Li-Fi Based Interactive Intelligent Shopping System With Auto Payment Using Android

Mr. Pinagadi.Venkateswara Rao[1], Vishnu Menon.M[2], Suresh.S[3], Vignesh.K[4], Stridharan.G.M[5]

[1]Assistant Professor, Department of B.tech .Information technology Engineering, panimalar engineering college, Tamilnadu, India.

[2,3,4,5] Students, Department of B.tech .Information technology Engineering, panimalar engineering college, Tamilnadu, India.

--***---

Abstract - *In this paper we describe is at the time of shopping, it is hard to manage the selection of product and the budget of overall purchasing. Time management and waiting in the queue is another problem. In this paper, displaying all the offers of the day and for comparing the chosen products with the similar products in term of price per unit is achieved. Our implementation. Android Application is deployed on the Consumer Phone which is attached with Li-Fi Hardware via OTG. Every Product is attached with Li-Fi. User will have to show the product in front of the Mobile so that corresponding Product info is automatically updated. This includes Product ID & Cost. Li-Fi Module is also connected with Trolley. Android user can pay the bill via mobile phone and the details are updated to the shop server. Shop server communicates to the Gate hardware, where another Li-Fi is connected. Trolley communicates with the Gate section so that the products are packed safely without standing in the queue. Normal mobile users can place the order via cash is paid on COD mode.*

Key Words: **Li-Fi, OTG cable, Android application, Shop server, COD.**

1.INTRODUCTION

At the time of shopping, it is hard to manage the selection of product and the budget of overall purchasing. Time management and waiting in the queue is another problem In the proposed system, displaying all the offers of the day and for comparing the chosen products with the similar products in term of price per unit is achieved. The modification part is our implementation. Android Application is deployed on the Consumer Phone which is attached with LiFi Hardware via OTG. Every Product is attached with LiFi. User will have to show the product in front of the Mobile so that corresponding Product info is automatically updated. This includes Product ID & Cost LiFi Module is also connected with Trolley. Android user can pay the bill via mobile phone and the details are updated to the shop server. Shop server communicates to the Gate hardware, where another LiFi is connected. Trolley communicates with the Gate section so that the products are packed safely without standing in the queue. Normal mobile users can place the order via cash is paid on COD mode. User's previous purchase & offers are analyzed. We also implement easy interface for Visually handicapped people for effective billing for customer. QUEUING is a pervasive phenomenon occurring in public areas such as supermarkets, restaurants, banks, transportation terminals, and amusement parks. People spend a substantial amount of time waiting in lines, and long waiting time brings about awful user experience. Before determining whether to take a line or not, people usually want to know more about the waiting lines, e.g., the number of people ahead or waiting time. Providing such queuing information helps customers better spend time doing something alternative rather than blindly waiting in line, thereby mitigating their anxiety and improving user experience. In addition, managing queues is important for business since it can help reduce inefficient resource allocation and revenue loss. Therefore, there is a need for a better understanding of emerging trends of the queues in order to not only improve user experience but also benefit business. Nowadays, mobile phones present an attractive platform for people-centric applications as they integrate a variety of sensors that may make similar observations as human. Most smart phones have built-in sensors that measure motion, orientation, location and various environmental conditions. These sensors are capable of providing raw data with high precision and accuracy for sensing and inferring queuing behavior recognition. Besides, we observe that people often carry their phones when they are not home and people are willing to obtain queue information if it does not affect the typical usage of their smart phones. This motivates us to use commodity mobile phones to detect queuing and obtain queuing information as a people-centric sensing application. While the idea of using smart phones for queuing detection seems simple, many challenges arise in practice. Queuing features are computed based on queuing characteristics in term of individual activities and support vector machine (SVM) is used to automatically detect whether people are queuing or not on mobile phones. The cloud backend processes multi-lines scenarios and provide estimation of queue length and waiting time. Agglomerative hierarchical clustering is implemented on the server to divide queers into different lines based on changing rate of relative positions of queers.

2. MODULE DESCRIPTION:

2.1. Android application:

In this module we will create an application to product name, product price connected with LIFI with shop server

Mobile Client is an Android application which created and installed in the User's Android Mobile Phone. Once the created the user is allowed to enter the data. Also the server will store the data and allow the purchase to enter in to the application.

2.2. Data User:

In this module, Server is used to verify the product information and allow the User to purchase. Product information will be stored in shop server. Also the Server will analyze the contents user. So that server will extract the identify. Also the Server will be retrieving the user information like Access time and location which is used to find the User's product and we can provide the any necessary help to them. The Server Module will maintain all the User's access information and respond to the Clients request. Since the communication between the User and the Server is frequent, we have to establish the communication between them. For this purpose we can provide Network connectivity between them. The Server will extract the User information based on the query they've entered in the search bar.

2.3. Embedded Hardware Construction:

Li-Fi is a bidirectional, high speed and fully networked wireless communication technology similar to Wi-Fi is a subset of optical wireless communications (OWC) and can be a complement to RF communication (Wi-Fi or Cellular network), or a replacement in contexts of data broadcasting. It is wireless and uses visible light communication or infrared and near ultraviolet (instead of radio frequency waves) spectrum, part of Optical wireless communications technology, which carries much more information, and has been proposed as a solution to the RF-bandwidth limitations. A complete solution includes an industry led standardization process.

2.4. Android Product Purchase:

In this module whatever the products purchased by the customer is added in to cart then automatically the android phone detects the product id and price its shown to customer. Once Customer purchase the product , that product id matched to the Li-Fi. Cart also connected with LIFI connection. The final amount is shown to customer in android product purchase application. Next ready to pay the bill using mobile banking or net banking by using android mobile application. System based product purchase is also available.

