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REAL TIME PILGRIMS TRACKING WITH FEEDBACK

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ABSTRACT

Now a days due to the increasing crude of pilgrims at the holy areas, during pilgrimage the management authorities faces so many problems regarding the crowd control, pilgrim identification and tracking and providing medical emergencies and also regarding security issues. The tracking and monitoring of pilgrims become more difficult during season time. To solve this issue completely is quite impossible but we can reduce it up to some extend for the safety of the pilgrims. This paper presents the solution to all above problems based on the RF sensors modules and proximity sensors to track and communicate administration with the pilgrims with two way. Other systems focus only on the tracking pilgrims who lost and health monitoring of the pilgrims. At this moment none of these will provide the any emergency notification from the pilgrims to the management authorities and from management authority to pilgrims. This system can also be implemented in many different places including airports, port shore and offshore areas, shopping malls, offices and industrial field.

KEYWORDS: RF module, IR sensors, proximity sensor, PIC controller, etc…

INTRODUCTION

In India the sacred site events are Melas which are the viral part of the spiritual tradition of Hinduism. These events are celebrated in the auspicious astrological period during which the number of peoples visits the respective place from all over country that results into overcrowd of pilgrims. While such events are unique spiritual experiences for all pilgrims, it poses major challenges of all sorts to the authorities responsible for these annual events.

Following are some commonly faced difficulties during such events faced by the authorities. Every year so many people die or lost because of paucity in pilgrimage management and overcrowd of the pilgrims in holy events. Many of the sensor and wireless devices available today that include ZigBee, IR sensors, and Proximity sensor can be used for the efficient management crowd movements. This system is specially designed for the elder and child pilgrims. The most of the crowded events are usually religious in nature and often involves simultaneous movements of very large group of people.

Wireless communication has come forward as one of the largest scenario in the telecom industries as well as in the forte business in last few decades as a most promising and growing area of development. The most feasible applications of the wireless system are military, health, defense and some other areas such as object tracking. Tracking means the determining the location of the object. Global and local are two basic types of the positioning system, global coverage uses the global navigation satellite system, while the local coverage uses the local technologies such as Wi-Fi, Bluetooth, and Radio Frequency Identification Technology (RFID) ZigBee. This local wireless technology will works with very high accuracy, low rate and real time. The localization is estimated through the communication between localized and unlocalized node for determining their geometrical placement or position. The localization schemes are classified as anchor based or anchor free, centralized or distributed, GPS based or GPS free, fine grained or coarse grained, stationary or mobile sensor node and range based or ranged.

RELAED WORK

There are several systems developed to track the pilgrims. Some of them are based on the GPS, ZigBee and some system uses the modified triangulation algorithm. Very first K. Sreenivasa Ravi, Mohammed Abdul Aziz , B.

Venkata. Ramana developed the pilgrims tracking and identification system using RFID technology[1]. Teddy Mantoro, Media A. Ayu and Murni Mahmud proposed the system to track the crowd in Hajj[2]. Mohamed Mohandas, M. haleem, M Deriche combinely developed the wireless sensor network for pilgrim tracking. All above systems are just designed for the tracking and monitoring the pilgrim[4]. Later Anju M Nair and S Joshua Daniel developed the system that automatically monitors the body condition of the pilgrim under pressure[5]. The efficient range based algorithm is developed by Soumya C P, T V P Sundararajan and Gowdhami N for pilgrim localization in pilgrimage[6].

PROPOSED SYSTEM
System Overview
The sensor network developed to track and get feedback from pilgrims consist of two basic units first is fixed unit placed at the control room and another are the mobile units that are provided to the each pilgrim. Because of that the number of mobile unit is always more than the fixed units. Thus the wireless sensor network (WNS) for such application has similarities to the ZebraNet designed for the habitat monitoring. It makes use of opportunistic, ad-hoc and short-range wireless communication to dissented data. In this proposed application each pilgrim carries a mobile unit that includes the PIC microcontroller, health monitoring unit consist body sensor, Proximity sensor to establish communication with fixed unit network and some tags that can be used to send different messages to the fixed unit at the management regarding any emergency. The complete data of the pilgrim locations and the health condition is saved at the management database, so as to easily retrieve that information whenever required.
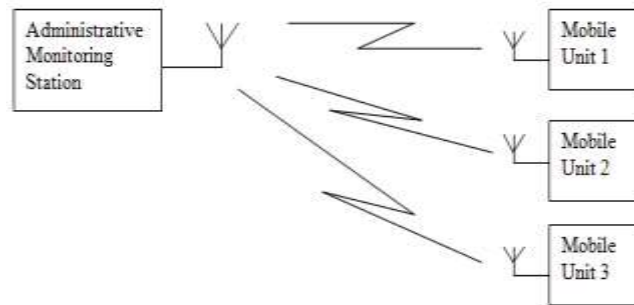

