VISITOR TRACKING TECHNIQUES

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ABSTRACT

World of technologies is wide spreading and updating now-a-days. The data proliferate and collaborate with appropriate field. Security of valuable data is one of the important tasks. Tracking become of the most effective and advanced way to enhance security of the firm or wealth. Tracking of a person or more specifically the tracking of visitor in the area where reliability is important aspects of unwanted activities like stealing the confidential data, leaking or destroying it. Various tracking techniques are used such as through the GPS system, RFID, Wi-Fi area, LBS, longitude and latitude, etc. The paper named Visitor tracking and management techniques compares the various techniques available for tracking the visitor to increase the security level of the firm or industry. The comparisons are based on problem definitions, effectiveness, efficiency, accuracy, applications, further updates, claims and solutions. The conclusion comes after the survey of diverse techniques and analyzing the pros and cons.

KEYWORDS: Tracking, Security, Visitor, GPS (Global Positioning System), RFID (Radio Frequency Identification), Wi-Fi (Wireless Fidelity), LBS (Location Based Service)

INTRODUCTION

As the number of people on earth increases, the management of monitoring public rush in large, crowded area like amusement parks, museums, industrial areas, big companies become tough and complex. The security is an important parameter to secure the valuable data from the unwanted visitor in the face of criminal. It seems very easy to treat the company in the face of the visitor. Manually registered visitors and their data are difficult to find. The data can be changed, deleted easily. So, it is a very important aspect to keep eye on the visitor. Therefore, various methods are developed and used.
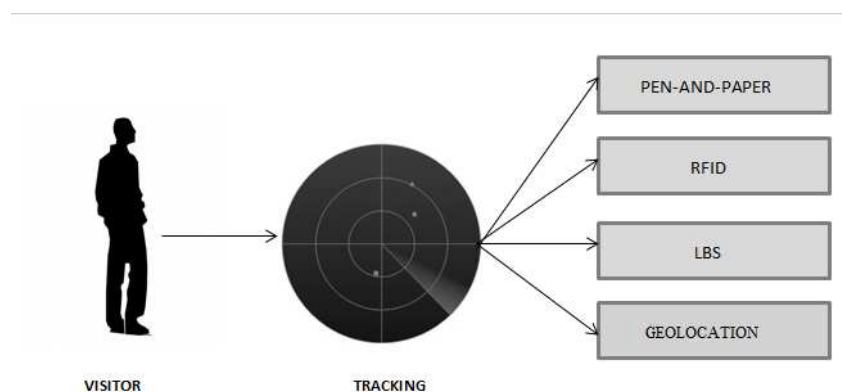
TECHNIQUES FOR TRACKING THE VISITOR

Figure 1: Techniques for Tracking

Timing and Tracking: Unlocking Visitor Behaviour [1]

Visitor tracking can be done accurately, where the visitors are not aware they are being observed, or cued, where visitors are asked if they can be watched. Using the manually entered paper-and-pencil method is the most common form of timing and tracking in museums today, because it is more simple and low in cost than other options. While cost and ease of use are compelling reasons, we have found some limitations to using paper-and-pencil methods for timing and tracking. Another option is Videotaping. Videotaping, provided the area is small enough to be recorded by one camera, can provide a wealth of information and the ability to re-watch segments and recode if necessary. The drawback of this method is, this method is only feasible for small area i.e. the space can only be monitored which is covered by single camera. There is one another method which is more advanced and efficient than pen-and-paper method which is Electronic behavioural coding and analysis systems such as Noldus Observer. It has several advantages such as high accuracy, ability to record separate times for concurrent behaviours, No data entry necessary—data are simply downloaded directly into SPSS or other spreadsheet software and less obvious—a handheld PC does not attract nearly as much attention as a clipboard.

Visitor Control and Tracking System [2]

In this patent the system controls the visitor and tracks their location at venue. The system uses the RFID technology for such task. All the visitors have RFID tags in which visitor's basic information is stored. RFID Readers are fixed at some points of the venue. When RFID tags reaches in area of any RFID reader it send visitor's information to that RFID reader. And all the RFID Readers are wirelessly connected to central system for sending visitor's information with location. The disadvantage of the system is, it is complex to set up and maintain. We should give training to others for this new system. More than that costing of RFID is more than other equipments. So it is efficient but costly system for tracking.

Mobile Tracking Application for Locating Friends Using LBS [3]

As the trend is of smartphones emerging today it's very important for the mobile user to have the location based services (LBS). Location based service can be elaborate as the services which uses the users geographical location which consist of X and Y coordinates i.e. longitude and latitude, which is generated by GPS (global positioning system) which acts as positioning device. This system is mobile tracking application for locating person using LBS, which uses the GPS as location provider through geographic location for mobile network. This application includes anti-theft facility for the woman's or the user which is using the app so that his location information is sending the geographically nearest police station. This implements the client server system that helps the user to locate and track their friends, and receive the alert message when nearby, basing on radius set by administrator.

Location Tracking Using Google Geolocation API [4]

Geolocation is a process which identifies of the geographic location of a user or hosting device via a variety of data collection mechanisms. Most of the geolocation services use network routing addresses or internal GPS devices to determine this location. Geolocation is a device-specific API; some browser/devices support it, while others do not. So we can assume that geolocation is always possible for a web application. The Google Geolocation API provides the geographic information of the particular location like latitude and longitude associated with the hosting device. Information about the location can be tracked using the GPS and the other sources which provide the location information such as IP address, Wi-Fi, Bluetooth Mac address, GSM, CDMA etc. We use Google Geolocation API for identifying the current address of the user. Geolocation API provides the geographical location of hosting device. This API is used in this project

for obtaining the latitude and longitude.

Comparison of Tracking Methods

Table 1: Comparison of Tracking Techniques

	Pen-and-Paper	**RFID**	**LBS(Location Based System)**	**Geolocation**
Efficiency	Less	High	High	High
Accuracy	Less	Very High	High	Medium
Implementation	Very Easy	Hard	Medium	Medium
Cost	Very Low	Very High	Medium	Medium
Working Area	Small	Large	Very Large	Medium
Reliability	Medium	High	High	High
Device Required	Pen, Paper, CCTV camera	RFID Tags, Reader	GPS system	Smartphone, Central Wi-Fi

CONCLUSIONS

We have analyzed and compared the above possible solutions to track a visitor's behaviour. In the world of technology, it is advisable to use the appropriate system according to their need. Different technologies have various advantages and disadvantages. If accuracy is the main concern than one should go for more advanced one and so on. Further updates and modifications can be done in systems.

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