2.5. Bank server:

In this module, after purchasing the products, user can pay the bill in android mobile itself. once user purchased all items finally debit the amount from customer account. In this information automatically send to shop server.

2.6. Product Delivery:

In this module the Server will verify the products provided by the customer and verify them with the shop server and then allowed to the customer will leave . If the customer arrived the gate section LIFI matching with the products, in case customer didn't pay the amount like that some issue, discard the products. Gate section also using LIFI connection. While customer leaving from the shop automatic product detection established.

3. PROPOSED SYSTEM:

The hardware authenticates the firmware by verifying the checksum during the power-up. On the other hand, firmware verifies the identity of the hardware and cannot produce correct results unless it receives a unique hardware ID, which we call as system ID

We develop Mobile based offline payment system. we design Li-Fi device with OTG support with user's Mobile. User has to pair the Li-Fi device with the OTG in Mobile. After pairing, the mobile application pops up. user has to enter the details like user name and the password. Then the host IP address of the server which is provided in the store. the user has to purchase the products

Each product will be assigned with a Li-Fi device were with the other Li-Fi device connected with the mobile has to be scanned with the product Li-Fi. The details gets stored in the mobile application. Once you have finished your purchase you can move on to the payment gateway.

Once you need to pay for the purchased products you can press the purchase option which will be present in top of the mobile application. Then the payment gateway will opened where you will be asked about the payment details. Once you finished filling the payment details the payment gets successful and you get a pop up message payment is successful.

Then you can directly leave store through the exit door. Where in the exit door a Li-Fi device is connected which scans the other Li-Fi present in the mobile through OTG cable. The Li-Fi in the exit has the purchase details you had made. Such that it verifies. If the details matches the exit door opens and you can leave else a alarm sound arises and you can clear it with the help desk provided near the exit gateway.

4. SOFTWARE AND HARDWARE REQUIREMENTS

System	: Pentium IV 2.4 GHz.
Hard Disk	: 40 GB.
Monitor	: 15 VGA Color.
Mouse	: Logitech.

Ram	: 1 GB.
Operating system	: Windows XP/7/8.
Coding Language	: Embedded C
Database	: MYSQL

Embedded Fabrication Kit
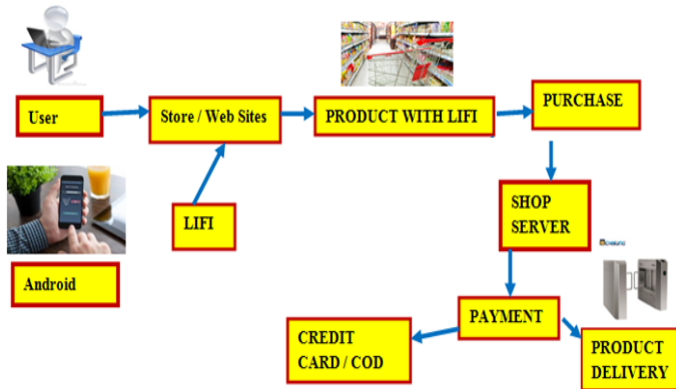
OTG Data Cable

5. ARCHITECTURE:

Fig -1: The architecture of Li-Fi Based Interactive Intelligent Shopping System with Auto Payment Using Android

6. CONCLUSIONS

In this paper we conclude that the time we use in the queue gets reduced by using the Li-Fi devices. Where the payment is done by using the exisisting online payment system. We propose a system which experience the user a smart way of shopping system which will make an interactive surface for the users to deal with. This will make the automation high by reducing the man power in the shopping system.

ACKNOWLEDGEMENT

REFERENCES

[1] N. D. Lane, E. Miluzzo, H. Lu, D. Peebles, T. Choudhury, and A. T. Campbell, "A survey of mobile phone sensing," Commun. Mag., vol. 48, no. 9, pp. 140–150, Sep. 2010.

[2] K. K. Rachuri and M. E. Musolesi, "Emotionsense: A mobile phones based adaptive platform for experimental social psychology research," in Proc. 12th ACM Int. Conf. Ubiquitous Comput., 2010, pp. 281–290.

[3] E. C. E. Larson, "Accurate and privacy preserving cough sensing using a low-cost microphone," in Proc. 13th Int. Conf. Ubiquitous Comput., 2011, pp. 375–384.

[4] Y. Jiang and K. E. Li, "Maqs: A mobile sensing system for indoor air quality," in Proc. Int. Conf. Ubiquitous Comput., 2011, pp. 493–494.

[5] J. Lester, T. Choudhury, and G. Borriello, "A practical approach to recognizing physical activities," in Pervasive Computing. Berlin, Germany: Springer, 2006, vol. 3968, pp. 1–16.

[6] K. Lewin and D. Cartwright, Field Theory in Social Science: Selected Theoretical Papers. London: U.K.: Tavistock, 1952.

[7] C. M. Bishop and N. M. Nasrabadi, Pattern Recognition and Machine Learning. New York, NY, USA: Springer, 2006, vol. 1.

[8] R. Bennett, "Queues, customer characteristics and policies for managing waiting-lines in supermarkets," Int. J. Retail Distrib. Manage., vol. 26, no. 2, pp. 78–87, 1998.

[9] I. Constandache and X. Bao, "Did you see bob?: Human localization using mobile phones," in Proc. 16th Annu. Int. Conf. Mobile Comput. Netw., 2010, pp. 149–160.