

# A Review Paper on Geolocation Based Employee Attendance Monitoring System Using Geotagging

Aashish Kumar Patel <sup>1</sup>, Ravi Tiwari<sup>2</sup>

*1 M.Tech Student, Dept. Electronics & Communication Engineering, Dr. C.V. Raman University, Bilaspur,*

*Chhattisgarh-India*

*2 Asst. Prof. , Dept. Electronics & Communication Engineering, Dr. C.V. Raman University, Bilaspur,*

*Chhattisgarh-India*

**Abstract:** *Geolocation is a technology that uses data acquired from an individual's computer or mobile device (any type of radio or network-connection-enabled device) to identify or describe his/her actual physical location. It is one of the most popular manifestations of the current development of information technologies and is recently experiencing a significant rise in popularity. A more systems-oriented definition might be as follows: A geolocation system is an information technology solution that ascertains the location of an object in the physical (geo-spatial) or virtual (Internet) environment. Most often, the object is a person who wants to utilize a service based on location, while maintaining his/her privacy.*

**Keyword:** *Geolocation, Geotagging, Geopositioning, Georeferencing, Employee Attendance System.*

## I. INTRODUCTION

Geolocation software services are used to support the business objectives of private and public enterprises. Geolocation data generally are used for three purposes:

- Geo-referencing or positioning—Ascertaining the physical location of an object or person relative to a coordinate system (map) to access specific information later. Examples of this are car navigation via a global positioning system(GPS) device such as TomTom TM

and prisoner monitoring via GPS-enabled ankle bracelets.

- Geo-coding—searching for information regarding objects or services on a map, such as locating a restaurant offering a particular type of cuisine
- Geo-tagging— adding geographic information to an object, such as a photograph, by incorporating the geolocation data in the photograph's metadata

Geolocation makes it possible, from a device connected to the Internet, to obtain various types of information in real time and locate it on the map with high accuracy at a given point in time. Geolocation data can be collected in a multitude of ways: web browsing via IP addresses, mobile phones, GPS devices, radio frequency identification (RFID), credit/debit card transactions, tags in photographs, and postings (such as geo-tags or check-ins using applications such as Foursquare) on social network sites such as Facebook® and Twitter. Geolocation technology has become a foundation for location positioning services and location-aware applications running on smart phones such as iPhone® and Android TM devices. Geolocation data have a variety of uses, each of which can be tailored to particular applications, environments or enterprises. These uses presently include localization and/or customization of delivered content, enforcement of access and delivery restrictions based on geographic

location, fraud prevention, and network traffic demand entails the problem of the nature of the analysis.<sup>2</sup> Extending these technologies and their information—often private and/or sensitive—associated with them. It is, therefore, important to be especially aware of issues relating to security and privacy to be able to use geolocation tools responsibly. Geolocation data is generated and collected in one of two ways—in an active mode referred to as user-device-based geolocation or in a passive mode referred to as table look-up or data correlation server-based geolocation.

Mode Collection Method Technologies Involved		
Mode	Collection Method	Technologies Involved
Active: User—Device-based	<ul style="list-style-type: none"> <li>• Uses firmware and software on user's computer or wireless device</li> <li>• Location determined via GPS chip and/or triangulation using cellular tower information</li> <li>• Request-response model</li> </ul>	<ul style="list-style-type: none"> <li>• GPS</li> <li>• Assisted GPS (A-GPS)</li> <li>• Wi-Fi—Wireless positioning</li> <li>• 3G/4G</li> <li>• Mobile applications—iPhone, Android devices, BlackBerry®</li> </ul>
Passive: Data-lookup—Server-based	<ul style="list-style-type: none"> <li>• Involves use of third-party geolocation service providers, e.g., Quova®, NetGeo, Bering Media</li> <li>• Based on nonlocation-specific IP address acquired from user device or service set identifiers (SSIDs) for wireless networks</li> <li>• Correlation with stored IP or SSID databases obtained from purchase records, user-provided information, network analysis of trace routes and domain name system (DNS) host names</li> </ul>	<ul style="list-style-type: none"> <li>• IP location—Whois lookup, DNS LOC, geographic names in domain name user or application information, timing data using ping inference based on routing data, e.g., trace route monitoring of Internet service provider (ISP) networks</li> <li>• 3G/4G</li> <li>• Wi-Fi—Wireless positioning</li> </ul>

Figure 1 summarizes these modes and the technologies each employs.

The advent of GPS, Wi-Fi, wireless mobile networks and IP location identification techniques has spawned a wide range of derivative technology applications. These include the ability to tailor content and services to users in particular locations; conduct financial transactions from mobile devices with greater assurance of detecting fraud; and apply new uses for cloud computing paradigms, such as using cloud storage to synchronize heterogeneous devices in support of context-aware computing across a multitude of mobile platforms and varying user locations. The capability to provide accurate and timely geo-reference data, tag items of interest with location metadata, and use location coordinates as a key to search databases has become the foundation for an expanding software market for applications that run on mobile platforms. Consequently, it has become possible to enhance and control Internet commerce by using geolocation information to provide virtual boundaries and or Internet services permitted in another. However, such boundaries and controls can be intentionally evaded by using web proxies, anonymizer software, e.g., Tor, These privacy and related security matters are discussed in a later section of this publication. as Internet gambling, video distribution, and procurement of products and services that may be restricted in one jurisdiction but As with any technology, geolocation has a double-edged nature. The capabilities that empower social networking, aid in law enforcement, and transform how the world is experienced and navigated and also provide the basis for serious misuse in the wrong hands. Such misuse includes unwarranted

surveillance of individual or enterprise activities and use in criminal activities.

