

The Future of Hotel Industry with Augmented Reality

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Abstract

The applications of augmented reality, which is a young technology, have not yet been completely revealed. In order to take the hospitality business in a new direction and provide an engaging learning experience, this project investigates a novel application of augmented reality. In order to give consumers or guests a special experience on mobile devices, this concept uses printed photographs as target images and elevates conventional hotel menu cards using augmented reality technology. In implementation Unity and Vuforia Engine software are used. Most people booked hotel rooms without seeing them, sometimes they may not get satisfied with them. When people order some new dish in hotels it may not fulfill their expectations because they do not know detailed information about the dish. Hence to overcome this problem, we proposed a system using augmented reality in which customers can take a virtual tour of the hotel room before booking and can look at a new variety dish virtually in the form of 3D models. With this, a customer can be satisfied and enjoyed their hotel tour. This growing technology can increase hotel business profit by fulfilling the customers' needs and requirements.

Keywords: Augmented reality, hospitality, industry, 3D models, virtual reality

INTRODUCTION

The purpose of augmented reality (AR) is to combine information from the virtual and real worlds to give viewers more information about an object in the actual world. The most revolutionary technology of the twenty-first century is thought to be augmented reality (AR).

So, we have made an android application which helps virtualize the 3D object in real global. Hence by using this App customers can take virtual tour of hotel rooms along with that, customers can have an up-close look at the food menu. With models there is also information about each model like price, ingredients. Through this AR Hotel App, the customer will have complete information about the dish

as well as hotel rooms they want to book rather than asking the staff.

LITERATURE SURVEY Smart Restaurant Menu Card by Using Augmented Reality

In this paper, they introduce a menu card by using augmented reality. The primary proposed system intends to offer a setting that will help the user in integrating the manufactured 2D and 3D objects into the real-world display through augmented reality. This project proposes a QR-based augmented reality system running on the Android operating system that will assist in connecting virtual objects with this current reality state in a variety of purposes [1].

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Virtual Reality (VR) and Augmented Reality (AR) Technologies for the Tourism and Hospitality Industry

This research paper discussed the evolution of VR/AR technology licensing, the currently popular VR/AR device, and a variety of VR/AR application use cases for the tourism and hospitality industry. In order to enhance current marketing funnel designs, increase client conversion rates, and deliver the necessary additional value and ROI, it analyzed the successes, failures, and problems of the development and deployment of VR/AR applications [2].

Virtual Reality in the Hotel Industry: Assessing the Acceptance of Immersive Hotel Presentation

They concentrate on smartphone-based virtual reality in the hospitality sector in this paper. In the hotel industry, it is crucial to reduce the inherent information asymmetry concerning the goods offered. This asymmetry can be minimized through the uses of smartphone-based virtual reality applications (SBVRs), which allow virtual simulation of real experiences and thus enable more efficient information retrieval. The study aims to determine for the first time the user acceptance of these immersive hotel presentations for assessing the performance of travel accommodation [3].

Augmented Reality Application for Smart Tourism

In this article, they have reviewed the new technology which is augmented reality. This essay attempts to provide significant tourist attractions, restaurants, lodging options, and sightseeing locations to both local and international visitors. The intensity, rankings, feedback, modern-day social media image processing information, and rate records approximately these regions may be provided concurrently at the cellular utility. Image processing techniques and area vicinity statistics may be used for imposing augmented truth era [4].

Foody-smart Restaurant Management and Ordering System

In the given paper they introduced an online app which foody through which they provide various services using IT concepts such as Business Intelligence, Data Mining, Predictive Analysis, and Artificial Intelligence. This includes snapshots and 3D modeling offer existent bodily information related to meals such as colors, and sizes and further users can view the ingredients of the meal as well as the available tables. The app also displays a live map of the eatery [5].

Augmented Reality Map Navigation with Freehand Gestures

With the presentation of the Android framework, PDAs are becoming quicker and all the more effectively with web admittance to advanced cells, client area data can be cited anyplace whenever effortlessly. Increased Reality based Technology empowers the arrangement of an assortment of data, for example, photographs and situation of structures in the movement field. For visual following, computerized labeling and advanced data ought to be given while the Non-visual Trace Way requires the utilization of Hardware. Most route solicitations can show the way from the client's ongoing area to its objective. In this paper, the plan and execution of expanded reality framework are examined. It will utilize a very much planned PDA camera and GPS to show client driven data progressively on an advanced cell [6].

School Atlas with Augmented Reality

The aim of the paper is to describe the technology of creating and adding Augmented Reality to school atlas. No new atlas was created and there is no need of creating one. A current school atlas is used as a base for adding Augmented Reality. Different software, applications and tools for creating AR are presented for Windows, Android and iOS. All of them do not require previous knowledge of programming and are generally easier to use. The steps which a cartographer has to go through are presented, as well as the problems he/she meets and needs to solve in creating an atlas with AR. A classification of Augmented Reality devices is presented. A description of how the use of such technologies act as learning resources for students and its capability to effect learning outcomes is also presented [7].

