

SMART SHOPPING APPLICATION USING ANDROID STUDIO AND UNITY

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Abstract

In past few decades, an incremental growth in queues has been witnessed all around the world in shopping marts at the time of checkout. There has been an incremental research in order to bring down the average human time spent while checking out using various Machine learning and Artificial Intelligence techniques. This paper elaborates the use of barcode scanning through a mobile application and the use of indoor navigation so as to quickly locate products and also a potential data analysis scheme for shop owners so as to analyse their customers buying trends. The methods employed involves scanning the barcode of a product through app and adding product in your cart and paying through a designated payment gateway. In this paper, we propose a mobile application for scanning barcodes present on products. By using mobile camera and integrating it with a mobile application and using it as a barcode scanner, we are able to detect the product details thereby giving an option to user to add the product in cart and head to payment gateway.

Keywords— Navigation, Barcode, Augmented Reality.

I. INTRODUCTION

A modern approach towards shopping using new technologies and trends along with getting benefitted with the use of analytics of data through various modern approaches. In order to make

the shopping experience hassle free and more convenient, this paper proposes a mobile application which helps user to directly add product in his/her cart by scanning and then paying for it and easing out the check-out process. The application determines the process of self-checking out of supermarts and using augmented reality for indoor navigation and proposes analysis techniques of data for finding out customer buying patterns and linking it for future references.

II. RELATED WORK

In recent years many trials have been done in order to decrease the average time spent during checkout to ease out the process and make it hassle free across the world. The common thing in these researches was that they were majorly concerned with the in-house shopping experience. In contrast our paper is focused on making the checkout process which usually consumes less time, more efficient, reliable and secured to protect from theft.

1. Lista Application

This application is designed for iOS and Android users, with the help of Lista application. We can use the camera of phone for purpose of scanning barcode labels of product. This gives us details like volume and product name. Only the product details can be obtained.

2. Pricena Application

We can have this as a website as well as application which can run on iOS and Android OS. In this we can either scan barcode, else write product name and it will show us the list of websites that have the product along with its cost price. We can save item details of items and can also redirect to the site. In this we cannot create our shop basket. It is not for any specific website as such. It can calculate grand total and the tax.

3. Icheck

It is designed for Android OS. Similar to other studies this too uses the camera. We can get product name, price and other information. It can be used to calculate total cost while we are shopping. This approach does not fulfil all the desired features. It just shows the price. It cannot be used to create shopping basket.

III. PROBLEM DOMAIN

While shopping a major time can get wasted while standing in queues and checking-out of the supermarkets. Also, mostly it becomes hard to locate certain products you desire at a supermarts because of its huge spaces, which sometimes leads to more confusion and the feeling of getting lost in supermarts and thus resulting in wasting time; also, the customer gets lost while shopping and is not able to keep a check over his spending by just putting items in his/her cart thus spending more than his set monthly expenditure of groceries/products. Also, sometime malicious activities are observed in supermarts people hiding products and getting out without getting caught, which leads to loss for the shopkeeper and can't keep track on it; also keeping track over the stock availability and checking shelves manually for products is time consuming, costly as man force has to be deployed and chances of human error increases. For owners mostly it becomes hard to evaluate their business models as a perfect system is not yet built to provide with reports and customer

buying patterns. We are using a barcode scanner to scan product barcodes with the help of mobile camera and generating product identity adding it to cart and buying it with online payment methods. The indoor navigation will be provided so as to locate objects.

IV. PROPOSED METHODOLOGY

We can register and then login with your registered id and password. After successful login you will be shown list of supermarkets partnered with us, after selecting desired one you can finally navigate through the store using our built-in app indoor navigation to locate shelves where your product will be situated as to ease out the time required in finding products. After successfully finding your product, you can scan the product barcode through the barcode scanner present in the app which will show you the details of the product in the app (price, brand, quantity). Thus, after scanning you can add the product in your cart and pay through a secured payment gateway. After the completion of your payment a QR code will be generated containing the information of your transaction which would then be asked by the security to check your items during checkout so as to minimize chances of theft. This project will help us to save our time and have a smart shopping experience and analysis of our expenses. It will curb the time and energy of standing in long queues. Also, it will help the shop owners to analyse the profits and losses faced. After studying various IEEE Papers, we have learnt different techniques to ETL data from different database servers for data analysis. There are different methods for data analysis, one of them are discussed in one of the IEEE Paper and that is “Data Factory” method. Data Factory method tells us about how data analysis can be done using the idea of different methods used in factory for the production of any product. There are different databases used for storing structured as well as unstructured data such as MySQL and Firebase respectively. After ETL process is done, we can connect our database to either Google Analytics or Tableau. These analytics tools help us to get insights of In-App behaviour analytics or attribution analytics. Our project will help our customers to set his/her monthly budget. Our team will help the customers to provide insights about his/her daily or monthly spent amount on different products. This project will not only help customers(buyers) but also the owner of the small shop or big supermarkets to predict and decide their future business model or ideas. Thus, this will help and give shop owners opportunity to expand their different kinds of businesses.

