International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 07 Issue: 08 | Aug 2020 www.irjet.net p-ISSN: 2395-0072
National Conference on Recent Advancements in Communication, Electronics and Signal Processing-RACES'20
Organised by: Department of ECE, Velammal Engineering College, Chennai-66

KIDS' SMARTPHONE ACTIVITIES TRACKER: AN ANDROID APPLICATION FOR TRACKING AND MONITORING CHILDREN SMARTPHONES

Thenisha S[1]
Dept. of Computer Science and Enginnering
Meenakshi Sundararajan Engineering College
Chennai, India

Monika S[2]
Dept. of Computer Science and Engineering
Meenakshi Sundararajan Engineering College
Chennai, India

Sundari V[3]
Assistant Professor
Dept. of Computer Science and Engineering
Meenakshi Sundararajan Enginnering College
Chennai, India

ABSTRACT — Smart phones with unlimited applications are considered essential for contemporary day lifestyle, hence the amount of smart phone users has sky rocketed during this decade. The high percentage of youngsters and teenagers carrying cell phones has caused controversy on how justified having a minor carrying a communication device is. There is little question about the very fact that oldsters need to be ready to contact their children, however, a toddler with a phone and poor judgment will most likely be vulnerable to the outer world with all its' threats and abuses. And also they are privy to a lot of information from web that might or might not be age appropriate. It is becoming very difficult to track, monitor and limit the children's mobile usages and the content they view. Controlling, monitoring, and managing approaches are in got to help in overcoming a number of these worries.

The proposed alternatives included phones with an android application that allows parents to monitor their children smart phone activities. The proposed system "kids' tracker" includes an Android application on the parents' smart phone. Kids' tracker has shown a really decent performance with many unique features compared to other existing solutions.

Keywords— GPS Tracking, Telephony Services, Android Operating System, Smart Phones.

INTRODUCTION

The term Location-Based Service (LBS) may be a concept the term Location-Based Service (LBS) could also be an idea that denotes applications integrating geographic location (i.e., spatial coordinates) with the general notion of services. Samples of such applications include emergency services, car navigation system, tourist tour planning, or "maps" information delivery. This application is typically to be used by parents to trace down the child's location. Currently, there are about 1.5 million android devices are activated in a day and quite 50 billion apps are downloaded from Google play in monthly .This indicates the widespread acceptance and usage of mobile device like android devices among users. There are more and more mobile applications developed on Android OS. This is often actually because android is that the most environment that mixes the next features: a really open, free development platform supported Linux and open-source. In this paper, the proposed App named Kids' Tracker android application is additionally supported location-based service. The basic needs for this app are: First, Child's and Parent's mobile should be on and thus the App should be installed and Second, GPS should be enabled.

Nowadays, all smart phones are provided GPS technology which provides the spatial coordinates of the user location with the help of worldwide Positioning System (GPS); satellites data with support from cellular network and it works both indoor and outdoor, responds faster, and uses less battery power.

ARCHITECTURE OF MOBILE LBS

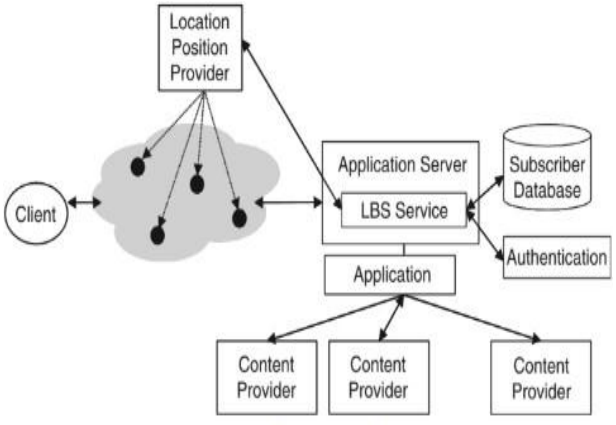

Figure 1

The client requests the appliance server to urge provisioned with the LBS via Location Provider. The appliance server lookup for the client within the subscriber database and identify its position. This is often done by invoking the GPS application which matches the request with the content. The content providers return the content (spatial coordinates) to the appliance then the appliance returns the content to the LBS service. The end-to-end architecture diagram of LBS is depicted within the above figure 1.

