

Augmented Reality based Interactive Mobile Application for Restaurants

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Abstract—Augmented Reality (AR) has established itself as a radical tool in the modern world. Augmented Reality (AR) is one of the most economical technologies that can be tried out at every restaurant despite its size and infrastructure. Virtual Reality and Actual Reality are fused by making new tools available for the user to ensure efficiency in the transfer of knowledge for several processes in various environments. A Mobile Application based on Augmented Reality is propounded, to help restaurants to provide innovative services to their customers. The implementation of the AR can be started from the menu cards just by scanning the already printed menu card with their cell phones and showing three dimensional models of the dishes that have been selected. They can also use AR food menus to directly market special offers, deals and discounts and happy hours. The customers can play games while waiting for their order to arrive. With the proposed app the restaurant can see improved customer engagement and experiences. It can also improve the restaurant's visibility and let them know about the customer preferences.

Index Terms— Augmented Reality, Virtual Reality, Vuforia, 3-D Models.

I. INTRODUCTION

The anticipation of being in restaurant business lies heavily in the constant state of activity. Those who adapt latest marketing technologies quickly seem to gain several perceptible benefits. Food industry is adapting newer recipe trends to increase customer footfall[2][3]. The dishes the restaurant is serving wouldn't make a humongous difference if the approach of the restaurant towards entertaining the customers is not able to retain them. Among all the current trends in restaurant marketing, Augmented Reality has rapidly growing popularity. This is a promising technology that can play a vital role in increasing the sales of one's restaurant[4]. It allows overlaying digital content in the real world using your own phone, engaging the user and customer more quickly and in a new way[6][10].

Augmented Reality (AR) permits the user or the customer to see the actuality with the virtual objects that are composited with the present reality[6]. Augmented Reality (AR) is an interactive experience of a physical and real-world environment whose components are "augmented" by computer-generated or extracted real-world sensory input such as video, illustrations or haptic information. People scan a menu and watch the video of how the dinners are prepared, or view the 3-D view of the dishes ordered or simply the dishes which are top of the day or week. AR can convey intriguing and eventful experiences to its customers. People always keep on looking for something new and exciting and this technology can become a source of appeal as well as can help to promote a restaurant in a unique manner.

II. LITERATURE REVIEW

This section explains the basic and main concepts of the Augmented Reality. It talks about the fields and other applications where AR is used. It helps in understanding the issues faced while making a system that includes concepts of AR.

A. Domino's pizza Hero

It is an app created by Dominos for engaging people in pizza making activities and for providing entertainment also they provide them the option to deliver the pizza that they 'virtually' made. This app also provided the opportunity for being a pizza-maker at dominos if the person playing it exhibited excellent skills thus increasing the employment[1].

B. Kabaq (Web Based System)

Allows the user to view all the dishes present on the menu. Provides information about the proportion and the ingredients present.

C. Taggar (An android App)

It is an app which helps to scan any square image or object to see what's been tagged. It helps to use "Tag-over" with their own videos, photos, graffiti or stickers. After tagging the object, any messages, notations tagged to the object can be shared across different social media platforms.

D. Junaio (AR Browser)

Junaio is an AR browser that stresses on the interactivity between the user and the system. Live content information such as traffic information, etc. can be provided by this browser[8]. Users are allowed to give recommendations on shops, restaurants, etc. and are able to leave digital tags[5][11].

III. PROPOSED SYSTEM

Figure 1. shows the system that has been proposed in this paper. This system consists of various modules that will be explained further into this paper. Here, the customer needs to visit the restaurant or open the digital copy of the menu and launch the app of the restaurant after which the logo of the restaurant can be scanned from the menu and the food can be viewed in 3-D model[8].

