



## International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijircce.com](http://www.ijircce.com)

Vol. 6, Issue 3, March 2018

# A Survey: User Interaction System to Provide Location Based Services using iBeacon Technology

Prof. Jagtap V.V.<sup>1</sup>, Chothe Sujata<sup>2</sup>, Memane Bharati<sup>3</sup>, Shinde Akshay<sup>4</sup>

Professor, Department of Computer Engineering, G.H.RAISONI Engineering College, Chas, Ahmednagar, India<sup>1</sup>

U.G. Student, Department of Computer Engineering, G.H.RAISONI Engineering College, Chas, Ahmednagar, India<sup>2</sup>

U.G. Student, Department of Computer Engineering, G.H.RAISONI Engineering College, Chas, Ahmednagar, India<sup>3</sup>

U.G. Student, Department of Computer Engineering, G.H.RAISONI Engineering College, Chas, Ahmednagar, India<sup>4</sup>

**ABSTRACT:** iBeacon is technology which can be used for scanning the Bluetooth devices for sending push notifications to the portable devices which are in nearby Bluetooth range. It can be used in Android based smart devices which can interact using the android application installed in it. Raspberry Pi can be used for broadcasting i.e., it can work as intermediary between the server and the Wi-Fi. The system can do number of functions likewise nearby field-positioning, route guiding, rating, feedback & interaction with surrounding physical environment. As there is use of concept of iBeacon technology only and not the iBeacon device, which results in low cost.

**KEYWORDS:** iBeacon, Raspberry pi, User Interaction system

### I. INTRODUCTION

In recent years apple introduced the new technology which is called iBeacon technology which is basically worked on Bluetooth Low Energy(BLE) or bluetooth 4.0. ios used the iBeacon technology for sending push notifications to portable devices. This system we develop for mall. previously iBeacon is worked on Bluetooth Low Energy(BLE) which is not much secured and it is multicasting system. the iBeacon technology we use in our project is based on Wi-Fi. through the iBeacon technology we can send push notifications to the devices which are portable in nearby location. this system can work on android device which can interface with android application installed in it. raspberry pi can be used for intermediary between the server and Wi-Fi for broadcasting the messages. The system can do number of functions likewise push notification, nearby field-positioning, route guiding, rating, feedback & interaction with surrounding physical environment.

### II. RELATED WORK

In [1] author used iBeacon is an In-door positioning system works on Bluetooth Low Energy(BLE) technology system pushed notifications automatically to the user when smart devices with iBeacon apps come to certain areas. It provides related information about customers location through the push notifications.[4] This technology used in museum scenario. For learning musical history on museum hall used this technology. Through the iBeacon in museum hall visitors can interact and their potential history learners. iBeacon is used to find the visitors interest or potential interest according to visitors behaviors. And to find the better way to learn more history knowledge behind collections and their interest about local history.



# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijircce.com](http://www.ijircce.com)

Vol. 6, Issue 3, March 2018

## III. LITERATURE REVIEW

In 2013, Apple introduced new technology named iBeacon. Apple used the iBeacon for receiving the push notifications from nearby areas. Basically they designed system only for the Apple smart devices based on IOS7. They used this technology because it works with Bluetooth low energy( BLE). It is also known to be as Bluetooth 4.0 or intelligent Bluetooth.

Based on the research it is seen that, more than 70% users spend their time indoors. For the purpose of easy and efficient smart work iBeacon is the good example. It is working with system for around 20ms from itself. It became easy for the indoor positioning of user with device due to the use of iBeacon.

The proposed is made in 2015 for route guidance. As system can get push notifications from the iBeacon devices, user need to response to particular notifications. For guiding the route towards the notifications got, system used the iBeacon device. Hence system is considered to be used for the route guidance.

## IV. PROPOSED SYSTEM

### 1. Software Requirements :-

The basic software requirements for the initialization are as follows:

- (a) Windows / Linux OS
- (b) Java and Python
- (c) HTML5 and CSS3

### 2. Input Process :-

- (a) Acquiring the data from the all shopkeeper's which wants to set as today's offers for uploading it to server.
- (b) Today's uploaded offers are valid only for current day , next day offers needs to upload to server again. Daily updation is required.
- (c) For the route guidance user have to enter the location or choose the location at which shop he wants go.