A. LOCATION & MAP

The most two important services of Android are Location and Map. This app uses android location package and the Google Maps Android API classes to build Location and maps-based app.

LOCATION TRACKING: The application have used android location package for tracking the child location which gives the applications access to the location services supported by the child's Android device through classes in the android location package.

Location Manager system service is the central component of the location framework which provides APIs to determine location of the object. The app can call getSystemService(Context LOCATION SERVICE) method through an instance from the system in the App which will returns a new LocationManager instance through which the location is obtained by accessing GPS_PROVIDER.

GOOGLE MAPS ANDROID API: To integrate Google Maps into the app, the Google Play services libraries are installed for the Android SDK which used the Google Play services APIs supported Google Maps which displays a map that contains data obtained from the Google Maps service.

The Google Maps Android APIs aren't included within the Android platform, but these features are available on any Android 2.2 or higher version device with the Google Play Store running through Google Play services.

B. BROWSER SERVICES

This application enables parents to view the browsing history, that is, the sites visited by the child. This feature enables parents to know what the child is about to and it helps the parents to guide the children if they get distracted. In this application, whatever the child searches gets directed to the Google browser. On the parents side, they can view what their child has googled and also the history of their searches.

C. CALL LOG

Parents can see the call log and messages received by their children through this application in their phone. This feature helps the parents to protect their children if they offensive messages and calls.

CallLog Content Provider: Android has a content provider for accessing the call log on the handset via the class android.providerCallLog. This can be used to filter recently dialed calls, received calls and missed calls. The CallLog is a useful content provider for customer relationship applications.

D. SMS NOTIFICATION

Parents can be notified with SMS about their child location or other details. This can be done by accessing SMS manager.

SMS Manager: Manages SMS operations such as sending data, text, etc.,. The android.telephony.SmsManager enables this application to manage SMS operation. This is provides the functionality of alerting the Parents via SMS.

E APP BLOCKING

This is actually an idea that would take this project to next level. According to this feature parents can block the applications in child's mobile phone from their mobile phone through this application. This enables the parents to control their children if they get distracted and spend much time on games or in social media applications.

F. ANDROID PERMISSIONS

There are some restrictions to execute command or some actions to be used by 3rd party apps. Well these restrictions are the permissions. All Android Application at the time of installation, it will asking some permission in order to access the application. Each application having a manifest file, and the application should request permission from the user to access sensitive data (such as SMS, call logs and contacts) or certain features (such as the internet access and camera). Based on the type of feature, the system might grant the permission automatically or might prompt the user to approve the request. The Android security architecture is designed in such a way that no app, by default, has permission to perform any operations that would adversely impact other apps, the operating system, or the user. All of the security features include reading or writing the user's confidential data (for example contacts or emails), reading or writing another app's files, performing network access, keeping the device awake, and so on.

PROPOSED SYSTEM

There are two main services our proposed system relies on: location and telephony services. Finally, like any other software product, there is still room for improvement. Features can be added to enhance the system such as Geo- fencing, emergency alerts and many others. The proposed system will be implemented, continued, reviewed and improved in a later work. The application is used to track the Child's location as well as call logs, messages and contact from their smart phone. Reason for choosing android operating system is that to target more users. The children browsing history will be shown to their parents. The parents can also block certain applications in child's mobile phone.

KIDS SMARTPHONE ACTIVITIES TRACKER

This work is designed for parents and children. Both of them must have a smart phone that supports GPS and SMS as a minimum. SMS is a basic service on any smart phones but GPS can be found only on new smart phones. This application is mostly to be used by parents to track down the child's location. Once the user enters, the user need to select whether they are parent or child. If the user is a parent, he/she needs to register his user name and password and provide his/her child's details such as the child's user name and password and also the child's mobile number. The parent has to provide his/her mail id and address. In this application, only parent can register. This feature enables the parent to know the child's password and also the parent only has the authority to his/her child's password.

Once registered, the application directs to the login page. Next the parent has to enter the user name and password and then click on login. After login in, they will be provided these options: Location Summary, Browsing History, Call Log, Block Application.

LOCATION SUMMARY – The parent can view the places the child has already visited and also can spot the current of their child on Google Map.