## II. PROBLEM IDENTIFICATION

The employee attendance is very important in service sectors. The existing system like signature attendance, thumb impression, cannot locate the person is in the office or not. The drawback of previous system is that there is not any system which recognizes the location of employee.

## III. PROPOSED METHODLOGY

**GEO TAGGED ATTENDANCE SYSTEM.** Through this system user can locate where the attendance has been marked on the Map. The advantage is to track Field Employees and contractual employees. Our Fingerprint Identification includes offerings starting Time Attendance system to complicated Automatic Finger print Identification system for Police. Transline's comprehensive solutions provide customer the privilege of end to end solution that includes expertise of IT to Network to Biometrics to Software. It helps you manage your entire manpower from your field force to office manpower. It has inbuilt module for Employee self help as well as payroll system. The system is available Geo-tagging / Territory Management

### Overview

Territory management enables the organization to manage the complex team structures along geographical locations. Without segmentation of customer and grouping the employees around territories makes it difficult to track the organizations field coverage. EFFORT Geo-Tagging and Territory Management allows businesses to effortlessly allocate the territories to employees for faster turnaround time, better coverage and lower operational cost.

**Process**

Manager defines the territories and groups customers. Assigns the territories to employees. Employee signs in and performs the activities within the assigned territories on mobile device. All the activities and movements are Geo-tagged Attendance system Managers gets real time reports on activities performed in/out of the territories.

**IV. EXPECTED OUTCOME****Metrics**

- (1) 40% Decrease in Operational cost.
- (2) 40% Improved Coverage.
- (3) 30% Improved Productivity

**Benefits**

- (1) Manage complexity with ease.
- (2) Improved territory based customer coverage
- (3) Authentic information
- (4) Operational efficacy
- (5) Improved productivity
- (6) Greater compliance

**Features**

- (1) Location tracking of employee movement on the field.
- (2) Total distance travelled and time spent at various locations by the employee

- (3) Circle and polygon based territory definition.
- (4) Customer segmentation and employee assignment based on territory
- (5) Automatic work allocation to employees based on customer's territory
- (6) Location based alerts when the employee is moving in/out of the territory
- (7) Visualization of employee activities in territories.

**REFERENCES**

- [1] Kumbhar, A. A., Wanjara, K. S., Trivedi, D. H., Khairatkar, A. U., & Sharma, D. (2014). "Automated Attendance Monitoring System using Android Platform.", *International Journal of Current Engineering and Technology*, Vol. 4, No. 2, pp1096-1099.
- [2] Pankanti, S., Prabhakar, S., & Jain, A. K. (2002). "On the individuality of fingerprints", *Pattern Analysis and Machine Intelligence, IEEE Transactions on*, 24(8), 1010-1025.
- [3] Shoewu, O. O. M. Olaniyi, and Lawson (2011), "Embedded Computer-Based Lecture Attendance Management System", *African Journal of Computing and ICT (Journal of IEEE Nigeria Computer Section)*, 4(3):27 – 36.
- [4] Cheng, K., L. Xiang, T. Hirota, and K. Ushijimaa (2005), "Effective Teaching for Large Classes with Rental PCs by Web System WTS", *Pro. Data Engineering Workshop (DEWS2005)*, 1D – d3 (in Japanese).
- [5] Shoewu, O. and O.A. Idowu (2012), "Development of Attendance Management System using Biometrics", *Pacific Journal of Science and Technology*, 13(1):300-307.

[6] Kadry, S., & Smaili, M. (2013). "Wireless attendance management system based on iris recognition", *Scientific Research and essays*, 5(12), 1428-1435.

[7] Time and Attendance. [Online]. Available: <http://www.en.wikipedia.org>

[8] A Short Course on Fundamentals of Touch Technologies and Applications, Geoff Walker Principal Analyst IMS Research, 2010.

[9] Automated Time and Attendance System. [Online]. Available: <http://www.gatekeepersolutions.com>

[10] C. Y. Lin and M. T. Hung, A Location-Based Personal Task Reminder for Mobile Users, Springer Verlag, London, 2013.

[11] O. Shoewu, O. M. Olaniyi, and A. Lawson. "Embedded computer-Based lecture attendance management system," *African Journal of Computing and ICT*, vol. 4, no. 3, pp. 27–36, 2011.

[12] K. Cheng, L. Xiang, T. Hirota, and K. Ushijimaa, "Effective teaching for large classes with rental PCs by web system WTS," in *Proc. Data Engineering Workshop (DEWS2005)*, 1D – d3 (in Japanese), 2005.

[13] O. Shoewu, and O. Badejo, "Radio frequency identification technology: Development, application and security Issues," *Pacific Journal of Science and Technology*, vol. 7, no. 2, pp. 144-152, 2006 and security Issues," *Pacific Journal of Science and Technology*, vol. 7, no. 2, pp. 144-152, 2006.