### 3. Processing :-

- (a) After the uploading all offers to server ,server broadcasting the today's all offers through the Wi-Fi network for Android user.
- (b) From all offers , which offer are available for today user will select any offers based upon the discount or brand or rating from it.
- (c) The selected offers shop is where in the mall is not known to user means exact location of that shop is provided with the help of Route Guidance to user.
- (d) After purchasing the product user have to give the rating to that product , and depending upon the rating of user to that product client can give same offer again for next day

### 4. Output Process:-

- (a) Analysis of the user rating for product is very important but not compulsory for next days offer.
- (b) With the route guidance ,this will provide the exact location for the user.

### 5. Testing:-

- (a) The whole system is tested using the various software testing tools and techniques.
- (b) Each and every module testing is done to create the reliable and real time system with user friendliness.

## V. OPERATION OF THE SYSTEM

Proposed system work in three phases. Three phases/modules are as follows :

1. Client-Server
2. Admin
3. User

# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijircce.com](http://www.ijircce.com)

Vol. 6, Issue 3, March 2018

1. Client- Server :-

Raspberry-PI plays the important role for client-server communication in the system. It will communicate with the dedicated server. Main reason behind using the Raspberry-PI is that it as Wi-Fi network.

2. Admin :-

Admin is the admin panel in the form of webpage for monitoring the users. Notifications are pushed to android application and it maintain the users data or offer which are selected by user. Admin only can have the priority to make changes in the data uploaded to the server as per need.

3. User :-

User can communicate with server by using the Android application in the form of request and response. User can give the rating to the product which are buy by him.

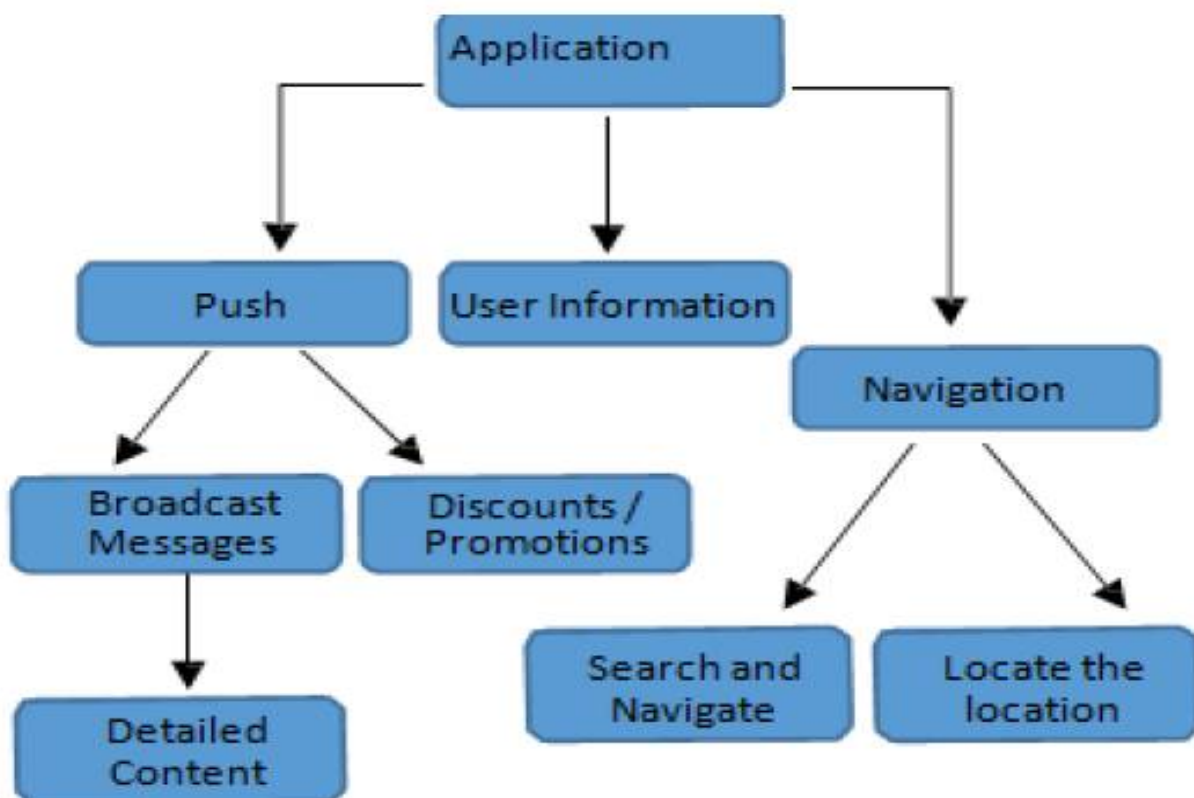


Fig1. System Architecture



# International Journal of Innovative Research in Computer and Communication Engineering

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Website: [www.ijircce.com](http://www.ijircce.com)

