



## Full Length Research Article

### REAL TIME GPS TRACKING FOR TECHNICIAN SERVICES

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#### ABSTRACT

Technician services using real time GPS tracking which is basically an android application. What makes it special is the way it works or we can say as it comes to play in our daily basic needs, how a small application can save a plenty of your daily time. What it does is it locates all the available technicians around you using *Location based services*. After you locate them you can just hire them for the work you need to get done just by a click. Basically it creates a bridge between the end user and the technician which makes it easy to use, and as because it's a end to end user application the cost factor is comparatively less too.

#### INTRODUCTION

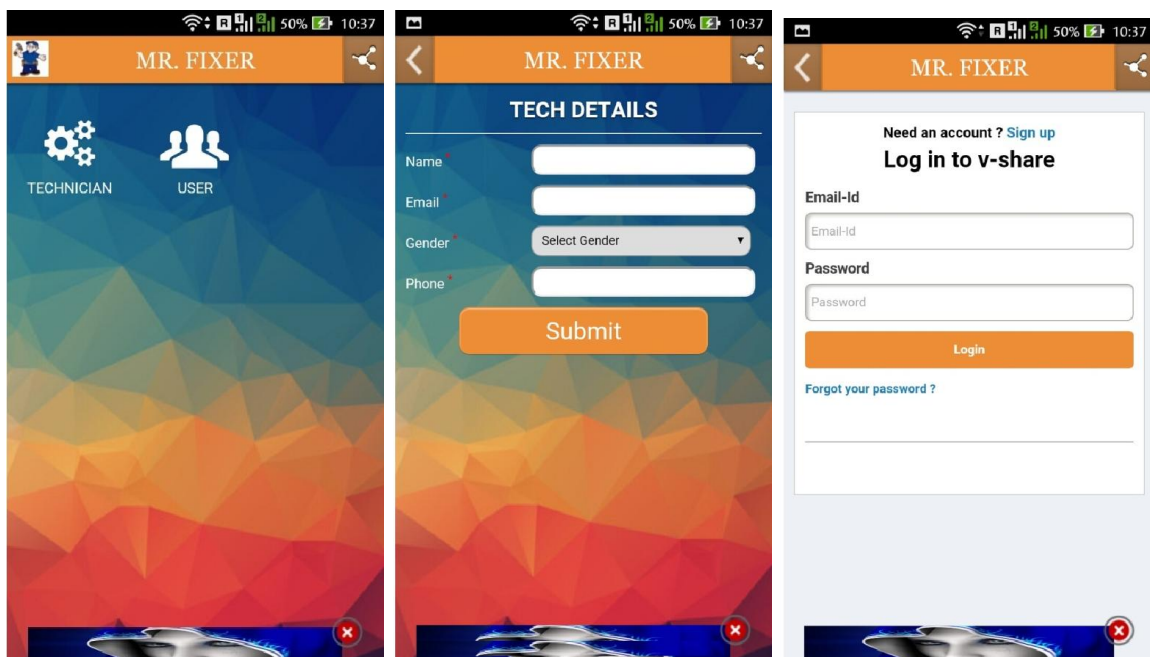
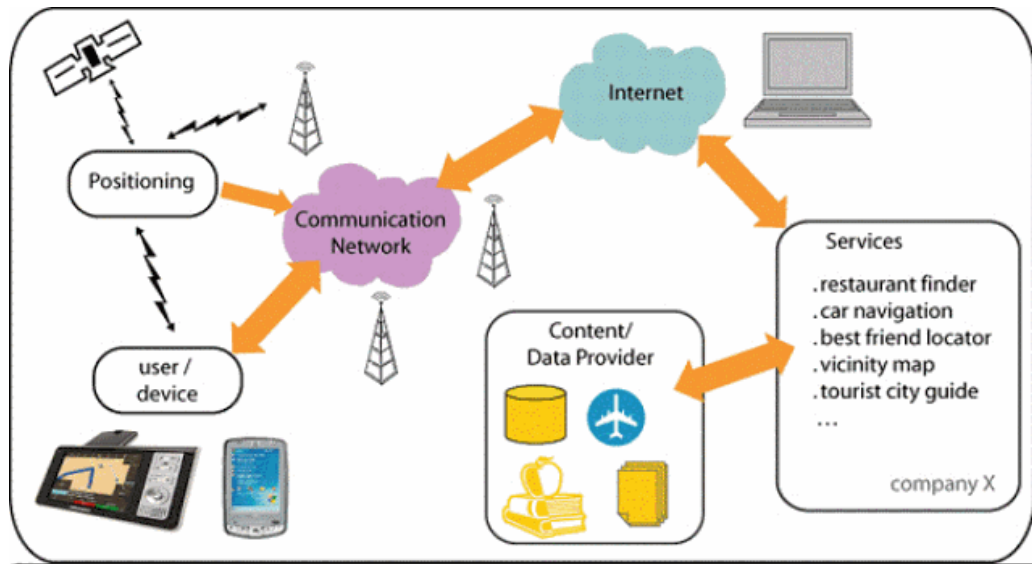
The technician services provided using GPS tracking follows a simple algorithm of *location based services* which is basically used in applications like cab tracking or transport tracking services. This application would be specifically helpful for the people on the move. The application just need a registration from both the parties which are the users and on the other side the technicians. Then based on the *LBS* the location of both the parties are being tracked which helps both the parties to locate and reach each other (Abhijeet Tekawade, ?). The customer side will know the location and availability of the technicians where as on the other hand the technician can find the location of the customer who are hiring them and can reach them much more efficiently (Anthony Clarkson, ?). At the end there would be a basic rating and review services to rate the services provided by the technicians which will be sorted through the average rating algorithm, so that the new customer can view and decide whom to hire. At the end for security reasons there would be panic button included in the application which would notify the nearest police station and provide the location of the distress beacon launched by the software, this service can be used if the customer doesn't feel safe with the hired technician.

