GPS AND GSM BASED TRACKING SYSTEM FOR FISHER MAN, SOILDERS, AGED PEOPLE AND GIRLS

Varsha S[1], Vimala P[2], Supritha B S[3], Ranjitha V D[4]

Students
Department of ECE,
BGSIT, Mandya, India

Abstract: **There are various systems for tracking the position of a vehicle but there is no such system made for tracking a human being. The main aim of our project is to track human like lost fisherman, girls, children and aged people in various situations. GPS (Global Positioning System) is used to track the location and time information of the person. GSM is used to send the tracked information to the concerned authorities. The proposed device is more like a safety system in case of emergency. This device can be fitted in a jacket (similar to a blazer for women). It is an essay to carry device with more features and functions. The emergency push button is held to one of the buttons of the jacket. The main purpose of this device is to intimate the parents and police about the current location of the women. A GPS system is used to trace the current position of the victim and a GSM modem is used to send the message to the pre-defined numbers. There are several applications that reduce the risk of sexual abuse by sending SMS but in our model useful for physically challenged people.**

Keywords: **Tracking; Arm controller; GSM; GPS; Sensors.**

I. INTRODUCTION

In this Project it is proposed to design an embedded system which is used for tracking and positioning of any person like Fishermen lost in the oceans, Soldiers lost in the war field, aged people with health disorders and teen age girls while travelling by using Global Positioning System (GPS) and Global system for mobile communication (GSM) and also tells information weather they are alive or dead.

In this project ARM7 LPC2148 micro controller is used for interfacing to various hardware peripherals. The current design is an embedded application, which will continuously monitor the different category of people and report the status of them on demand and also it informs the relatives about distance of concerned people if they are lost. For doing so an ARM7 is interfaced serially to a GSM Modem and GPS Receiver. A GSM modem is used to send the position (Latitude and Longitude) of the lost person from a remote place. The GPS modem will continuously give the data i.e. the latitude and longitude indicating the position of the concerned people. The GPS modem gives many parameters as the output, but only the NMEA data coming out is read and displayed on to the LCD. The same data is sent to the mobile at the other end from where the position of the people is demanded.

The hardware interfaces to ARM7 are LCD display, Heartbeat sensor, Alarm, relay, GSM modem and GPS Receiver. The design uses RS-232 protocol for serial communication between the modems and the micro-controller. A serial driver IC is used for converting TTL voltage levels to RS-232 voltage levels.

This system has also another faculty to the monitor the path along which the device moves. This is optional, when the user wants, to see the path it receives the entire information from GPS antenna otherwise it only receives the desired information. From application point of view, this environment tracking scheme can be utilized for various application such as locating in-demand personnel like doctors or patients with vital sign sensor in hospital environment, army, air force, etc. it can also serve as a basis for context-aware application. The raw data provided by the GPS receiver is captured by the software and processed to extract the required location, and speed information. The micro-controller connected to the system is also responsible for monitoring the GPS receiver and GSM modem to receive and transmit the data to LCD and mobile phone as text message. This system holds all the required information that is to transmitted to remote user using AT commands, LCD and PC Monitor. It is also controls data transmission module to exchange information with remote server. It receives commands sent by remote server through data transmission/receiving module and performs corresponding action required by that remote server. It actually acts as a bridge between GPS receiver, vehicle and remote server. It receives commands spent by remote server. The software performs three phases, reads message from mobile through GSM modem, the GPS position reading, and GPS data transferred and display unit networks. The message reading phases prepares the module for three functions. The system uses geographic position and time information from the global positioning satellites. The system has an "On-Board Module" which resides in the vehicle to be tracked. The On –Board module consists of GPS receiver, a GSM modem and ARM processor.

II. PROPOSED SYSTEM

Embedded System:

An embedded system is a controller embedded system is a controller programmed and controlled by a real-time operating system (RTOS) with a dedicated function within a larger mechanical or electrical system, often with real-time computing constraints. It is embedded as a part of a whole device usually as well as hardware and mechanical elements.

Methodology:

Basically the project is designed to track the lost fisher man, teen age girls, aged people, soldiers and babies. To implement this project all the above category of the people will be provided with a wearable device which they have to wear on their body all the time. The wearable device consists of the advance micro-controller ARM7 LPC 2148 which is interfaced with a Display system to display the status on the device regarding the location they are, a GPS to navigate the place and track the location, a GSM to send the location to the concerned authority, a heartbeat sensor to monitor weather the person is alive or dead and a buzzer to alert the people.

