Augmented Shopping Application based on the User Location

Basavanna M
Department of Studies in Computer Science,
Davangere University, Shivagangotri, Davangere- 577 007, Karnataka, India

Prem Singh M
Post Graduate Department of Computer Science, Government College (Autonomous),
Mandya,-571 401, Karnataka, India

Balakrishna M
Department of Computer Science,
Maharani's Science College for Women, Mysuru – 570 005, Karnataka, India

Abstract- The existing shopping application recommends products to users based on the ratings, reviews of similar products and previously purchased orders, or any other user's order that have purchased any other items along with this product. Human editors are employed to manually select a set of content items to present from a candidate pool. In existing system recommendation is based on ratings and reviews of similar products. Recommendation can be even based on our previous purchase or other items in cart. Recommendations are usually based on other users who shop some related items of the product. Human effort is quite expensive and usually cannot guarantee that the most attractive and personally relevant content items are recommended to users especially when there is a large pool of candidate items. Recommendations are based on other users shopping experience which is not the correct way to suggest any product for the user. The main scope of this application is to give a very good shopping experience to the user. To develop a mobile based application which gives the services based on the user location, We build a recommendation system to help the customers find the nearest shop with the products based on the searched keyword and location of user. It was Global Positioning System (GPS) technology application tracking the exact location of the user and recommends the shop having the searched product. User can add the nearest shop to favorite list and view feedback and ratings of that product, give feedback and rate the product.

Keywords – Augmented Shopping Application, GPS, mobile based application, favorite list, feedback and ratings.

I. INTRODUCTION

Augmented reality (AR) is a live direct or indirect view of a physical, real-world environment whose elements are augmented (or supplemented) by computer-generated sensory input such as sound, video, graphics or GPS data. It is related to a more general concept called mediated reality, in which a view of reality is modified (possibly even diminished rather than augmented), by a computer. As a result, the technology functions by enhancing one's current perception of reality. By contrast, virtual reality replaces the real world with a simulated one. Augmentation is conventionally in real-time and in semantic context with environmental elements, such as sports, scores on TV during a match. With the help of advanced AR technology (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally manipulable. Artificial information about the environment and its objects can be overlaid on the real world. This is the project where information is fetched based on GPS and alerted to the users. The user adds the desired product and the app suggests the availability of the product in nearest range with lowest price offered. The user can be sitting at home or on street, he keeps getting push notification according to the required product specification. Advantages of the Augmented Realites are user friendly, recommends nearest Shop having necessary products for the user, and when the user is near that shop, the App notify him about it.

II. EXISTING SYSTEM

In the existing shopping system, user has to search for shop with necessary products manually. This is time consuming and tiring process. The limitations of existing systems are: time consuming, tiring process, needs manual

interaction, and manual search is a long process. The main objective of the proposed method is to alert the user based on the lowest cost of the product and nearest available location of finding the product.

In Nur Intan Adhani and Dayang Rohaya Awang Rambli [1] approach the objective is to observe the trend and the importance of mobile augmented reality by focusing on sports, games and entertainment, cultural heritage, medical, education and training and marketing/advertising area depended on where it can be applied. In this they have explained how the Augmented Reality can be achieved by focusing on/or in the field of sports, games and entertainment, cultural heritage, medical, education, shopping and other fields. They have explained single image in all the fields by using augmented reality. It is like example to achieve augmented reality in the entire field. Leo R. Vijayasarathy [2] have Technology Acceptance Model (TAM) which focuses on two specific salient beliefs are i. Ease of use and usefulness, ii. Study of user adoption of different technologies and has emerged as a reliable and robust model. A test of this model, with data collected from 281 consumers, show support for seven of nine research hypotheses. Specifically compatibility, usefulness, ease of use and security were found to be significant predictors of attitude towards on-line shopping, but privacy was not. Scott G. Dacko [3] retail settings are being challenged to become smarter and provide greater value to both consumers and retailers. An increasingly recognized approach having potential for enabling smart retail is Mobile Augmented Reality (MAR) apps. Panos E. Kourouthanasis [4].In this proposed method, a set of interaction design principles for the development of Mobile Augmented Reality (MAR) applications. The design recommendations adopt a user-centered perspective and thus, they focus on the necessary actions to ensure high-quality MAR user experiences. The design principles have then been applied to guide the development of a MAR travel application. They performed a field travel study with 33 tourists in order to elicit whether design choices effectively lead to enhanced satisfaction and overall user experience. Results suggest that the proposed principles contribute to ensuring high usability and performance of the MAR application as well as evoking positive feelings during user and system interactions. Thomas Olsson et al.,,[5] conducted 16 semi-structured interview sessions with 28 participants in shopping centers, which can be considered as a fruitful context for MAR services. They aimed to elicit new knowledge about, i. The characteristics of the expected user experience, ii. Central user requirements related to MAR in such a context. The user experience categories and user requirements that were identified can serve as targets for the design of user experience of future MAR services.

