



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 9, September 2015

A Survey on Location Based Services on Smart Phone: City Lense

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ABSTRACT: The basic mechanism of using the mobile handsets and phones is to deliver the valuable services. city lense refer to a set of application that exploit the knowledge of the geographical position of a mobile device in order to provide valuable services based on that information. citylense provide the mobile clients personalized services according to their current location. They also handle a new area for developers, cellular service network operators, and service providers to develop and provide value-added service: advising clients of current traffic conditions, providing routing information, helping the user to find nearby shopping malls. Location-based services on smart phone: - city lense offer many merits to the mobile clients.

KEYWORDS: City Lense, LBS (Location Base Services), Geo-coding, Distance Radius.

I. INTRODUCTION

The Android operating system is combination of a virtual machine that runs on the Linux kernel, plus APIs, and a collection of built-in application. A location-based service on smart phones: - city lense is a mobile application that is depending on the location of a mobile device. A positioning component is usually needed in a LBS application to determine the location of user mobile device. Most of the current services do require users to input location manually, like Source and destination or street name. All In order to make LBS services possible, some infrastructure elements are necessary, including mobile devices, communication network, positioning component, and service servers Mobile devices are tool used by user to access LBS services, to send requests and retrieve results. Such devices can be portable navigation device (PND), Personal Data Assistant (PDA), laptops, mobile phones, and so on. Application is the interface for users to access the LBS service [2].

It is software developed by an application provider, downloaded and installed on user's mobile device. it is an application which is generally developed for a location base service. Due to the restrictions of mobile devices (screen size, limited processor power, memory, battery capacity), location base applications need to be lightweight and battery saving. Communication network refer to the mobile network which transfer service request from user to service provider. A positioning component is usually needed in LBS.

Usually people face problem when they try to explore city. While exploring, people have to ask someone or find the main places on the internet. To overcome this Problem, We are developing City Lense. City Lense is a one stop solution for the problems. It is a window where people can explore things/ places in City within the customizable distance radius. This Application get the current location of Clients And get the other location of the city. After installing Application on Android phone you can get the current location of user and places by moving phone in direction that user wanted to go. As the system has all verified data about the places so user just need to select a place from the places shown on screen.

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In Latitude Software, the Haversine formula [9] is used to calculate the distance between two locations. Haversine Formula:-

$$a = \sin^2\left(\frac{\Delta\phi}{2}\right) + \cos(\phi_1) \cdot \cos(\phi_2) \cdot \sin^2(\Delta\lambda/2)$$

$$c = 2 \cdot \text{atan2}(\sqrt{a}, \sqrt{1-a})$$

$$d = R \cdot c$$

Where ϕ is latitude, λ is longitude, R is earth's radius (mean radius = 6,371km)

Content provider is responsible for collecting and storing geographic data, location-based information, and other related data. This data will be requested and processed by service servers and then returned to users. First, user send a request using the application running on the mobile device the service request, with user current location information obtained from the positioning component, is sent to service server via the mobile communication network. The service server request geographic database and other related database to get required information At last, the requested information is sent back to user mobile phone via mobile communication network paragraphs must be indented. Maps Navigation- The user can use the Google Maps to get to the particular location or to trace the route between any two locations.

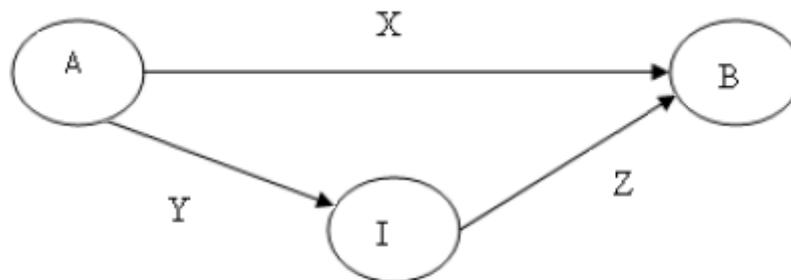


Fig 1:- Showing two path from Location A to Location B [9]

SaranaNutanong et al proposed Hausdorff distance Calculation Algorithm to compute Max-Min distance from X to Y [10]. This Algorithm is used to measure the distance between Route and used to search similar Route. For searching Trajectory the algorithm is at Marginal. There are two cases considered regarding actual distance. Case 1: If there is error only in predicate distance (through Latitude). Case 2: There is error in both predicted distance and actual distance. Because while calculating the actual distance, there are different paths to reach a Location as shown in Figure 1. Starting from Location A to reach Location B, there are two paths A->B and A->I->B. The distance calculated by two paths is different. Therefore, presence of error in a actual distance is also considered in the paper [10].

