

# APPLICATION FOR SEARCHING HANGOUT PLACES BASED ON MIDDLE POINT OF PARTICIPANT'S LOCATION (MEEDLE)

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Abstract - The lifestyle of the current year's people is very different with the lifestyle of the people eight years ago. Start from the booming of Facebook as social media. It changes the ways of communicating. Those can be said that is the turning point of the digital era, from then the people are educated to share everything online and from those sharing it creates the opportunity to gather information that also affecting the change of conventional business process. Just one simple application can change the lifestyle of million people. From then, many other mobile application has help the simple task in our life. This work that developed an application named, *Application for Searching Hangout Places Based on Middle Point of Participant's Location ( MEEDLE )*, will discuss the development of solving the simple problem of searching and deciding hangout place based on the data that internet shared. This application will give the user ease and effectiveness while using.

## 1. Introduction

This is the generation of millennials, the technology rapidly evolving. Start from the complex to simple problem could be solved using technology and the result is, many aspect in our lifestyles changed. This is the era where machine actually creates machine, although not initiated by itself but nowadays technology could be made by everyone. Knowledge is just one click away.

Today's society cannot be separated from their gadget and internet since both of them are easy-to-use and very mobile, that's why the development of mobile application is very hype right now. The development of mobile application is getting easy since now there is React Native, the native version of the popular JavaScript library. Using React Native is making the development cycles shorter because it has a lot of open source project for components available to use and there is management tool such as, Redux to create one shared data layer for both iOS and Android helps

developer to write applications that behave consistently, run in different environments (client, server, and native), and are easy to test.

So, this paper will describe the making of a mobile application that helps people to find a hangout place right by the middle point of their location or could be halfway, since if it is really in the middle then it could point us to hangout in random people's backyard and we wouldn't want that. This application also would help the user to see the hangout places in that area, decide, and how to get there using private or public transportation. This application will be named "Meedle".

## 2. Scope and Limitation

The work focused on mobile tracking that required a consistence coordinate of the GPS by developing these several features:

1. Displaying current location of transmitter (user device) in range of time,
2. Tracking the movement of user,
3. Scanning of nearby friends and places to hang out,
4. Invite friends to hang out,
5. Decide or vote place to hang out,
6. Show direction to the decided place

However, this application also has some limitation, such as:

1. Cannot turn user device's GPS on or off automatically, means that the users have to enable GPS on their phone or turn on the GPS to allow the device to be located.
2. Cannot monitor disabled phone, or turned off phone.
3. Both party (transmitter and receiver) have to enable their GPS first.

### 3. Method

This section explains the method used in the development of the application.

#### 3.1 Global Positioning System (GPS)

GPS satellites orbiting around the world two times a day and transmit signal information to earth. GPS receivers then take this data and use trilateration to calculate the user's exact location. Basically, the GPS receiver compares the time a signal was transmitted by a satellite with the time it was received. The time difference tells the GPS receiver how far away the satellite is. Presently, with distance estimations from a few more satellites, the receiver can determine the user's position and show it on the unit's electronic map. A GPS receiver must be locked on to the signal of at least 3 satellites to calculate a 2D position (latitude and longitude) and track movement [1]. With at least four satellites in view, the receiver can determine the user's 3D position (latitude, longitude, and altitude). Once the user's position has been determined, the GPS unit can calculate other data, such as speed, bearing, track, trip distance, distance to destination, sunrise and sunset time and more.

#### 3.2 Mobile Phone Tracking

Mobile phone tracking is the determining of the position or location of a mobile phone, whether stay on the point or even moving, according to Wikipedia. Localization can happen either by means of multi alteration (a route method in view of the estimation of the distinction in separation to two station at known area that communicate signals at known times) of radio signal between (a few) cell towers of the network and the phone, or simply via GPS. To locate mobile phone using multi alteration of radio signal, it must emit at least the roaming signal to contact the next nearby antenna tower, but the process does not require an active call. The Global System for Mobile Communication (GSM) is based on the phone's signal strength to nearby antenna masts.