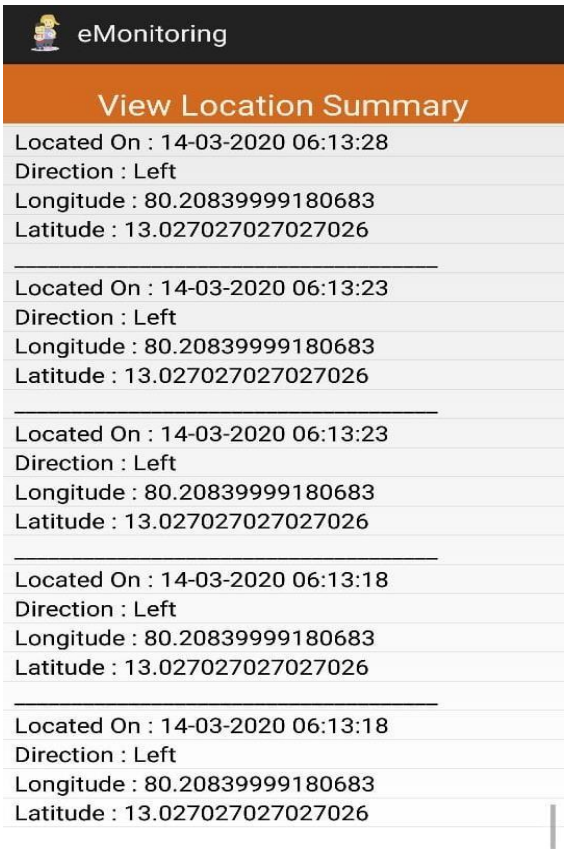

Figure 2: Child's location summary

LOCATIONMANAGER FOR ACCESSING LOCATION:

```
LocationManager service =
        (LocationManager)

.getSystemService(LOCATION_SERVICE);
Boolean enabled =
service.isProviderEnabled(
LocationManager.GPS_PROVIDER);
```

This checks whether the GPS is enabled in the child smartphone. If not it will direct the child to the settings to enable the GPS service. The recorded location data is stored within the tracking unit that is used to obtain summary of the location. The location summary of the child is depicted in Figure 2.

RETRIEVING LATITUDE AND LONGITUDE:

```
location =
locationManager.getLastKnownLocation(LocationManage
r
.NETWORK_PROVIDER);

Latitude = location.getLatitude();
longitude = location.getLongitude();
```

GOOGLE MAPS :
Instead of starting a location intent, an instance of a WebView is created and loaded the URL of the Google Maps mobile website. Parameters to the URL can be added, which provides more functionality than is available using the Java-based Google Maps API. Figure 3 demonstrates how WebView helps to display a mobile Google Maps URL with parameters in an Android app.

```
WebView webView = (WebView) findViewById(R.id.mywebview);

webView.getSettings().setJavaScriptEnabled(true);
    webView.loadUrl ("http://maps.googleapis.com/maps/api/staticmap? ll=36.97,%20-122&lci=bike&z=13&t=p&size=500x500&sensor=true");
```

CALL LOG: The parent can view the calls received by their child.

SMS NOTIFICATION: In this module, child information gathered to send a message to the parent.

BLOCK APLLICATION: On clicking this option, the parent can see the applications that are installed on their child's mobile. If the parent thinks, some social media applications or game applications make their child to get distracted more, they can block those applications on their child's mobile by using this option from their mobile itself. Once an application is clicked by the parent that application will be blocked in child's mobile phone, after that the child cannot enter into the application.

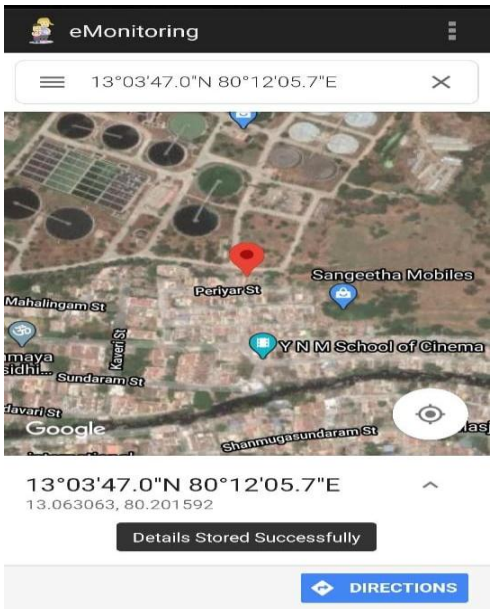

Figure 3: Location is displayed via Google Map

BROWSER HISTORY – The parent can view what their child has searched in the browser. For this feature Google browser has to be provided as the default browser in the child's mobile phone. This is because in this application whatever the child searches will be directed to the Google browser. Summary of browsing history is depicted in Figure4.