David Harborth [6] have proposed to show that research on user behavior is under represented in the current literature on AR compared to technical research, especially in the domains gaming and smartphone browsers. Results are categorized with regard to the focus of the research and the domain of the application being investigated. Ju – Young M. Kang [7] proposed a method whether monetary, convenience, emotional and social values were related to utilitarian and hedonic performance expectancies, which were then related to usage intention of augmented reality and motion capture (ARMC) e-shopping via a webcam and whether ego involvement and cognitive effort moderated the links between performance expectancies and usage intension. The results not only verify theoretical conceptions regarding usage intention of ARMC e-shopping but also provide beneficial insights into the implementation and development of ARMC e-shopping applications that use webcams and motion capture technology. Philipp Spreer and Klaus Gutknecht [8] proposed AR is currently most discussed marketing topics and has already been adopted by companies such as Adidas or Lego. However, little is known about the role AR could play in displaying information at the point of sale (POS), especially in the retail industry. Examines the use of mobile AR applications with an experimental analysis in cooperation with one of the largest German book sellers and Metaio, a leading AR development company. The results show that AR has the potential to improve the customer information process at the POS. Furthermore, the intention to use AR is essentially affected by the perceived enjoyment and perceived usefulness. Bruce H. Thomas [9] have proposed visual missed and augmented realities which have historically been applied to the gaming application domain. There is an exploration of both indoor and outdoor mixed and augmented reality gaming. The different games are presented via three major display technologies, i. Head-mounted display, ii. Handheld display, and iii. Spatial immersive display. A number of academic mixed and augmented reality research projects are described that provide an overview of the current state of the art. As a set of example commercial games are also examined to provide the context for the state of the games on the market.

Gallayanee Yaoyuneyong [10] handheld and wearable smart devices have enabled Augmented Reality Technologies (ART), including AR Hypermedia (ARH) print ads in which mobile smart devices acts as view finders to super impose virtual, hyperlinked, 2-D images over traditional print ads. This study utilizes eight constructs – attitude towards the ad (Aad), informativeness, entertainment, irritation, advertising value, time-effort, novelty and an ARH print ad. Result showed the ARH print ad was preferred, yielding higher perceptions of informativeness, novelty and effectiveness; whereas the QRH print and resulted in higher irritation; and the traditional print and resulted in higher time-effort. Theoretical and managerial recommendations are offered based on three findings. Zulqarnain Rashid , etb al.,[11] proposed Retail is undergoing through a major technological changes. Online shopping is rapidly increasing because of the features it offer. Bringing online shopping features to offline retail will enrich customer

experience. In this paper they present a Augmented Reality (AR) interfaces developed for handheld devices, linked to a physical Smart Space to bridge the gap between offline and online retail. Huaishu Peng and et al., [12] present the Robotic Modeling Assistant (RoMA), an interactive fabrication system providing a fast, precise, hands-on and in-situ modeling experience. As a designer creates a new model using RoMA AR CAD editor, features are constructed concurrently by a 3D printing robotic arm sharing the same design volume. The partially printed physical model then serves as a tangible reference for the designer as she adds new elements to her design. RoMA's proxemics-inspired handshake mechanism between the designer and the 3D printing robotic arm allows the designer to quickly interrupt printing to access a printed area or to indicate that the robot can take full control of the model to finish printing. RoMA lets users integrate real-world constraints into a design rapidly, allowing them to create well-proportioned tangible artifacts or to extend existing objects. We conclude by presenting the strengths and limitations of our current design. Sneha Kasetty Sudarshan [13] proposed Recent advancement in smart phone technology has fueled the popularity of Augmented Reality in mobile devices. This paper presents an introduction to mobile Augmented Reality. they focus on the key technology required to develop a mobile Augmented Reality application. Discussing the existing problems and a generic framework required for its development. Finally, they provide an overview of the future scope and applications for Augmented Reality in mobile devices.