VI. SOFTWARE AND HARDWARE REQUIREMENTS

Hardware – Android Smart Phone (version above 7), Laptop.

Software – Android Studio, Unity, Arway Toolkit, Firebase.

VII. RESULTS

The user must register and verify on the application before accessing it. After entering the shopping market, the user opens the ShopEasy application. The user can get a view of the entire mart and be able to navigate through

the option of in-store navigation. When user finds the product, he/she wishes to purchase, the product must be scanned and the product will get added. After completion the total sum can be paid directly through transaction option.

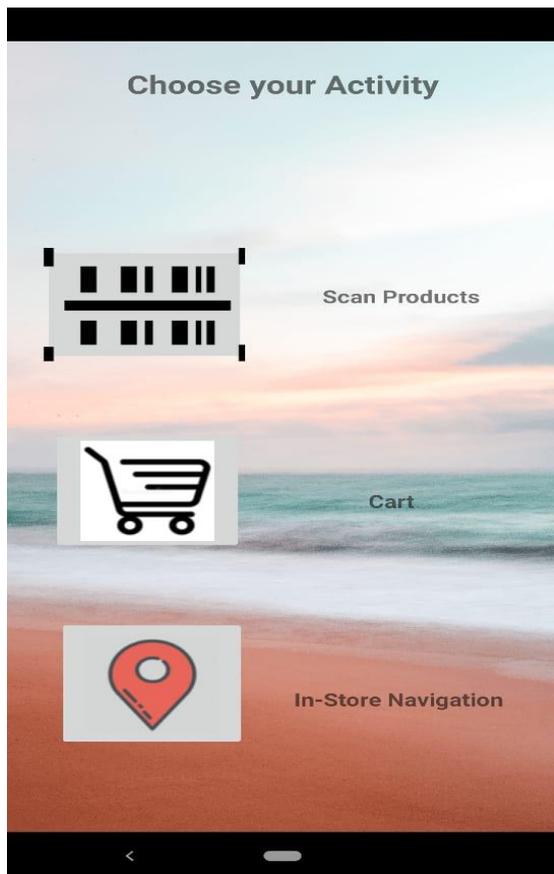


Fig.1: Application screen

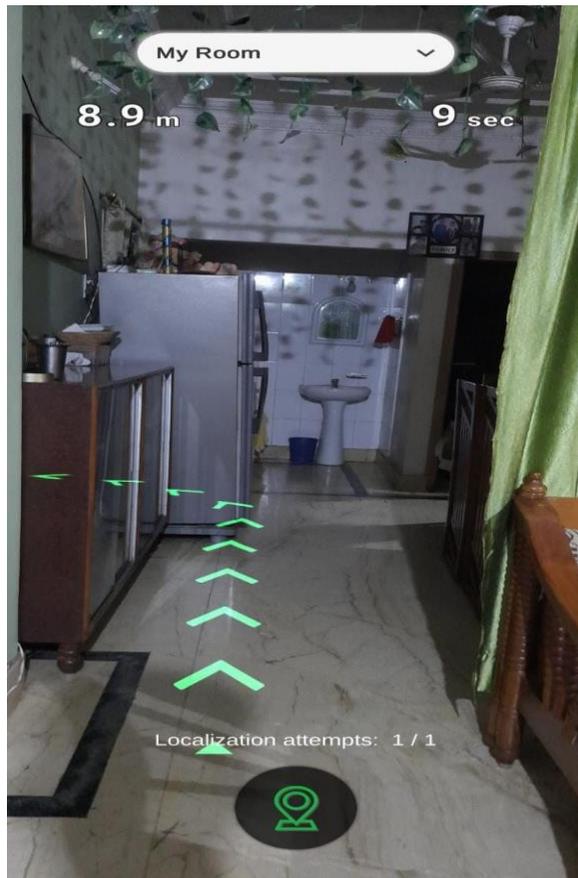


Fig.2:AR Screen

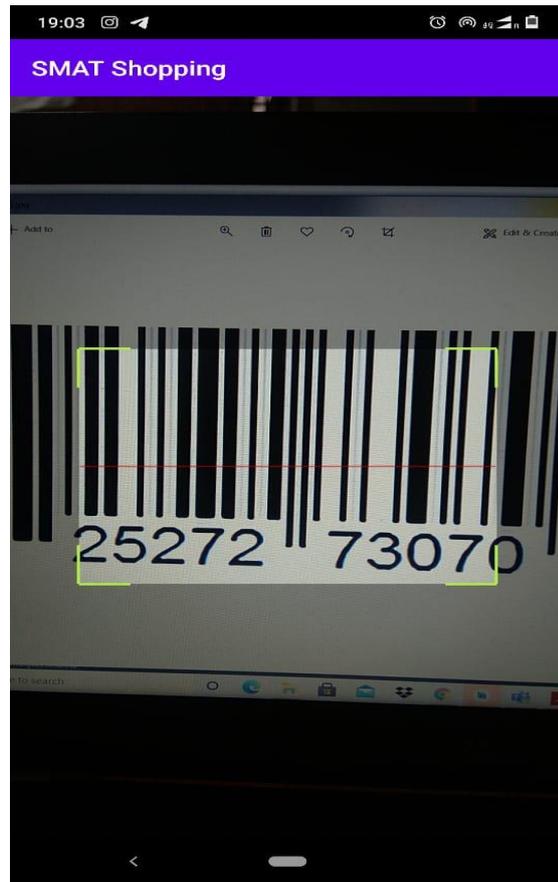


Fig.3: Barcode Scanner

VIII. CONCLUSION

In this paper, we have proposed shopping application which runs on a user's smartphone. The application facilitates us to do shopping by scanning bar code of product, adding it to cart and paying online through payment gateway. The sample products added here include jeans, coat, socks, glairs and other items. The scope is limited to actual shopping experience done physically. Thus, the project helps in delivering a smooth shopping experience along with some useful functionalities.

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REFERENCES

- [1] Pricena, "Pricena- Price comparison,"
<https://itunes.apple.com/sa/app/pricena-price-comparison/id804021137?mt=82018>.
- [2] "Lista Application,"
<https://itunes.apple.com/us/app/lista-%D9%84%D8%B3%D8%AA%D9%87/id1118567832?mt=8,2016>