Augmented Reality versus Picture

Augmented reality (AR) allows the information in a guide to be overlaid directly on an environment. This can decrease the amount of effort required for information matching, thus increasing work efficiency. AR guides on head-mounted displays (HMDs) have been shown to increase efficiency. Handheld AR (HAR) is not as efficient as HMD-AR in terms of manipulability, but is more practical and features better information input and sharing capabilities. In this study, we compared two handheld guides: an AR interface that shows 3D registered annotations, that is, annotations having a fixed 3D position in the AR environment, and a non-AR picture interface that displays non-registered annotations on static images. We focused on inspection tasks that involve high information density and require the user to move, as well as to perform several viewpoint alignments. The results of our comparative evaluation showed that use of the AR interface resulted in lower task completion times, fewer errors, fewer gaze shifts, and a lower subjective workload. We are the first to present findings of a comparative study of an HAR and a picture interface when used in tasks that require the user to move and execute viewpoint alignments, focusing only on direct observation. Our findings can be useful for AR practitioners and psychology researchers [8].

Outdoor Navigation with Handheld Augmented Reality

As of late, outside expanded reality (AR) has opened up. Many PDA based route applications give AR capacities. Be that as it may, a large portion of them are to show virtual focal points (POIs) in the guide or add virtual data to the genuine scenes caught by the camera. We observed these applications are useful when clients are searching for intriguing spots, yet it is awkward for clients who plan to go to the objective. Additionally, bolts for demonstrating headings on route maps are not natural when clients are coming. In this paper, we proposed an outside route framework joined with Baidu map utilizing AR strategy where a virtual model can direct clients to their objections [9].

Object Visualization using Maps Marker based on Augmented Reality

Augmented Reality (AR) is a technology which is a combination of real world and virtual world. AR technology has contributed a lot of various fields, tourism is one of them. It helps tourism to guide tourists to explore objects in real objects in real world. This research applies AR technology as tour guide on Batam Island using 3D objects are applied into the building of the tour by using the method marker based tracking. The main function of this application is to display 3D tourist object that exists in a map and show the location to the tourist attraction [10].

PROBLEM STATEMENT

In Today's world, a people mostly believe in what they see not on words. Sometimes people booked hotel rooms without seeing it, they may not get satisfied with it. When people order some new dish in hotels it may not fulfilled their expectation because they don't know detailed information about the dish. Some people have allergies with some food ingredients. Hence to overcome this problem, we proposed a system using augmented reality in which customer can take virtual tour of hotel room before booking and can take a look of new variety dish virtually in the form of 3D models with detailed description about that version. By this a customer can be satisfied and enjoyed their hotel tour. This growing technology can increase hotel business profit by fulfilling the customer's needs and requirements.

PROPOSED SYSTEM

In this project, we create interactive three-dimensional (3D) content using the software Unity and Vuforia, integrating it with traditional printed elements to improve the visual and comprehension of technical knowledge. Unity is used to create AR content using 3D data from real objects and Vuforia is used as a database in which custom-made markers are stored. Later we linked both the software.

We describe a two-step method where the 3D item is created automatically by taking and processing a number of pictures of a real thing, and then it is transformed into an augmented reality

element which can be linked to a specific marker used with a marker-based augmented reality device. Using App we can take virtual tour of hotel rooms along with that customers can have an up-close look at the food menu. With models we have also shown the information about each model. With the help of this method, hotel management can quickly and easily develop AR content to make their property more interactive.

Flowchart

Figure 1, explains the actual flow of the project. At first, there will be a Homepage to start an application. After that, we need to scan the target image/marker. After scanning the marker/target image it will display a 3D version. Along with model there is the option to see the details of the specific model.

Block Diagram

Figure 2, the figure describes the architecture of the application that takes the 2D image as input with the help of an AR camera and then processes it with the virtual object to get the resultant output as an augmented display. The system uses a mobile phone built-in camera that supports augmented reality to collect views as the real scene view is observed by the human eye and stacks the 3D models of dish/room on the screen displayed. The application must first be launched by pressing the start button, then required to scan the target images or 2D images of a particular food/room. After scanning, a 3D model as seen from all angles will display. For getting more details about the model Info button is also available which shows all information regarding the model.

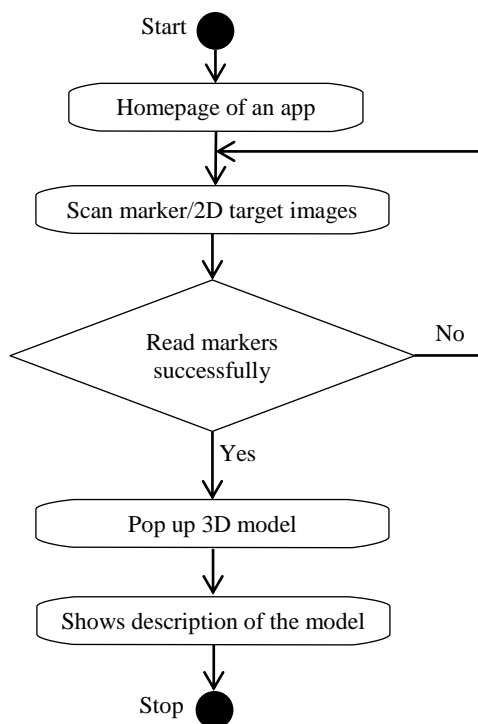


Figure 1. Flowchart showing flow of the project.

