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

Is an application which runs on iOS and Android operating systems, by using Lista application we can use the phone camera to scan barcode labels on a product, and then it gives the product name and volume only. After that, we can group the scanned barcode in a list. This application only provides the product name and volume which are recognized by the product manufacturer not related to any store.

2. Pricena Application

It comes in the form of website and application that runs on iOS and Android operating systems. In Pricena, the app user scans the product barcode or writes it manually or writes the product name, and then it shows all the websites that have this product and its price there. It allows you to save the product, share it and also directs you to store sites. This application is not related to any specific website, only for online stores, and also does not allows you to create your shopping basket and provides you the total cost, items and the tax.

3. Icheck

It is an application which runs on android operating system, by using the phone camera to capture the products barcode label and also price labels and then it gives the products name, information and price. After that it calculates the total cost of customers purchases while they are shopping in any store and in any gallery by capturing the written prices labels.

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

The first step in our project is to register yourself with your desired option that is email/mobile number then a unique one-time password would be sent to your registered phone number or email for the authentication process accordingly. Then you can 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. According to the different big data business and data analysis tasks, the data factory software system can build a specific “data factory” for data analysis, build the necessary “data workshop” to realize data processing, and build the required “production process”. "Implementation of algorithm integration. The raw material for the production of the data factory system is data, and the product is the data analysis report. The data factory defined in this paper consists of data workshop, data warehouse and production process. 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 to the cart. After completion of the shopping the total sum can be paid directly through transaction option.

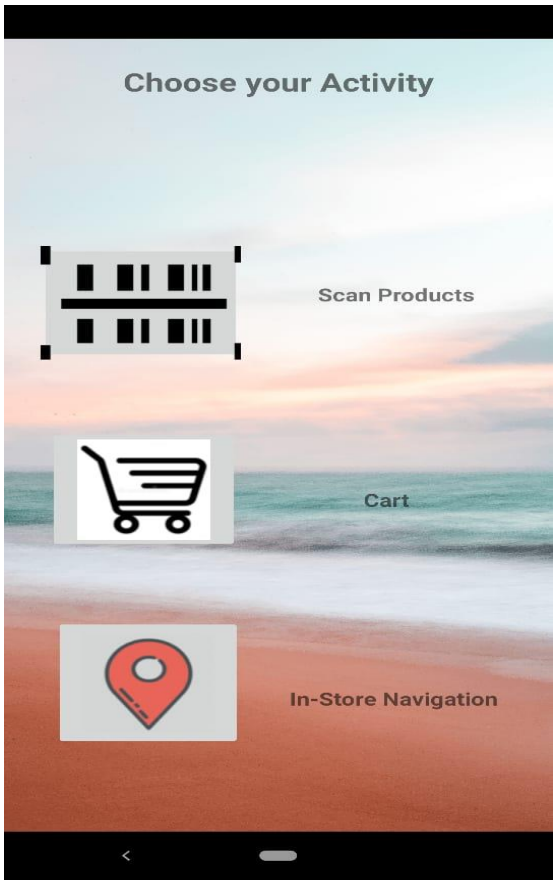

Fig.1: Application screen

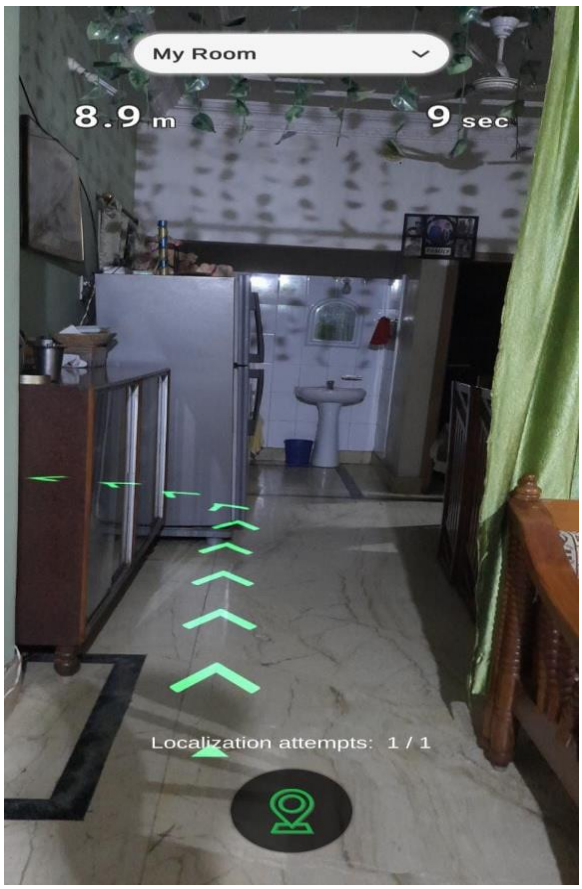

Fig.2:AR Screen

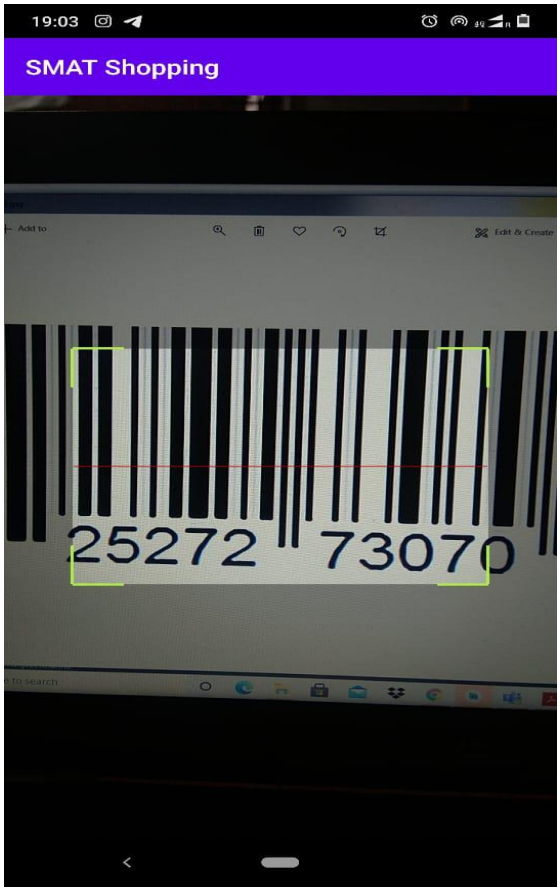

Fig.3: Barcode Scanner

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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