#### 3.3 Midpoint calculation

The geographic midpoint is calculated by finding the center of gravity for the locations in the 'Your Places' list. The latitude and longitude for each location is converted into Cartesian (x, y, z) coordinates. The x, y, and z coordinates are then

multiplied by the weighting factor and added together. A line can be drawn from the center of the earth out to this new x, y, z coordinate, and the point where the line intersects the surface of the earth is the geographic midpoint. This surface point is converted into the latitude and longitude for the midpoint.

#### 3.4 Google Maps Platform

Google Maps is the developer platform where third parties can build from Google's location service and data. Now, Google Maps Platform is the new generation of Google Maps, it's includes the new upgraded version of its design and the advantage of new maps and location-based features and a billing account to access it. There are three core products of Google Maps Platform, there are Maps, Routes, and Places and each of them has access for certain API.

### 4. Experimental Result

To make sure the system has fulfilled the functions and requirements, it was tested in some certain scenerios. Table 1 shows some of the given scenerios

Table 1. Scenerios

No	Scenario	Evaluation
1	Login	User will be directed to Home screen if the user input valid username and password, display pop-up to alert if the username and password is invalid, and direct user to register account when user click 'Register' button.

2	Search user	User will found the contact if the username in the search bar is registered account and will be notified with 'User not found' if the username is unregistered account. If the user found is already befriended the button 'Add' will be disabled and the other way around.
3	Friend List	User can see the list of their friends and choose friends to invite them to meet up.
4	Responding Request	User can respond friend and meet up request with accept or reject.
5	Vote	User can vote places to hang out and see the result

The testing scenarios that has been shown that the system is a robust application and achieves the expectations.

### 5. Discussion

This section presents discussion about the effectiveness of Application for Searching Hangout Places Based on Middle Point of Participant's Location ( Meedle ), which are:

- User can find hangout places that have minimum distance between other participants
- It is a robust application for searching hangout location in term of its stability in running and fulfilling the functions.
- It can be used chatting between or among people who are remote before having gathering.

### 6. Conclusions

There are several conclusion that can be obtain from this work, listed as:

1. "Meedle" application helps user to be more efficient when planning a meet up.
2. User can find other user by searching their username and also add them as friend and invite them to roam new environments and hang out with other user that they already befriended with.
3. User can see the last location of their friends to keep tab on each other and invite them to hang out too.
4. "Meedle" application can pin point the middle location between user and friends then show the list of places to hangout around it.
5. User can send, receive, and respond toward invitation to meet up or friend request.
6. User can find hangout places that have minimum distance between other participants.

### References

- [1] T. I. Pedro Isaias, "High Level Models and Methodologies for Information Systems," in High Level Models and Methodologies for Information Systems, New York, Springer, 2014, p. 145.
- [2] J. B.-Y. Tsui, "Fundamentals of Global Positioning System Receivers: A Software Approach," in Fundamentals of Global Positioning System Receivers: A Software Approach, John Wiley & Sons, 2005, p. 352.
- [3] A. El-Rabbany, "Introduction to GPS: The Global Positioning System," in Introduction to GPS: The Global Positioning System, Artech House, 2002, p. 176.
- [4] F. S. T. V. Diggelen, "A-GPS: Assisted GPS, GNSS, and SBAS," in A-GPS: Assisted GPS, GNSS, and SBAS, Artech House, 2009, p. 380.
- [5] W. Shi, "Principles of Modeling Uncertainties in Spatial Data and Spatial Analyses," in Principles of Modeling Uncertainties in Spatial Data and Spatial Analyses, CRC Press, 2009, p. 432.
- [6] C. H. Elliott Kaplan, "Understanding GPS: Principles and Applications," in Understanding GPS: Principles and Applications, Artech House, 2005, p. 723.

- [7] B. Williams, "Latitude and Longitude," in Latitude and Longitude, Smart Apple Media, 2002, p. 32.