II. RELATED WORK

Initially mobile phone was developed only for voice communication but now days the scenario has changed, voice communication is one aspect of a mobile phone. There are other aspects which are major focus of interest. Two such major factors are web browser and GPS services [1]. Both of these functionalities are already implemented but are only in the hands of manufacturers not in the hands of user because of proprietary issues, the system does not allow the user to access the mobile equipment directly. But now, after the release of android based open source mobile phone a user can access the hardware directly and design customized native application to develop Web and GPS enabled services. Locations based Service are one of the fastest growing areas of computing this type of services are built by using positioning algorithm [2]. There is an increasing demand to accurately and quickly determine the position of a mobile at low cost. Location based application are becoming popular and available and provide the user with an information based on their location. This describe about different techniques proposed for locating user. An Algorithm is then derived for deciding the best method based on user requirement. The Algorithm dynamically deactivates different positioning technologies and only activates positioning method with least energy consumption [2]. The Algorithm can reliably and accurately determine.



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The market for smart phone has been booming in the past few years. There are now over 400,000 applications on the Play Store. Due to the Android popularity, there are now a large number of malicious vendors targeting the platform. Many honest end user are being successfully hacked on a regular basis. Our reputation based security solution takes advantage of the aspect that each application in the android platform is assigned a unique user id (UID) [3].

The inspiration for every location based information system is to assist with the exact information, at right place at the real time with personalized setup and location sensitiveness. All the information must be available in his mobile device and also in the user customized format. Our Android application for location based service on the mobile is based on the operating system Android, GPS technology and Java technology (J2EE) [1]. In the past few year of android development a light weight framework is use for location base service by grin[4].

In this paper we use the global positioning system in Dijkstra's algorithm for finding the current location [6]. By using this position we measure the distance from source to every node in the graph. From this we also estimate the shortest path. Distance is given by a formula:

$$\text{Distance} = [(x_2 - x_1)^2 + (y_2 - y_1)^2 + (z_2 - z_1)^2]^{1/2}$$

Where x, y, z are the coordinate of a position given by GPS. GPS is a satellite based system that can be used in navigation to locate the position anywhere on the earth. GPS is designed & operated by U.S. Department of Defense (DOD). GPS consists of satellites, control & monitor station and GPS receiver.

III. PROBLEM DEFINITION

As there are 2 main issues while using Google map as we think, first we have to put destination and then it gives route to reach to the destination. Second while following the route it cannot be stable while using. Usually people face problem when they try to explore city. While exploring, people have to ask someone or find the main places on the internet.

To overcome this Problem, We are developing City Lense. City Lense is a one stop solution for the problems. It is a window where people can explore things/ places in City within the customizable distance radius. This Application get the current location of Clients And get the other location of the city [5].

After installing Application on Android phone you can get the current location of user and places by moving phone in direction that user wanted to go. As the system has all verified data about the places so user just need to select a place from the places shown on screen. Implementation is a stage of the project when the theoretical design is turned out into a working system. Thus it can be considered as the most critical stage in achieving a successful new system and gives the user confidence about the new system will work as effective.

The implementation stage involves careful planning, investigation of the existing system and constraint on implementation, designing of method to achieve change over and evaluation of change over methods.

IV. SYSTEM ARCHITECTURE

City lense architecture is categorized by means of the various characteristics regarding the design and functionality of each one [7]. The survey furthermore expands towards the integration of the location and the various GIS. In order to increase interoperability among the various system and technologies, the necessity for standardization and homogenization is also taken under consideration.

Most of the application have client/server architecture and can be abstracted into three main parts: Client, Server, and Wireless Communication. Wireless Communication is used for connecting Client and Server [7]. Client is responsible for sending the user request and the geographical location of the mobile device to Server, and Server is responsible for providing service based on the geographical location of the mobile device. Client can make contribution to information gathering by collecting data in the field. Server will put the information collected from the field into the database and will then provide service for all clients based on the database. In fact, the role definitions of Server and Client are becoming more and more ambiguous.

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Servers analyze this critical information and put it into the database for service. Although it is a trend for LBS to gathered information at the Client side, there are still some problems caused by wireless communication. The architecture of city lense is shown in Figure 2.