Jonathan Rodriguez and Ching-Yu Huang [14] have proposed Augmented Reality (AR) and Geographic Information System (GIS) can be applied in various areas. They can be utilized to provide information on identifying the environments. Since most of the colleges don't offer AR and GIS courses, this paper presents an independent study framework about how college students can learn AR, GIS, Database, mobile app development through the emerging independent study. It is very important to know how Geolocation can be used to make very dynamic applications that users can interact with based on their location. This Independent Study framework will be using many new web and mobile technologies that are open-sourced. Shaunak Shirish Deshmukh et al.,[15] proposed AR is a technology which combines virtual objects and real-world environments. Technologies like Computer Vision and Object Recognition can be used with AR to create an interactive and enhanced user experience of the real world. We plan to use AR to leverage the increased computing power of smart-phones to build a system that displays 3D objects using a printed image without using any complicated equipment. The purpose of this system is to accelerate learning and understanding of concepts such as structures or mechanisms. Instead of reading long manuals, the user can watch and interact with a 3D video manual through AR. The average person learns better by observing and listening something than by simply reading something. Gary Ng et al., [16] proposed the method Level editors let end-users create custom levels and content within a given video game. In this paper, they explore the concept and design of Augmented reality game level editors. These new types of editors are not only spatial and embodied, but also situated, as they enable users to tailor games to the unique characteristics and emotional value of their own space. Ankit Kothawade et al., [17] proposed the method. As Industry 4.0 being the current trend of automation and data exchange taking charge over the industrial way of working. The automation will help in enhancing the efficiency of the robotic arm and keeping a real time watch on the complete process. Firstly, the android application will open camera to capture real time view and detect the robotic arm which will be needed to process further. Google vision API will be used to recognize the image of robotic arm which will be shown as high signification description. The result will be passed on to the server site to process and return the complete analysis stored at the server i.e. number of defective glasses, total number of glasses etc.

Prof. Dhananjay Gaikwad et al.,[18] proposed Augmented reality is new emerging technology, where things in the physical world are mixed with digital content to increase user experience and simplicity. The project scope will be to provide a platform for users to share physical resources along with dynamic information to provide enhanced mixed reality experience. Cloud and the real-time database will be used to create a simultaneous connection between multiple users and share, creating a secure connection and provide data security, also users will be able to set triggers related to physical world i.e. silent mode in office. Nilam Desai [19] proposed rapid advance technologies in recent years such as virtual reality, augmented reality (AR), mobile computing that enable transmission of historic architecture into multi dimension modelling in real environment. In recent years, various vital research and techniques have been introduced that allows virtual reconstruction of heritage sites that enhance lookout of these sites through handheld devices. This paper describes about usage of AR in historical recreation as well as it elaborates previous work that has been done in this area and gives knowledge about technologies that allows creating application for AR oriented historical site. Tom Williams [20] When humans interact with each other, they often make use of deictic gestures such as pointing to help pick out targets of interest to their conversation. In the field of Human-Robot Interaction, research has repeatedly demonstrated the utility of enabling robots to use such gestures as well. Recent work in augmented, mixed, and virtual reality stands to enable enormous advances in robot deixis, both by allowing robots to gesture in ways that were not previously feasible, and by enabling gesture on robotic platforms and environmental contexts in which gesture was not previously feasible. In this paper, we summarize our own recent

work on using augmented, mixed, and virtual-reality techniques to advance the state-of-the-art of robot-generated deixis.