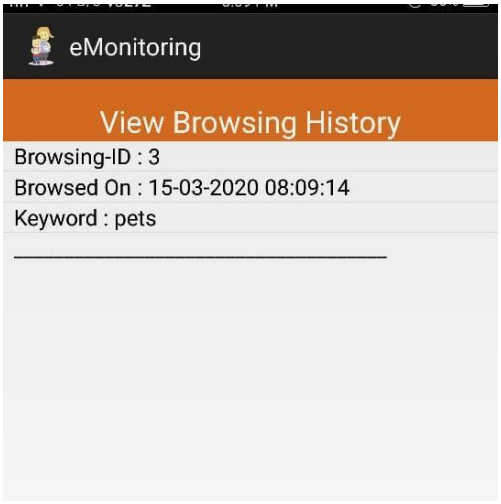

Figure 4: Browser history summary

CONCLUSION

This paper presents an overview of Location-Based Services, Mobile LBS, Content providers and Google maps API to integrate google map into the android application .The proposed system includes an android application that can track child location and possibly reduce the risks of child having a smartphone by allowing the parents to monitor their children smartphone activities. The arrangement proposed right now exploits the rich highlights offered in Androids keen telephones. The design of framework based on two fundamental part, GPS satellite, and GSM communication administrations. Building up this undertaking would not have been conceivable without contemplating related and existing works. A portion of these works depends on web network or a server that must be up running.

The proposed framework depends just on two primary administrations, communication and area, in this way dispensing with the requirement for web association or a devoted server. At long last, similar to any programming item or plan, there is still space for improvement. Highlights can be added to upgrade the framework for example, Geo-fencing, crisis cautions and numerous others. The proposed framework will be actually preceded, surveyed and also improved in a later work.

REFERENCES

[1] Ghaith Bader Al-Suwaidi, Mohamed Jamal Zemerly, "Locating friends and family using mobile phones with global positioning system (GPS)," IEEE/ACS International Conference on Computer Systems and Applications, 2009.

[2] Anderson, Ruth E., et al., "Building a transportation information system using only GPS and basic SMS infrastructure," 2009 International Conference on Information and Communication Technologies and Development (ICTD), IEEE, 2009

[3] Almomani, I.M., Alkhalil, N.Y., Ahmad, E.M., Jodeh, R.M., "Ubiquitous GPS vehicle tracking and management system," 2011 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT), pp.1-6, 6- 8 Dec. 2011.

[4] Akira Suyama and Ushio Inoue, "Using Geofencing for a Disaster Information System" Computer and Information Science (ICIS), 2016 IEEE/ACIS 15th International Conference, August 2016.

[5] Ghaith Bader Al-Suwaidi, Mohamed Jamal Zemerly, "Locating friends and family using mobile phones with global positioning system (GPS)," IEEE/ACS International Conference on Computer
Systems and Applications, 2009.

[6] Almomani, I.M., Alkhalil, N.Y., Ahmad, E.M., Jodeh, R.M., "Ubiquitous GPS vehicle tracking and management system," 2011 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT), pp.1-6, 6-8 Dec. 2011.

[7] Anderson, Ruth E., et al., "Building a transportation information system using only GPS and basic SMS infrastructure," 2009 International Conference on Information and Communication Technologies and Development (ICTD), IEEE, 2009.

[8] R. S. McGinnis, S. M. Cain, S. Tao, D. Whiteside, G. C. Goulet, E. C. Gardner, A. Bedi, and N. C. Perkins, "Accuracy of Femur Angles Estimated by IMUs DuringClinical Procedures Used to Diagnose Femoroacetabular Impingement," IEEE Trans. Biomed. Eng., vol. 62, no. 6, pp. 1503–1513, Jun. 2015.

