On Campus Location Tracking Using Mobiles Phones

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Abstract- The wide spread usage of mobiles as handheld devices has eventually lead to various innovative applications which are making their presence felt in our daily life. A suitable example One such application is location-tracking in indoor   environments. In this paper we discuss the implementation of a simple and cost effective system that assists users in tracking colleagues and friends within a campus environment. The system uses the information built in a typical mobile such as its IMEI and IMSI and the various Wi-Fi access points on campuses to pin point a user's position. In this paper we have explored various importance of using Location Tracking Application. One can use Location Tracking App to provide users with real time data related to a person's movements and location within a campus. Location Tracking surrounds the Client and Server application. In which, the Server application has been implemented in Java and Client application in Android.

Keywords- Android phone , JAVA, Window OS, Remote desktop, Access Point, MAC Address, Tracking, Wi-Fi.

I. INTRODUCTION

In today's environment, a mobile has become one of the important necessities. If a person wants to search his family member or if a person who loses his mobile wants to track it. With the help of Wi-Fi technology, it is possible to trace and find the location of person with the help of android mobile phones which the other person is using. There are many applications on the internet through which one can detect the location of user. These applications include surveillance, detection of fraud, help in business marketing etc. The important requirement of general user is to get the location of a person. This can be done through sending and receiving SMS. This Paper describes that since Wi-Fi (Wireless Fidelity) is widely deployed in buildings such as hotels, hospitals, universities, airports and train stations, it makes sense to make use of this technology in support of cost-effective location identification or positioning solutions. The proposed solution uses Wi-Fi, android mobile phones and access points in addition to a web server equipped with a GSM (Global System for Mobile Communications) modem . It reports to subscribers the most recent location of a user as well as a history of his or her previous locations within a specified time window.

II. RELATED WORK

The authors argues that [1] systems that integrate GPS and GSM technologies with Google earth to provide real-time data have also been proposed. However, for indoor, sand, closed environments GPS systems fall short and it becomes difficult to acquire the necessary satellites for accurate position computation.[2] Another techniques that are proposed for location tracking include the integration of Bluetooth technology with 3G networks. The proposed solution suggests that Bluetooth terminals can exchange information with each other and then a Bluetooth access point provides the interface to a mobile network. In their solution they presumed that Bluetooth fixed infrastructures are expected to be installed in offices, homes and public areas which is not the case nowadays.

III. FEATURES

[1] Track location: It will give the recent location of a user as well as a history of his or her previous locations within a specified time window.

[2]Registration: User has to download the application and server has to register.

[3] Attendance: It will mark the attendance after some span of time.

[4] Timetable: It will display the timetable.

[5]Notification: It will display all the notifications.

IV. ARCHITECTURE

The architecture depicted in Figure 1 decomposes the system into various components that seamlessly interact providing a practical solution to the positioning problem in campuses. The system follows a   typical client/server architecture with the client (mobile) running an application specifically built for this project. The mobile application can be installed on PC/LAPTOP.

System Components

The system consists of 4 major components which are described in the following sections:

Web Server

The main tasks of PHP server are: register users, update the database, retrieve user location, sends out user location information via SMS and post it online.

Android Application

On the mobile side, the application was developed and implemented using Android SDK. The application runs on any Android OS based phone. Note that the application can only operate on a Wi-Fi enabled mobile phone.

Database

The server uses a MySQL database. MySQL is an open source relational database management system which uses Structured Query Language (SQL). MySQL was chosen because of its reliability, speed and flexibility. The server receives requests from the application program. The request can be either to register a new user, update user

information, or locate an existing user. The server tokenizes the user requests, and issues the appropriate SQL statement to perform the required action.

GSM Modem
A GSM modem is used to send/receive the SMS messages. The GSM modem is connected to the web server. The GSM modem was programmed to send/receive the SMS messages.
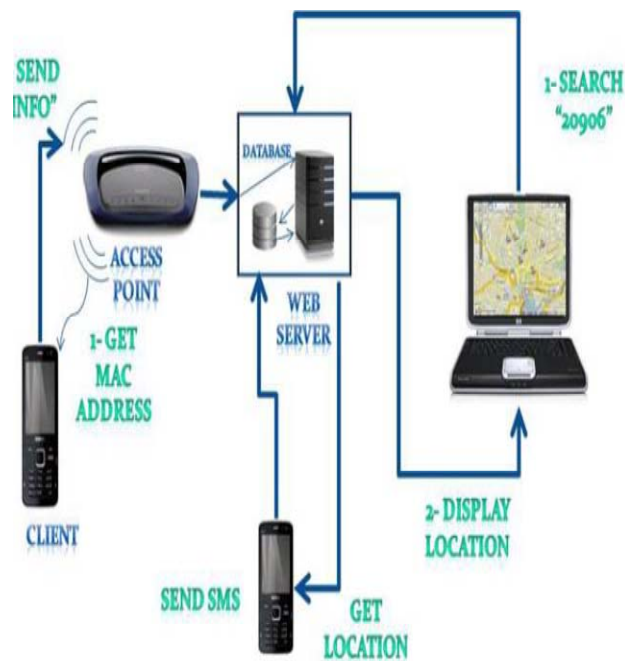

Figure 1: System Architecture

V. DESIGN AND IMPLEMENTATION
The system basically involves tracking location from android phone or a remote desktop.

[A] Design Constraints
(a) Error Recognition: Error should be easily recognized and get solved out.
(b) Screen resolution: Screen should be visible enough.
(c) Exception: All kind of exception should be handle properly.

[B] General Constraints
(a)Network Speed –As number of PC increases in LAN , it introduces an additional overhead on network bandwidth.
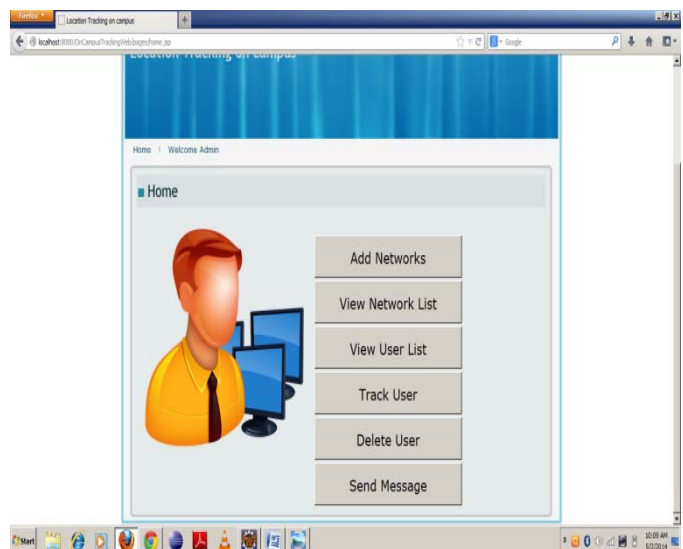(b)Processing Speed-Processing speed depends on the network connection

[C] User Documentation
(a)Currently we will be using J2EE for developing program.
(b)Developing tool to be used Eclipse and Net Beans.

VI. SCREEN SHOTS

(A)   Login Page

(B) Home Page

VII. FUTURE WORK
As a continuation of work in this application, we would include sophisticated positioning techniques: Fingerprinting and Triangulation for more security purposes.

CONCLUSION
Wi-Fi infrastructures are increasingly being deployed in major building. If we take into account that most if not all future generation of mobile phones will be Wi-Fi enabled, then the positioning approach presented in this paper seems to be the logical solution to the location tracking problem. The solution requires minimal additional resources to the existing infrastructure and was tested with favorable results.

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