GPS, GPS Tracking Unit and Geographic Coordinate System: The GPS is a space-based navigation system that provides location and time information in all weather conditions, anywhere on or near the Earth where there is an unobstructed line of sight to four or more GPS satellites. The system provides critical capabilities to military, civil, and commercial users around the world. The United States government created the system, maintains it, and makes it freely accessible to anyone with a GPS receiver.

A GPS tracking unit is a device, normally carried by a moving vehicle or person, that uses the Global Positioning System to determine and track its precise location, and hence that of its carrier, at intervals. The recorded location data can be stored within the tracking unit, or it may be transmitted to a central location data base, or Internet-connected computer, using a Cellular (GPRS or SMS), radio, or satellite modem embedded in the unit.

III. PROPOSED METHOD

This is a mobile based shopping application. This system allows users to search shops having the searched product. The major objective of the app is the "recommender system". Current recommendation systems are based on particular location based preferred products. This is the project where information is fetched based on GPS and alerted to the users via android application. Assume that a user is shopping near Shakthinagar, Mysore, so the application will recommend the shops having searched products in that location. This feature may help the user for shopping. Recommender systems or recommendation systems are a subclass of information filtering system that seek to predict the 'rating' or 'preference' that user would give to an item.

The user adds the desired product in the application. Our application will fetch the user's location by the help of GPS. The app will suggest/recommend shops having the required products that in particular area. Recommendations are based on the distance between the user and shop. The app will also notify the user about the shop in nearest range with lowest price offered.

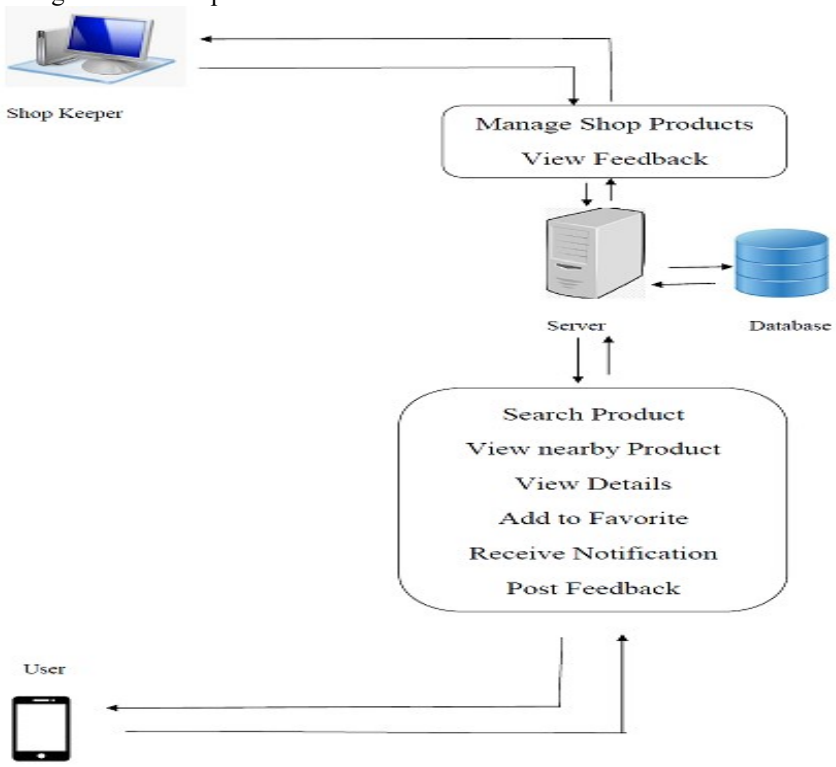

Figure1. Proposed method

User or Shop Keeper in Figure2 will register their details first and then they will login through their ID and Password. If Login ID and Password is valid then they will enter into the first module else they will be redirected to Login Module. User Modules are Search Product, View nearby Product, View Details, Add to Favorite, Receive Notification, Post Feedback. Shop Keeper Modules are Manage Shop Products and View Feedback. Once the user/shop keeper done with their activity they can logout from the page. Admin manages category, shops and products. Application keeps track of ratings given by users.

