

Paisheya-The Object Tracker

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Abstract : An efficient object tracking system called Paisheya, is designed and implemented for tracking the movement of any equipped object from any location at any time. The proposed system made good use of a popular technology that combines a Smartphone application with a microcontroller. This will be easy to make and inexpensive compared to others. The designed in-object device works using Global Positioning System (GPS) and Global system for mobile communication / General Packet Radio Service (GSM/GPRS) technology that is one of the most common ways for object tracking. The device is embedded inside a object whose position is to be determined and tracked in real-time. A microcontroller is used to control the GPS and GSM/GPRS modules. The object tracking system uses the GPS module to get geographic coordinates at regular time intervals. The GSM/GPRS module is used to transmit and update the object location to a database. A Smartphone application is also developed for continuously monitoring the object location. The Google Maps API is used to display the object on the map in the Smartphone application. Thus, users will be able to continuously monitor a moving object on demand using the Smartphone application and determine the estimated distance and time for the object to arrive at a given destination. In order to show the feasibility and effectiveness of the system, this paper presents experimental results of the object tracking system and some experiences on practical implementations.

Keywords: Paisheya, Object Tracker, GSM, GPS

I. Introduction

Object tracking systems were first implemented for the shipping industry because people wanted to know where each object was at any given time. These days, however, with technology growing at a fast pace, automated object tracking system is being used in a variety of ways to track and display object locations in real-time. A object tracking system using GPS/GSM/GPRS technology and a Smartphone application to provide better service and cost-effective solution for users. One can observe that the world is experiencing accelerated growth in Smartphone ownership. As a result, Smartphone users are now more prevalent within the overall population than owners of basic mobile phones. As Smartphones become more familiar to people and finding use in the day to day lives, their influence on society continues to grow. The main driving force for this accelerated growth in Smartphone usage is the availability of a large variety of applications to meet the needs of a wide range of users. In our project we developed a Smartphone application along with the in-object tracking device. The two parts work together to offer the most convenience to the users as they become handy to track object locations in real-time. Fig. 1. Changes in phone ownership, 2011-2012. The number of Smartphone owners increased 11% from 2011 to 2012. A object tracking is a prerequisite of the most basic function in all fleet management systems. A fleet management is the management of a company's transportation fleet. The fleet management system aims at improving the quality and efficiency of the industry by identifying major obstructions on the road and tracking real-time locations of their fleet on a map. Most of the object tracking systems are designed by using GPS/GSM technology. In object tracking systems, a object location is one of the most important components. The location and time information anywhere on earth is provided by using GPS technology. For wireless data transmission, GSM and SMS technology are commonly used. The SMS technology through GSM network and GSM modem provide a user with object location. 2014 IEEE World Forum on Internet of Things (WF-IoT) information. Utilization of SMS technology has become popular because it does not require much cost. It is convenient and accessible way of transferring and receiving data with high reliability. Instead of using SMS, the proposed object tracking system uses the Smartphone application to track and monitor a object

location obtained from the in-object tracking device controlled by a microcontroller. The object location is automatically placed on Google maps, which make it easier for tracking a object and provides users with more accurate object location information. The basic purpose of a object tracking system is to track a specific target object or other objects. The tracking device is able to relay information concerning the current location of the object and its speed, etc. Most of such tracking systems consist of an electronic device as usually installed in-object and can be used for tracking motor cycles, buses, and trains. The object tracking system proposed in the paper has the following features: • Acquisition of a object's geographic coordinates and a object's unique ID from an in-object device in real-time using the GPS module • Transmission of a object's location information and a object's ID to a web server after a specified time interval using the GSM/GPRS module • Database is designed to store and manage received object's location information • Whenever a user requests the object location, it can be accessed from the database and monitored on Google maps in real-time using a Smartphone application.

II. Previous Work

The existing system consists of a mobile application to help the user select the object he wants to find, via the internet. The user selects the option that he needs- i.e. Car-Key if he misplaces it. The transmitter sends a signal to the receiving sensor, which is attached to the car-keychain. When the sensor attached to the keychain matches the code-signal being sent, it starts ringing to notify the user where the item is. Once the user locates the key the audio is turned off. The systems with similar functions are, StickNFind, Tracker and Gadget Hound that implements the same idea of locating misplaced items. But the problem is that the existing devices are used only in Smart phones and use complicated and tech-savvy applications, which unfortunately are not understood by everybody. Another problem occurs with the cost.

III. Proposed System

The architecture consists of two sides. First is parent side and another is child side. Parent side acts as server and child side acts as a client. Basically there are two android phones one is at child side and another is at parent side. Parent's side used SMS service for communicating to child's mobile and with the help of map parent used to view child's location on map. That's why it uses internet and telephony services enable at parent side to track child's location. At child's side another android phone supports GPS and SMS facilities. Child side uses telephony services to communicate with parent side. In child side location services that is GPS is enabled and running in child side .And parent side uses internet connectivity to view child's location on the map. At parent side requirements are mapped for tracking and service (listener) for listening messages coming from child's side. On the child's side listener service always runs in background, at parent side used to send SMS for location of child.

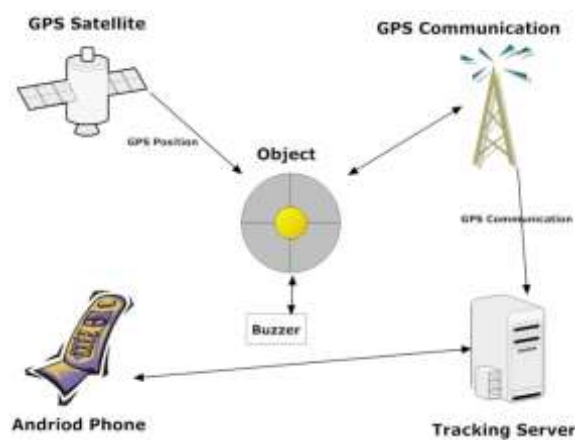


FIG-1: Architecture of the proposed system

Parent side listener used to listen Childs reply for location request. There are two main functions at child side. To listen and gets location from satellites or network provider. Listener is a very important service at

Childs side to listen all SMS incoming and reply SMS which only related to location requests. When parent sends location requests to the Childs side, at child side it listens message and code for this message to reply the location requests on map at parent side. The application is programmed to listen the predefined strings. At the listener the instructions or commands are saved such as “\$get Update\$” will be used by sending parent side location requests. Whereas “\$update\$Coord” will be used at child side for location update

IV. Conclusion

This paper presents a low cost tracking system using GPS and GSM, which is suitable for wide range of applications all over the world. The combination of the GPS and Bluetooth provides real time tracking. The cost is much lower since GPS is now available in almost all the smart phones. Free Google map reduces the monthly bundle cost for the individual user. It is expected that the full implementation of the proposed system would ultimately replace the traditional and costly SMS based tracking systems. Infrastructure Constraints One of the main problems is the lack of spread of the wireless network into the countryside. In developing country like India, the wireless technology is in very nascent stage. In metro cities and areas, the problem of network congestion is also an important issue. The percentage of service operators not meeting the congestion rate benchmarks has risen subsequently. This paper proposes a developing an Android Application which is based on LBS & provides different location based services like profile changing of mobile from normal mode to silent mode & vice versa for certain places that user registered. In conclusion project was designed for locating missing or lost children. This project was given depth information about child tracking system with the help of two components such as GPS and GSM telephony services the application is built in. Finally for this application has room for enhancement. Geo-fencing, Emergency alerts such features can be added to enhance system. The proposed system will be improved in later work.

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