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#### Related works

Following are few researches done on similar technology. The increasing number of location-dependent applications, positioning and tracking a mobile device becomes more and more important to enable pervasive and context-aware service. While extensive research has been performed in physical localization and logical localization for satellite, GSM and WiFi communication networks where fixed reference points are densely-deployed, positioning and tracking techniques in a sparse disruption tolerant network (DTN) have not been well addressed. In this paper, we propose a decentralized cooperative method called *Pulse Counting* for DTN localization and a probabilistic tracking method called *Prob Tracking* to confront this challenge.

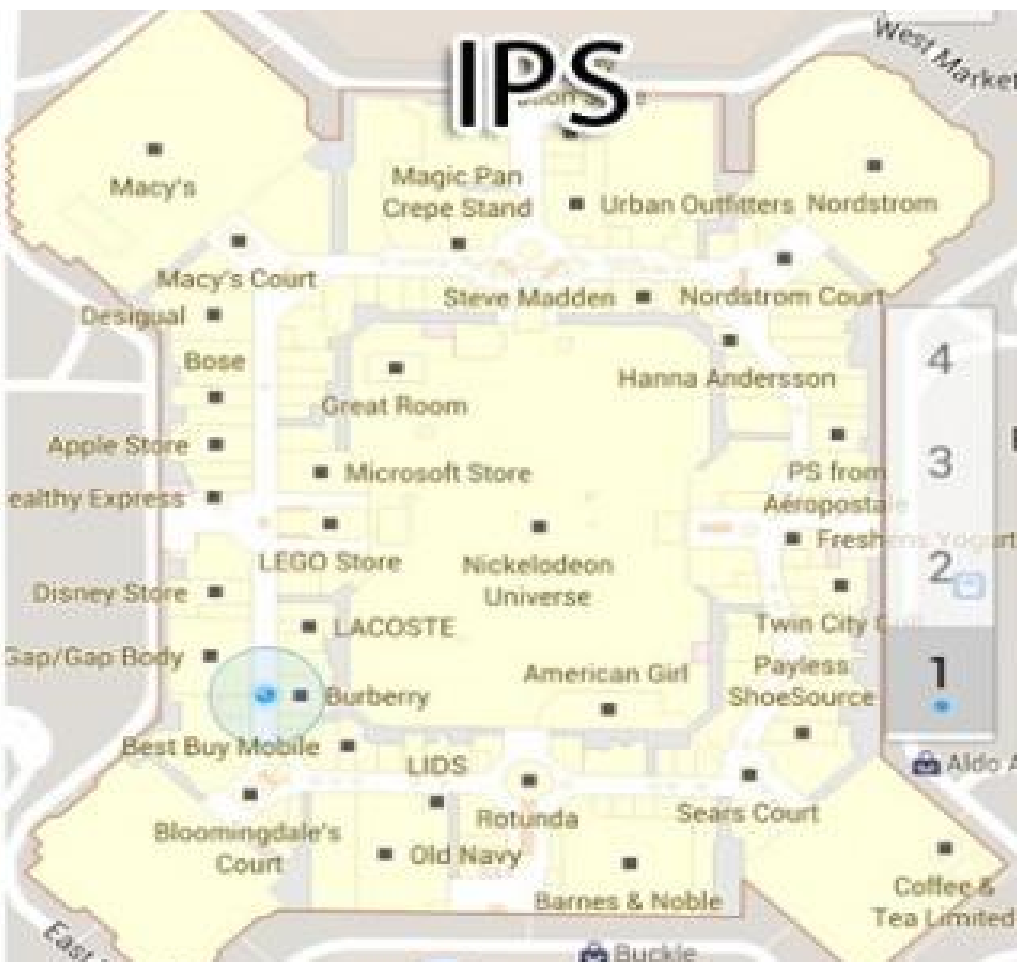
Pulse Counting evaluates the user walking steps and movement orientations using accelerometer and electronic compass equipped in cellphones. It estimates user location by accumulating the walking segments, and improves the estimation accuracy by exploiting the encounters of mobile nodes. Several methods to refine the location estimation are discussed, which include the adjustment of trajectory based on reference points and the mutual refinement of location estimation for encountering nodes based on maximum-likelihood.