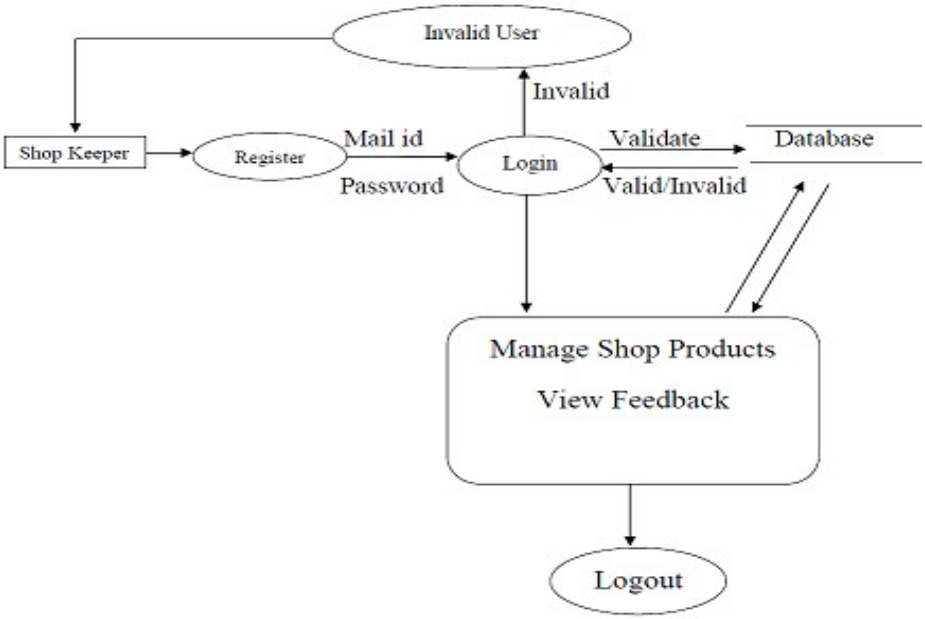

Figure2. Flowchart for the shopkeeper method

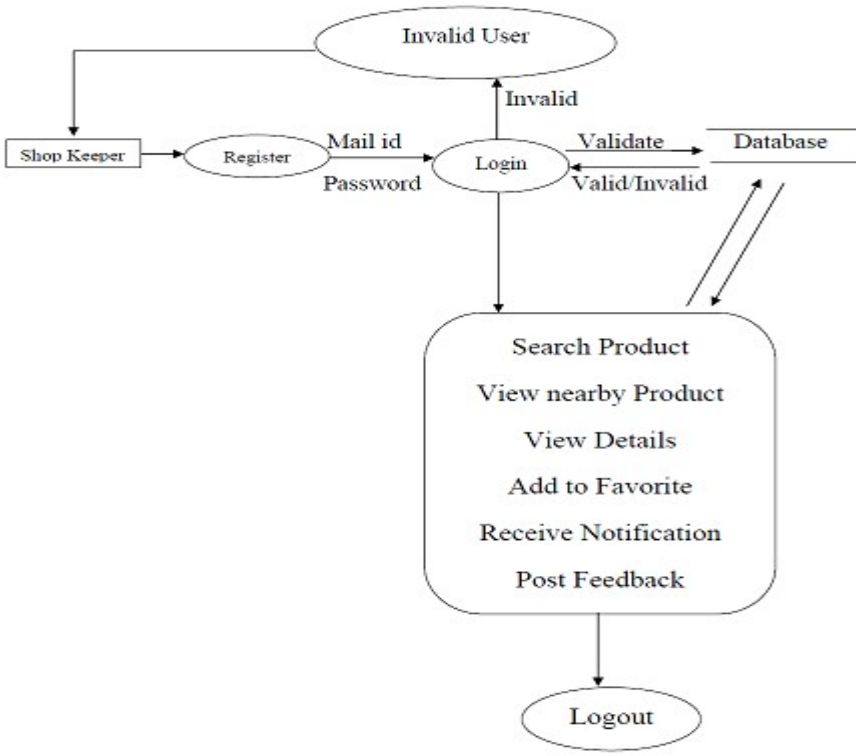

Figure3. Flowchart for the user method

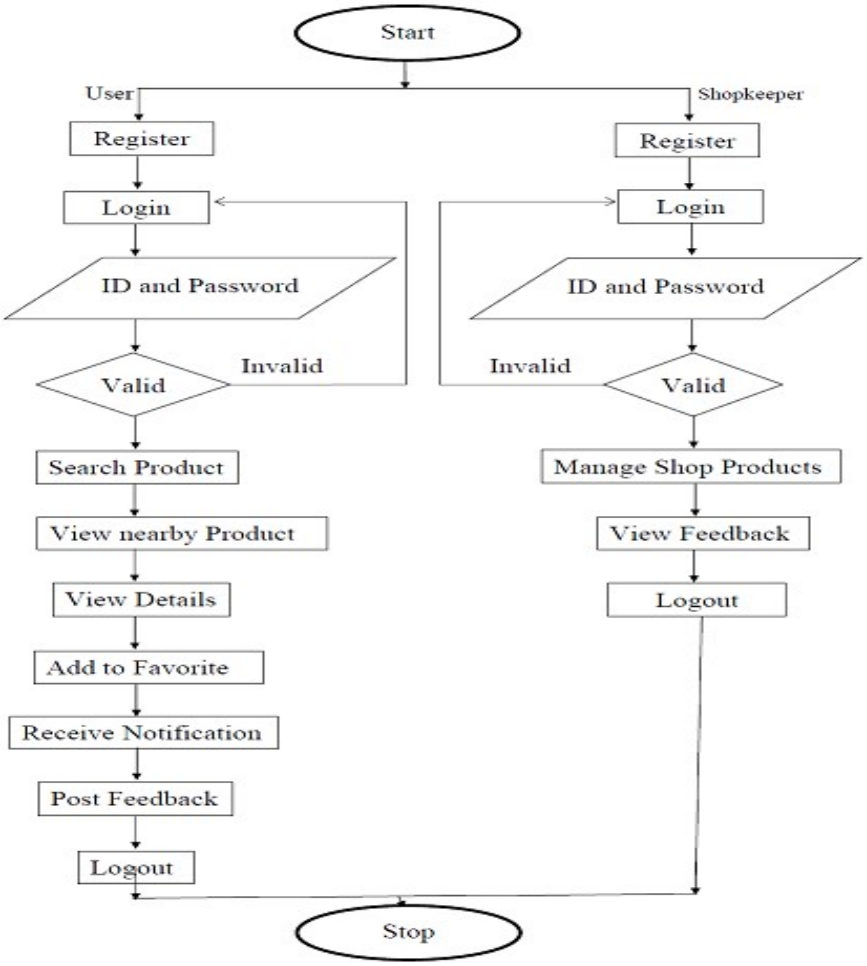

Figure4. Flowchart for the proposed method

Algorithm:

Step1: Start
Step2: User will login to the Application.
Step3: If the user is already registered
Then jump to step5
Step4: Register the details of user
Step5: Login with Id and Password
if login == valid then jump to step 7
else break;
Step6: Redirect to step5
Step7: Search for the product
Step8: Check the list of shops and compare the price
Step9: Purchase the product
Else go to step10
Step10: Add to favorite to get the alert
Step11: Check/Give the Feedbacks
Step12: Logout
Step13: Stop

User will Login with the Id and the password. If the Id and Password is valid then allow the user to go through the app else it will redirect to the Login page again. If he/she is new user then go the register page, enter the required details like mail id, password, name, mobile number etc. The user will search for the required item and the shop which is near to the user will be displayed. The shops which contain the item searched by the user will be displayed with the contact details. User can click on shop name for the product details and the cost. Meanwhile he can add to the favorite list so that he will get the alert when he comes near to that shop again. User can also view the feedbacks and also can give the feedback of their own on the products.

IV. CONCLUSIONS AND FUTURE ENHANCEMENTS

In this proposed method, we are trying to provide the best shopping experience. Here, we have achieved success in this process. Admin manages different shops, categories, products. User can avail the service like searching shops, view recommendations, add to favorite, view feedback and give feedback. Thus, this proposed method gives, at one place, two actors are performing their roles easily and successfully. In future, this proposed method can be enhanced to send SMS message or notification for registration, changing password, number of actors can be increased, like adding distributors, shopkeepers etc.

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