- [3] Rawabi M. AlWadani; Asma S. AlOtaibi, iCheck: An Android Application for Enhancing In-Store Shopping Experience Using Modern Techniques, 2019 2nd International Conference on Computer Applications & Information Security (ICCAIS)
- [4] Muhammad Atif Sarwar, Yousef-Awwad Daraghmi, Kuan-Wen Liu, Hong-Chuan Chi, Tsì -Uí Ìk, Yih-Lang Li, Smart Shopping Carts Based on Mobile Computing and Deep Learning Cloud Services, 2020 IEEE Wireless Communications and Networking Conference (WCNC)
- [5] Jose Antonio López-Pastor, Antonio J. Ruiz-Ruiz, Alejandro Santos Martínez-Sala, José Luis Gómez-Tornero, Evaluation of an indoor positioning system for added-value services in a mall, 2019 International Conference on Indoor Positioning and Indoor Navigation (IPIN)
- [6] Yaojun Wang, Yangyang Li, Jingyan Sui, Yang Gao, Data Factory: An Efficient Data Analysis Solution in the Era of Big Data, 2020 5th IEEE International Conference on Big Data Analytics (ICBDA)
- [7] Medina Diani Nastiti, Maman Abdurrohman, Aji Gautama Putrada, Smart Shopping Prediction on Smart Shopping with Linear Regression Method, 2019 7th International Conference on Information and Communication Technology (ICoICT)
- [8] Sudipta Ranjan Subudhi, Ponnalagu R. N, An Intelligent Shopping Cart with Automatic Product Detection and Secure Payment System, 2019 IEEE 16th India Council International Conference (INDICON)
- [9] Tailing Yuan, Yili Wang, Kung Xu, Two Layer Qr code, IEEE Transactions on Image Processing (Volume: 28, Issue: 9, Sept. 2019)

[10] Mobeen Shahroz; Muhammad Faheem Mushtaq; Maqsood Ahmad; Saleem Ullah; Arif Mehmood; Gyu Sang Choi, IoT-Based Smart Shopping Cart Using Radio Frequency Identification, IEEE Access (Volume: 8)