Fig -1: Proposed Sysytem

As shown in Fig-1, the pilgrim tracking system consists of administrative monitoring station at the base station and the number of mobile unit that are provided to each pilgrim. The monitoring system consists of city map on which the authorities can track and locate the pilgrim. The IR transreceiver is used to communicate with the pilgrim in case of emergencies and loss of pilgrims. The IR sensors are placed all over the city to monitor the location of pilgrims and city map is developed at the Control/fixed unit. The block diagram of this unit is shown in Fig-2
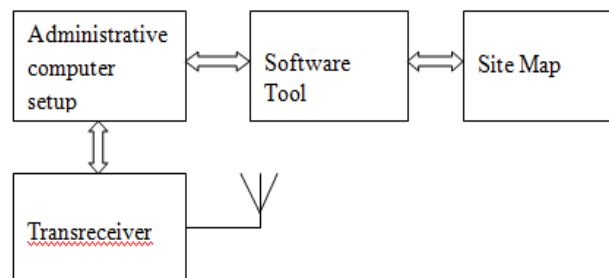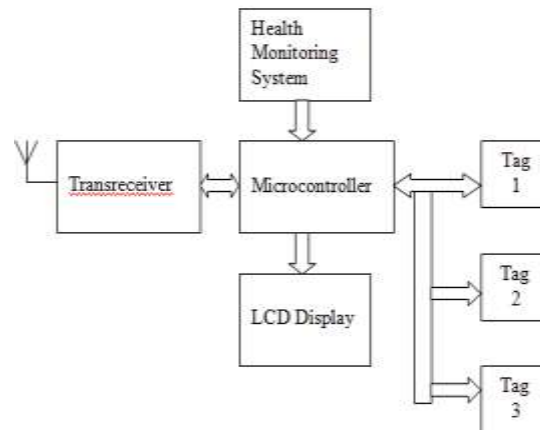

Fig -2: Control Room Unit

Fig -3: Mobile Unit

The block diagram of pilgrims unit is shown in Fig 3. The IR transreceiver is used to transmit current location and medical information of pilgrim such as heart bit count and body temperature. Health monitoring system takes the record of heart bit and body temperature, the LCD display provided to display route and guide the pilgrim in case of lost. It is also used to display any message from the administration. The proximity sensors are used to provide the exact current location of the pilgrims. Different tags (buttons) are provided on the pilgrim unit to convey the emergency messages the management authorities.

System Simulation
The system flowchart for the simulation is as shown in fig-4 that shows various stages through which the entire system works as simulated. Initially the nodes i.e. pilgrims unit are created and configured with the administrative system. These pilgrims moved out and management starts tracking and keep tracking till the event ends. If the management found that the any one of the pilgrim is not traced then the by default message "NOT IN RANGE" is displayed on the pilgrims unit. And if pilgrims are traced he/she will get message as they are in range "IN RANGE". The management keeps continues tracking pilgrims.
If any emergency condition accurse to the pilgrims, such as if they found they are lost or any kind of medical emergency. Pilgrims are able to send the respected message to the management authority person and request them for the required services.

- For the lost pilgrims the management will provide city map to the pilgrims on display built on the pilgrim's mobile unit. And guide them to reach them at their base camps.
- For any medical emergency, management is able to provided required facilities within a short time period as they know the exact location of the pilgrims.
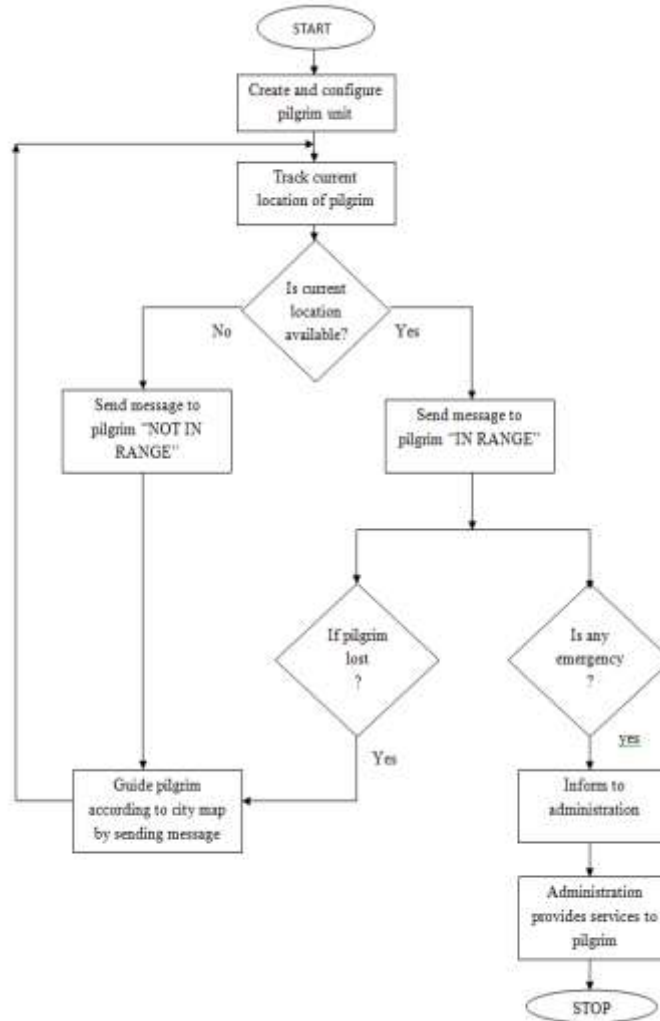
FiG 4 Flow of simulation process

CONCLUSION

There are many challenges for the authorities during the pilgrimage season like pandharpur yatra, kumbh mela and paithan yatra. The main challenge faced by authorities is location and providing the necessary facilities to the pilgrims. The system proposed here provides the solution to the above stated problems. We can easy track the pilgrims and find their exact location. Also this system is proposed in such a way that the pilgrims can send the request to the authorities for the emergency services. The communication between the mobile unit and the fixed control room unit is established using the RF module and the PIC controller.

ACKNOWLEDGMENT

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