To track user movement, the proposed Prob Tracking method uses Markov chain to describe movement patterns and determines the most possible user walking trajectories without full record of user locations. We implemented the positioning and tracking system in Android phones and deployed a testbed in the campus of Nanjing University. Extensive experiments are conducted to evaluate the effectiveness and accuracy of the proposed methods, which show an average deviation of 9m in our system compared to GPS (Wenzhong Li, ?). GPS is one of the technologies that are used in a huge number of applications today. One of the applications is tracking your vehicle and keeps regular monitoring on them.

This tracking system can inform you the location and route travelled by vehicle, and that information can be observed from any other remote location. It also includes the web application that provides you exact location of target. This system enables us to track target in any weather conditions. This system uses GPS and GSM technologies. The paper includes the hardware part which comprises of GPS, GSM,

Atmega microcontroller MAX 232, 16x2 LCD and software part is used for interfacing all the required modules and a web application is also developed at the client side. Main objective is to design a system that can be easily installed and to provide platform for further enhancement (Pankaj Verma, ?). In today's fast moving life services based on location has very much importance in everyone's life. As the trend is of smartphones, mobiles, iPhones, and all the gadget emerging today it's very important for the mobile user to have the location based services. Location based service can be elaborate as the services which uses the users geographical location which consist of X and Y coordinates, which is generated by GPS which acts as positioning device. This paper called mobile tracking application for locating friends using LBS, which uses the GPS as location provider through geographic location for mobile network. Nowadays security of woman's is at the stake in our country this application includes anti-theft facility for the woman's or the user which is using the app so that his location information is send 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. Frontend application coding is done in J2ME and MYSQL database used to update the location information and track the location (Abhijeet Tekawade, ?).

### Location Based Services

In today's world there are various ways to connect to people there are various position finding applications and ways LBS is one of them. It being the most accurate one is used extensively everywhere.

### LBS has 2 methods

- GPS
- A-GPS

A-GPS uses DTN networks which doesn't require any specific infrastructure but also has a flaw, it has a difference of up to 9 meters from the actual location. In today's urban jungle 9 meters are a big difference, henceforth we go for the GPS which has the accuracy rate of 99% (Anthony Clarkson, ?).

### Working of the LBS

#### Implementation

The following will be implemented using android studio which will be used to build the application. SQL database will contain all the various information details and other related objects. Apache Tomcat Server will be serving the purpose of the application and the database connectivity. PHP scripting will be needed for the database connection. The following combined with the LBS algorithm will help serve the required purpose and at the end there will be the review average algorithm. This application will be fast and efficient because of the end to end transparency. Improved accuracy using LBS (GPS) will solve most of the problems. Battery consumption will be comparatively lower as the application uses mostly mobile resources.

### Conclusion

The location based technician services will solve a lot of problems of today and of the future too, making the life of the common people easier giving it a greater pace.

### Future application of GPS & LBS

3DPS 3 Dimensional Positioning System or IPS internal positioning system, this system is still in its initial phase as there are multiple ways to use it in real life but no effective way to apply it. This system can exactly triangulate the position of the device in an area, for example if a device is in a buildings third floor north wing then normal GPS will just show the location of device in the building. But the 3DPS or IPS will show the exact position of the device as in third floor north wing. This system has extensive use in military as it would be greatly helpful for locating their allies and enemies and in extensive future it may also be used to locate devices in an urban jungle.

### The following image show the difference between GPS and 3DPS or IPS

We can already see through the images that the 3DPS or IPS images are much more detailed compared to GPS.

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