[9] Z. Zheng, S. Das, E. M. Young, A. Swanson, Z. Warren, and N. Sarkar, "Autonomous robot-mediated imitation learning for children with autism," in Robotics and Automation (ICRA), 2014 IEEE International Conference on, 2014, pp. 2707-2712.

[10] E. T. Bekele, U. Lahiri, A. R. Swanson, J. A. Crittendon, Z. E. Warren, and N. Sarkar, "A step towards developing adaptive robot-mediated intervention architecture (ARIA) for children with autism," Neural Systems and Rehabilitation Engineering, IEEE Transactions on, vol. 21, pp. 289-299, 2013.

[11] D'Roza, T., and Bilchev, G. An overview of location-based services. Journal 21, (2003), 20-27.

[12] Schwinger, W., Grin, C., and Retschitzegger W., A light-weight framework for location-based services. Springer, (Berlin, 2005), pp. 206-210.

[13] Amit Kushwaha, Vineet Kushwaha, "Location Based Services using Android Mobile Operating System", IJAET, Vol. 1,Issue 1,pp.14-20, Mar. 2011.

[14] Prof. Seema Vanjire, Unmesh Kanchan, Ganesh Shitole, Pradnyesh Patil,"Location Based Services on Smart Phone through the Android Application", IJARCCE, Vol. 3, Issue 1, Jan. 2014.

[15] Marins, Diego R., Marcelo de O. D. Justo, Geraldo B. Xexeo, Bernardo de A. M. Chaves, and Cl'udio DIpolitto. "SmartRabbit: A Mobile Exergame Using Geolocation", 2011 Brazilian Symposium on Games and Digital Entertainment, 2011.

[16] Program Studi Pendidikan Anak Usia Dini Universitas Negeri Jakarta, Jurnal Pendidikan Anak Usia dini, Jakarta: Program Studi Pendidikan Anak Usia Dini Universitas Negeri Jakarta, 2013, p. 105.

[17] D. J. Wheatley, "Design and Evaluation of a Children's Tablet Video Application," Consumption: Evaluating User Experience, 2014.

[18] M. V. M. B. Z. Marije Nouwen, "A Value Sensitive Design Approach to Parental Software for Young Children," IDC 2015 Medford, 2015.

[19] Mendoza, K. Surveying Parental Mediation: Connections, Challenges and Questions for Media Literacy. Journal of Media Literacy Education 1, 2009, pp. 28–41.

[20] Nikken, P. and Jansz, J. Developing scales to measure parental mediation of young children's internet use. Learning, Media and Technology, 2013.

[21] Padilla-Walker, L.M., Coyne, S.M., Fraser, A.M., Dyer, W.J., and Yorgason, J.B. Parents and adolescents growing up in the digital age: Latent growth curve analysis of proactive media monitoring. Journal of Adolescence 35, 2012, pp. 1153–1165.

[22] Livingstone, S. Children & the Internet. Polity, Cambridge, 2009.

[23] Ofcom. Ofcom Report on Internet safety measures. Strategies of parental protection for children online. 2014.

[24] Knorr, C. New Parental Controls Nix the Fear, Up the Features. common sense media, 2014. https://www.commonsensemedia.org/blog/newparental- controls-nix-the-fear-up-the-features. [Accessed 16 October 2016].

[25]Y. Hashish, A. Bunt dan J. E. Young, "Involving Children in Content Control: A Collaborative and Education-Oriented Content Filtering Approach," 2014.

[26]J. M. W. S. M. Debbie Stone, User Interface Design and Evaluation, 2005.

[27]Timo Jokela, "The Standard of User Centered Design and The Standard Definition of Usability: Analyzing ISO 13407 Against ISO 9241-11".

[28]M. K. Donyae, "Towards an Integrated Model for Specifying and Measuring Quality in Use," March 2001. [14]J. N. Norman, "Why You Only Need to Test with 5 Users,". [Online]. Available: https://www.nngroup.com/articles/why-you-only-need-to- testwith-5-users/. [Accessed 15 October 2016].

[29]K. N. S. Nur Sukinah Aziz, "ASSESSING WEB SITE USABILITY MEASUREMENT," IJRET: International Journal of Research in Engineering and Technology, p. 388, 2013.