Vol. 6, Issue 3, March 2018

## VI. SUMMARY AND CONCLUSION

When user entering into the mall then with the help of Wi-Fi provided by Raspberry-pi processor user receive the notifications in the form of offer on his android system. After that user select the offer which one he want to buy. Now depending upon the selected offer apart from all offer which user want to buy server will provide the route guidance of that offer's shop is where exactly in the mall. The route guidance is the main and important factor for provide exact location to user. The location provided to user in the form of route guidance is with the help of Bluetooth Low Energy (BLE) . For pushing notifications to the user first the shop owners need to upload/ update the offers daily on the server with the administration permission. After user buying the offer he needs to give feedback to that product. And depending upon the user's feedback the shop owner of that product can analyses to continue the offer for next day. In the previous iBeacon technology they use the iBeacon device for performing operations. In our new system we develop that system and with this it reduces the cost of iBeacon device also.

## VII. CONCLUSION

Hence we conclude that the User Interaction System using Bluetooth Low Energy ( BLE) using the iBeacon technology for tracking the Bluetooth devices. Server can send the notification on user's android application with route guidance.

## REFERENCES

1. Akihiro Fujihara and Takuma Yanagizawa "Proposing an extended iBeacon system for indoor route guidance" International Conference on Intelligent Networking and Collaborative Systems 3-6-1 Gakuen Fukui 910- 8505,2015.
2. X. Lin, J. G. Andrews, A. Gosh, and R. Ratasuk, "An Overview of 3GPP Device-to-Device Proximity Services," IEEE Communications Magazine, Vol. 52, Issue 4, pp.40-48, 2014.
3. A. Vasilakos, Y. Zhang, and T. V. Spyropoulos, Delay Tolerant Networks: Protocols and Applications, Wireless Networks and Mobile Communications Series, CRC Press, 2012.
4. Zhiqiang HE, Binyue CUI, Wei ZHOU, Shigeki YOKOI "A proposal of interaction system between visitor and collection in museum hall by iBeacon "The 10th International Conference on Computer Science & Education, July 22-24, 2015.
5. Dmitry Namiot, "On Indoor Positioning", International Journal of Open Information Technologies, vol. 3, no. 3, 2015.
6. P. Burzacca, M. Mircoli, S. Mitolo, A. Polzonetti, "iBeacon" technology that will make possible Internet of Things" 2014.
7. "Inside IOS 7: iBeacons enhance apps' location awareness via Bluetooth LE". Forums.appleinsider.com. 2013-06-18. Retrieved 2013-12-11.
8. Hadis Kakanejadi Fard, Yuanzhu Chen, and Kyung Kook Son "Indoor Positioning of Mobile Devices with Agile iBeacon Deployment" May 3-6, 2015.
9. J. Kwon, B. Dunder, and P. Varaiya, "Hybrid algorithm for indoor positioning using wireless lan," in Vehicular Technology Conference, 2004. VTC2004-Fall. 2004 IEEE 60th, vol. 7, Sept 2004, pp. 4625- 4629 Vol. 7.
10. Y. Luo, O. Hoerber, and Y. Chen, "Enhancing Wi-Fi fingerprinting for indoor positioning using human-centric collaborative feedback," Human-Centric Computing and Information Sciences, vol. 3, no. 2, March 2013.
11. P. Prasithsangaree, P. Krishnamurthy, and P. Chrysanthis, "On indoor position location with wireless lans," in Personal, Indoor and Mobile Radio Communications, 2002. The 13th IEEE International Symposium on, vol. 2, Sept 2002, pp. 720-724 vol.2.
12. S.-H. Fang, T.-N. Lin, and P. Lin, "Location fingerprinting in a decorrelated space," Knowledge and Data Engineering, IEEE Transactions on, vol. 20, no. 5, pp. 685-691, May 2008.
13. Y. Luo, O. Hoerber, and Y. Chen, "Enhancing Wi-Fi fingerprinting for indoor positioning using human-centric collaborative feedback," Human-Centric Computing and Information Sciences, vol. 3, no. 2, March 2013.