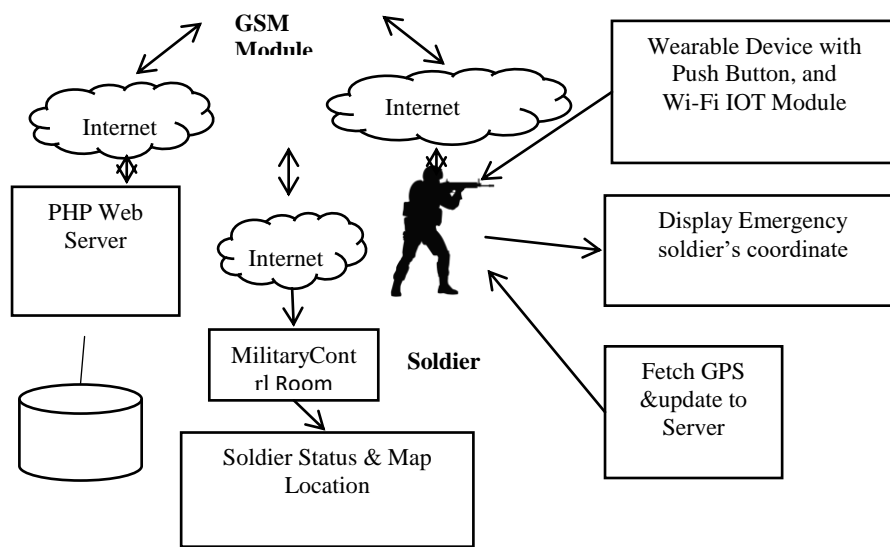


Fig. 1 Block Diagram of Tracking System

A. Node MCU Board

The Node MCU (Node Microcontroller Unit) is an open source that is built in with low cost system on a chip (SOC) called the Esp8266. Esp8266 was designed by Espressif system contains CPU, RAM, network, SDK & Modem operating system.[1]The Node MCU aims to simplify Esp8266 development. The Node MCU board has 40 pins out of 16 pins for general purpose shown in figure 2.

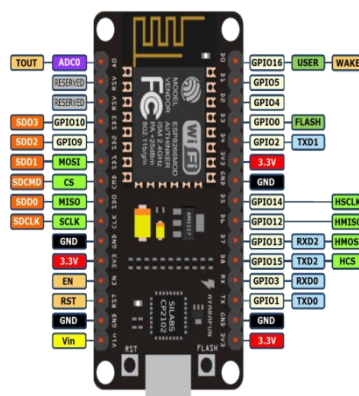


Fig. 2 Pin Diagram of Node MCU board

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B. Esp8266

The Esp8266 microcontroller was designed by the Espressif systems. The Esp8266 has complete Wi-Fi network offers bridge from current microcontroller to Wi-Fi & also capable of running self-contained application.

C. Front End Details:

Android application is written using Java language & uses the Java libraries. They are primary compiled with Dalvik to run on the Dalvik virtual machine designed specially to use in mobile devices. Android software development kit can be download from android website SDK contains tools, sample code & relevant document for making app.

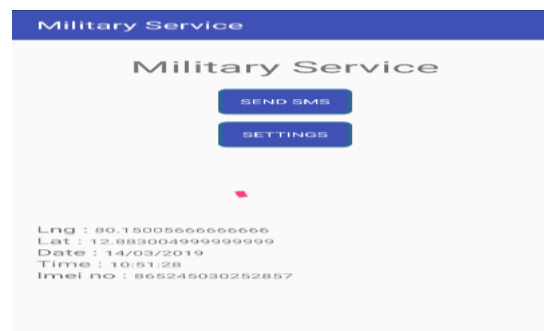


Fig. 4 output of android application

DALVIK VIRTUAL MACHINE

The Android software custom simulated machine called Dalvik virtual machine to run the java application. It custom own byte code arrangement that is different from Java byte code. Therefore, java class files need to get converted into dalvik byte code format to run.

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IV. RESULT AND DISCUSSION

Figure 5 shows the output, in this map red colour indicates the soldier who is in need of help from another soldier.

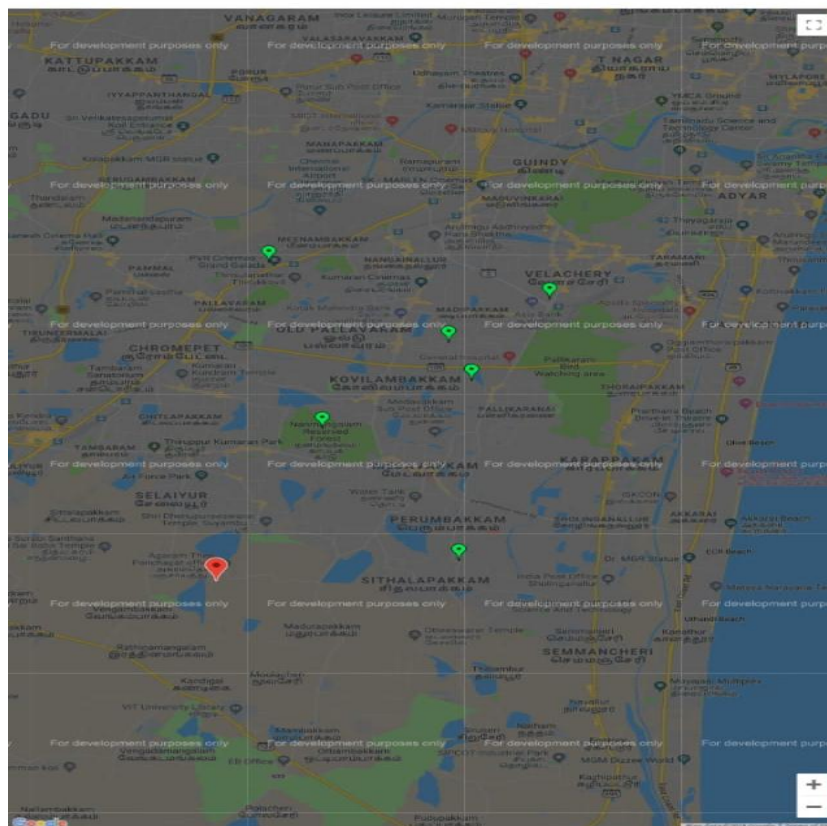


Fig. 5 Output of the Project

The soldier tracking and monitoring system is a real security and safety system which is made by integrating the advancements in wireless and embedded technology. It helps for a successful secret mission. This system can be used in critical condition. The most significance in this is implementation of live tracking. By implementing this system, we can improve the security of our country this also help to improve the safety of the soldier. This system also helps to provide real time location sharing information. Using this system, we can reduce casualties of war. It also helps to giving critical information's and warnings to the soldiers and can apply more of them to the current location. This reinforces the defense system. Thus, we can conclude that these kinds of devices are very helpful for safeguarding security to the soldier

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V. CONCLUSIONS

The project entitled soldier monitoring and location tracking system is an effective refuge and care scheme which is made by mixing the developments in wireless and embedded technology. It helps for a successful secret mission. This system can be used in serious situation. It has actual period competence. The accuracy of system is affected by some issues such as weather, environment around the mobile soldier unit, GPS receiver. The future works include enhancing the hardware system, selecting a suitable GPS receiver.

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