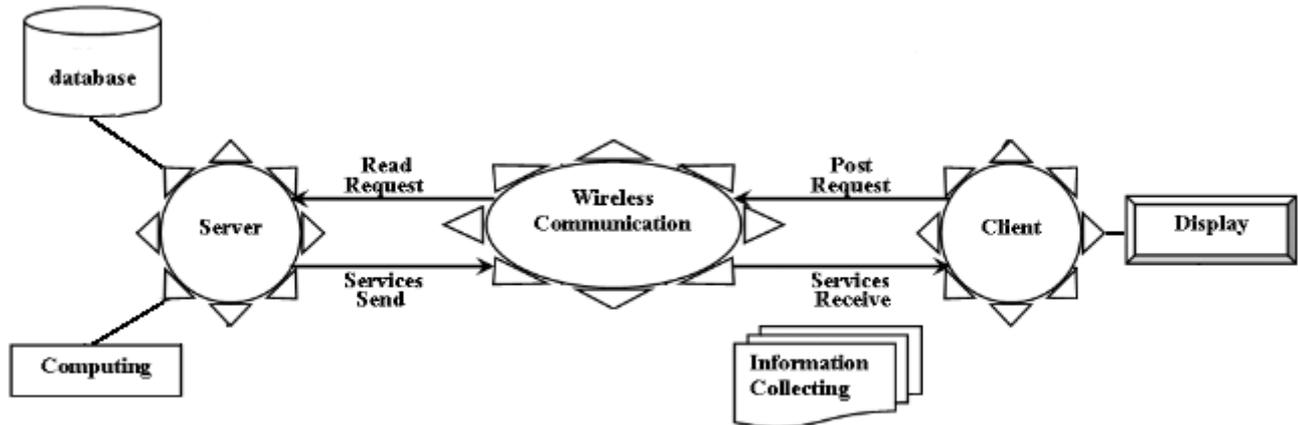


Fig 2:- Architecture [7]

City lense has three main functions Client, Server, and Wireless Communication of can be further divided into an aggregation of function, which for a certain application will fall into a subset of the following function pools.

- Client function: Display, Information Collecting, Computing, Wireless Connection, Save and Multimedia
- Server function: Network: Database, Computing, and Wireless Connection.
- Wireless Communication function: Receive Post, Send Services, Read Request, Encryption, and Information Security

The above mechanism is the first step for Client, Server, and Wireless Communication to pursue reusability.

At the Client side, the hardware compatibility which is the core problem for application developer to realize reusability is now available. Considered power consumption, computation ability, size, hardware interface, and screen issues, there is not a universal solution to meet the requirements of all users.

At the Server side, the crucial problem lies in network communion. The program running on the Server side should support multiple operating systems, web browsers, and protocol that are proliferating rapidly on the Internet and Intranet.

The most common and dominant method of wireless communication available today is the communication cellular telephone system. Compared to Server, the protocol for Wireless Communication is less. Moreover, different types of wireless communication are highly complementary and easily merged.

V. EXISTING SYSTEM

Usually people face problem when they try to explore city or places. While exploring, people have to ask someone or find the main places on the internet. Modern tracking systems commonly use Google Map technology for Current Location [1]. However, these systems that are implemented by the developer are not available to the general people if they don't have smart phone. Also, these systems are designed using proprietary software. Due to the high cost of these systems, urban agencies cannot bear the systems. To overcome such problems we have proposed a system designed using open source software.

VI. PRAPOSED SYSTEM

To overcome this Problem, We are developing City Lense. City Lense is a one stop solution for the problem. It is a window where people can explore things/ places in City within the customizable distance radius. This Application get the current location of Clients And get the other location of the city. After installing Application on Android phone you



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can get the current location of user and places by moving phone in direction that user wanted to go. As the system has all verified data about the places so user just need to select a place from the places shown on screen [5].

Current location or distance radius can be achieved by using Dijkstra's algorithm is a clarification to the single-source shortest path problem in graph theory [6]. Works on both directed and undirected graphs. However, all edges must have positive weights. This Algorithm for calculating shortest path from source to sink from computationally expensive as calculating shortest paths from source to any vertex.

Algorithm:-

Step 1 - Start

Step 2 - Identify source S as permanent and all other nodes $V.D[S] = 0$ and $D[V] = \infty$

Step 3 - Turn on GPS and get current position for source node in form of coordinates.

Step 4 - Set V as temporary and update neighbor's states.

Step 5 - If the temporary node linked to S that has lowest weight.

Step 6 - Get position of that node by GPS and calculate distance.

Step 7 - Is this node destination??? No goto Step 3.

Step 8 - Based on information in status record do until reach.

Step 9 - Stop

VII. CONCLUSION AND FUTURE SCOPE

The project has been designed to develop Application on Android phones you can get the current location of user and places by moving phone in direction that user wanted to go. As the system has all verified data about the places so user just need to select a place from the places shown on screen. And also Dijkstra's algorithm is used to find out the shortest path in a graph. Global positioning system is used in Dijkstra's algorithm to get the current position of each node. Distance is also calculated from this position. An algorithm is proposed for this. The future of the application seems really bright and prospective. With the time, all the technical issues will be resolved and city lense will definitely showcase something that would fill the gap between social and ethical issues too.

VIII.ACKNOWLEDGMENT

This work was supported by Pune University and BVCOE college of Engineering. We are very much thankful that he gave opportunity to complete this work in time to us. We would also like to thanks our prof. C. K. Patil. Principal BVCOE. Prof. H. D. Sonawane. H.O.D, Computer Department, for providing their valuable supported time throughout engineering.

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ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

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Vol. 3, Issue 9, September 2015

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