The people wearing this device if they are lost then simply they need to press the switch provided at the device. Once they press the switch the GPS will track the location and using GSM information will be sent to their care takers and the concerned authority so that they can help these lost people and track them. In case fishermen crossed the border then this device will help to identify that they belong to our country because GSM IMEI number will be the proof that they belong to India and they canto identify that they belong to our country because GSM IMEI number will be the proof that they belong to India and they can be released immediately. If the wearing this device is dead, then Heartbeat sensor pass the information to the processor regarding this status and GSM ill send the information to the concerned authorities.The idea of cell based mostly mobile radio systems appeared at Bell laboratories within the early Nineteen Seventies.This paper consist a new algorithm based on the paper proposed by Dong et al. in the year 2013, in which mixed noise is removed by a unified framework algorithm called as weighted encoding with sparse non local regularization. The new method developed will encode the noise corrupted pixel with help of dictionary to remove the AWGN and IN simultaneously. Existing and available mixed noise removal technique, involves two step operations. In first step, impulse noise pixels are detected and then they are removed in second step. This two-step operation is not effective when mixed noise content is more.

In this paper two separate operations are unified into a single frame work called as "sparse non local regularization". This unified frame work method was proposed by Huang et al. in the year 2014. In this method, the reference median value was calculated to resolve whether a current pixel is a noise pixel or not. The method based on, if the absolute value among the reference median with a target pixel is higher, then the target pixel is referred as a noise pixel and consequently the mixed noise is removed by switching the operation between the AWGN removal and IN removal. This regularization procedure is combined with sparse non local self-similarity to improve the noise removal capacity in the algorithm.

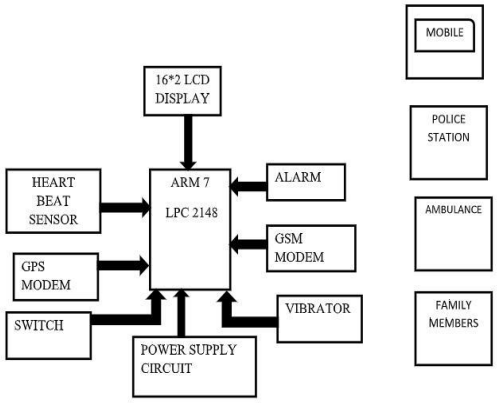


Fig 1: Block Diagram

In 1982 the conference of European posts and telecommunications formed the Grouped special mobile (GSM) to develop a Pan-European mobile cellular radio system.

A GPS navigation device GPS receiver, all simply GPS is a device is the capable of receiving information from GPS satellites and then to calculate the device geographical position. The GPS itself doesn't require an internet connection. You need a maps app that can download the maps beforehand, so they can be used without an internet connection. The free Google maps can now download areas of interest in advance of needing them.

We come across LCD displays everywhere around us. Computers, calculators, television sets, mobile phones, digital watches use some kind of display to display the time. An LCD is an electronics display module which uses liquid crystal to produce a visible image. The 16*2 LCD display is a very basic module commonly used in DIYs and circuits. In this LCD each character is displayed in 5*7- pixel matrix.

Vibration sensors are sensors for measuring, displaying and analyzing linear velocity, displacement and proximity or acceleration. Therefore, vibration analysis is used as tool to determine equipment condition as well as the specific location and type of problems.

Technical specifications:

- Operating voltage of embedded circuitry is 12vdc.
- Current consumption of device in active mode 200mill amp.
- Operating frequency of device is 11.0592MHZ.

Ⅲ. Advantages And Applications:

Advantages:

- Prevents the fishermen by getting lost.
- In case if they lost the system easily navigates their position since we are using GPS.
- The project also gives the information like the person is alive or dead with the help of Heartbeat sensor.

Applications:

- It can be used in Vehicle tracking system.
- The project can be used in animals tracking system if they are lost.
- The project can be used to track the jewelry if it is lost.

Ⅳ. Result And Discussion

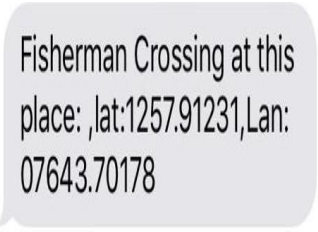
Fig 2: Real time device for tracking time

Now a day's people facing so many problems, in that situation. We can use this tracking device like band, because this device helps us to find out the current situations that are in danger zone. This device used to easily track the position.