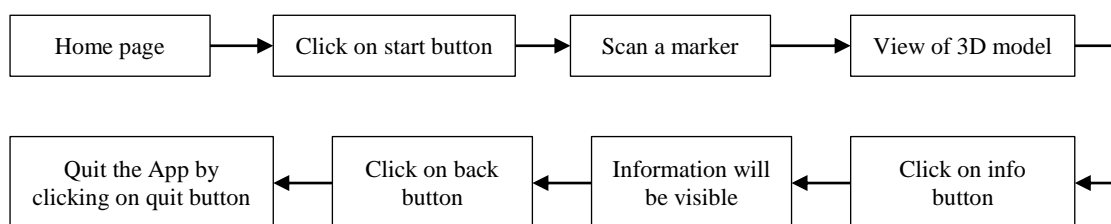


Figure 2. Block diagram function of AR model.

DETAILS OF SOFTWARE AND HARDWARE

- Software:
 - Mobile Version: Android 8.0 or IOS 11, RAM- 2GB
 - Unity Game Engine
 - Vuforia Augmented Reality SDK (Software Development Kit)
- Hardware:
 - RAM 4GB
 - Laptop/desktop
 - Camera of devices

IMPLEMENTATION PLAN

Home Page

Figure 3 shows that after opening the application, first, the home page will appear where we can see the two buttons one for Start and another is Quit. By selecting the start button, AR camera will start to scan the target image or 2D image of a particular Dish/Room. After successful scanning, the 3D model will appear.

Scanning the 2D Images/Target Images

After selecting the start button, AR camera will start, so we need to place it on 2D images of dishes or rooms. Through these markers on 2D images or targets, images can be read and help to pop of model in the 3D form as shown in Figure 4.

Displays 3D Model

As all markers are read by the AR camera so it will display a 3D model of a given food dish or room. Here (Figure 5), we can see the given 3D model from all directions and as well as can take close look by zoom in or out.

Displays Description of Model

To get details of the room model and see what are various ingredients present for the food model Info button is available. By selecting it all information regarding the model pop up (Figure 6).



Figure 3. Homepage of an App.

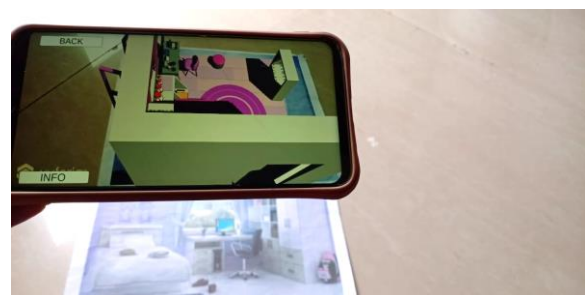


Figure 4. Scanning the 2D images.



Figure 5. Displays 3D model.

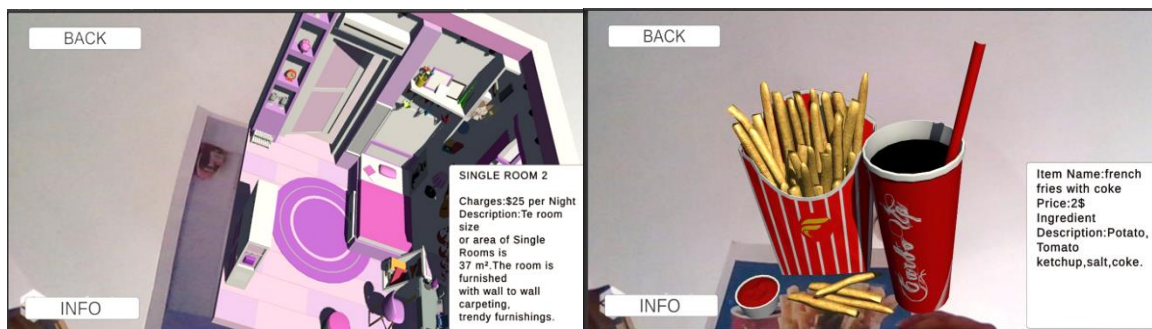


Figure 6. Displays description of model.

CONCLUSION

- AR is a booming innovative technology that has helped the e- marketers in tourism and hospitality industry to enhance their service quality and create value for their consumers.
- This cutting-edge technology offers 3D models of foods like burgers, desserts, and other delectable fare, along with 3D models of luxury hotels that are provided by technologies. Today's restaurants use augmented reality to improve customer satisfaction and change the traditional paper-based menu structure. Augmented reality in hospitality industry plays an important role. Through which customer get entertained and satisfied by showing various hotel rooms, their interior design in 3d format.

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