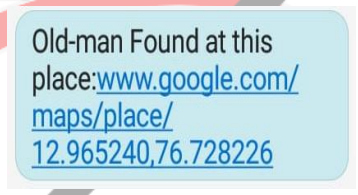
Above figure we take a example for fisherman safety there is two zones safe zone and warning zone. The device continusoly alert, if fisherman is in safe zone or warning zone. If he is in near the warning zone then we can save the fisherman.

1. If the fisherman crossed the border in the ocean it will track the position of them and send a message to the mobile using GSM.

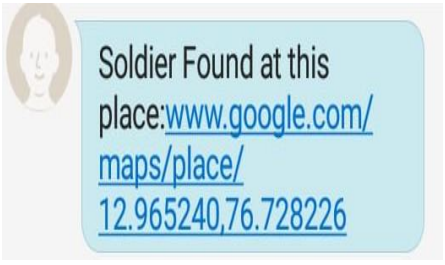
2. If the Fisherman crossing the border in the Ocean it will track the position of a fisherman and it will send a message to the mobile using GSM.



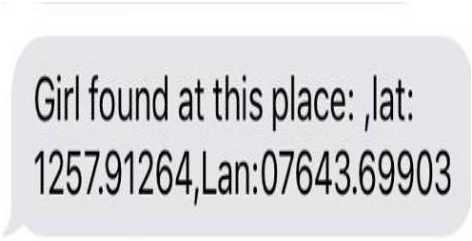
3. If the old people is in away from the home if there health condition is not well then it will gave a alert to our mobile phones that time we easily help the those people.



4. In war field if soldiers are missed then we can easily track them in all the situation that time message will send to the mobile where they are present.



5. Nowadays Girls Safety is most important if they are in danger situation then we get a message to our mobile where they are present



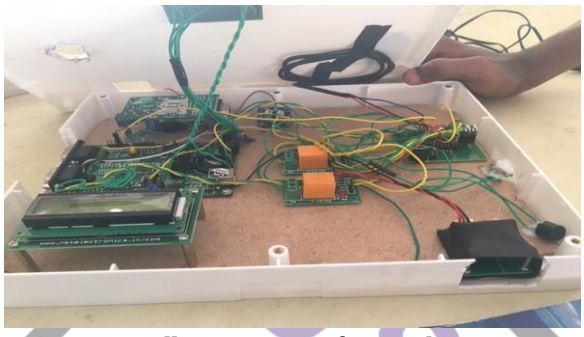


Fig 3: Overall Connection of a Tracking System

V. CONCLUSION

Low-cost tracking system has been designed and implemented. The proposed system can be smartly used for girl's safety during daily outing. Using AT commands the GSM modem is able to send the message to the predefined numbers. Usually we prefer the information transfer to one or two numbers.But if necessary to send the message to many numbers it is also possible. The numbers must be stored in the program of the ARM7 LPC 2148 and must be using the kit. The only problem is that it takes time to send message if the predefined numbers are more than three. Thus in the above block diagram we are able to see the transmission of message from GSM modem to the predefined numbers using the virtual terminal.

REFERENCES

[1] B.P. S. and SatyajitRath, "Integrating GPS-GSM and cellular phone for location tracking and monitoring", Proceedings of Geomatrix"12, INDIA.
[2] Abid khan, Ravi Mishra, "GPS-GSM Based tracking system", International Journal of Engineering Trends and Technology Volume3 Issue2.
[3] Chen Peijiang, Jiang Xuehua, "Design and Implementation of Remote monitoring system based on GSM," vol.42.
[4] Asaad M. J. Al-Hindawi, IbraheemTalib, "Experimentally evaluation of GPS-GSM based system design", Journal of Electronic Systems Volume 2 Number.
[5] Chen, H.,Chiang, Y. Chang, F., H. Wang, H.(2010).Toward Real-Time of Precise Point Positioning: Differential GPS Based on IGS Ultra Rapid Product, SICE Annual Conference, The Grand Hotel, Taipei, Taiwan August 18-21.
[6] Kai-Tai Song, Chih-Chieh Yang, of National Chiao Tung University, Taiwan, "Front Vehicle Tracking Using Scene Analysis", Proceedings of the IEEE International Conference on Mechatronics & Automation 2005.
[7] Francois Peyret, David Betaille, and GaetanHintzy, "High-precision applications of GPS in the field of real time equipment positioning," Automation in construction, vol.9, pp, 2999-314, 2000.