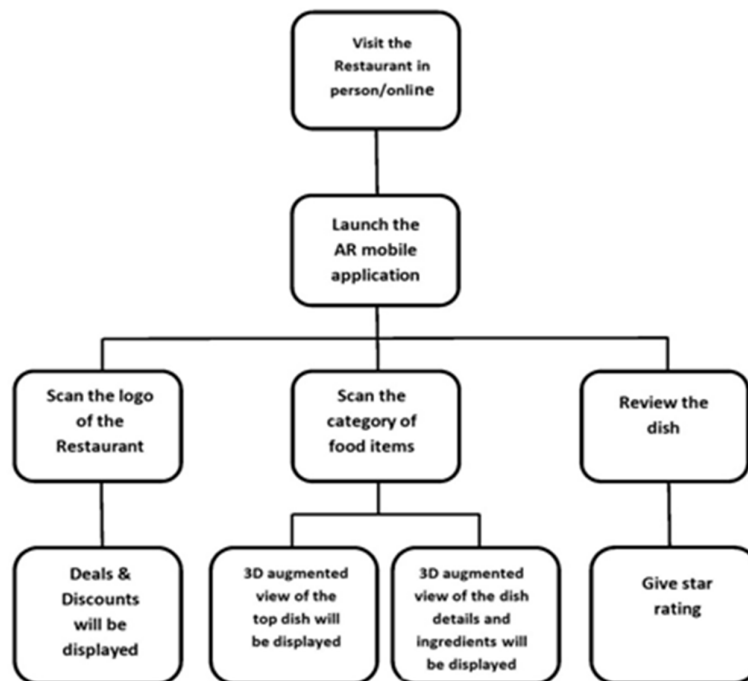


Figure 1. Flow of the Proposed System

A. Daily Discounts & Offers

This module provides daily discounts and offers information to the customers. Customer has to hold the camera of his/her mobile on the main page of the menu card and scan the restaurant logo. All the deals and discounts will be popped right around the restaurant name in the form of 3D augmented clouds or some other shape.

B. Augmented 3D View of Food Items

Customer just needs to hold the camera of his/her mobile on the menu, flip to the category (for example: appetizer) he want to order. Customers can always check out the 3D view of the top dish in that category which will be popped to the right-hand side of the menu card. The top dish will be based on the feedback provided by the customers and keep changing accordingly and daily. Details of the dish like its price and ingredients of the dish will pop below the name of the dish.

C. Feedback

Customers can provide their precious feedback and review the dishes they have ordered by just scanning their bill. 3D Star rating options will pop up right beside their ordered dish from which they can input their rating for the dish. This will help the new customers to choose their orders as the rating given will be reflected in deciding the top dish of the day from the various categories.

IV. DESIGN

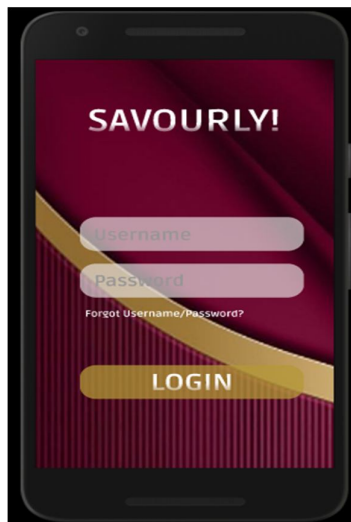


Figure 2. Login page of the application

Figure 2. shows the login page of the application where the customer can login and launch the application by merely inserting the username and password of their registered id.



Figure 3. Offer & discounts page of the mobile application

Figure 3. shows the module of the application where upon scanning the logo of the restaurant (here savourly), it displays all the deals and discounts offered by the restaurant around the logo of the restaurant in the 3D view.



Figure 4. Printed menu card

Figure 4. shows a page of menu containing only the names of dishes present on the menu. Figure 5. shows how the menu looks with 3D models when scanned using the app.

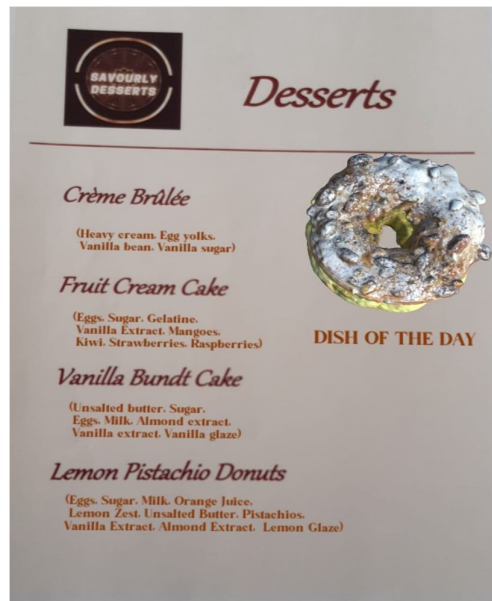


Figure 5. Scanning the menu using the mobile application

Figure 5. shows the view after the dessert section of the menu is scanned, which displays all the ingredients of the dishes present on the menu below its respective names in the 3D view[7]. It also displays the top dish of the day in the 3D view on the right side of the menu. The 3D models can be made using software like Blender and ingredients list can be made directly in Unity hub.



Figure 6. Feedback page of the mobile application

Figure 6. shows the feedback section of the application. This module is also called the review section. In this section, the customer can review the dish by giving the star rating to the dish they have ordered according to their preference.

V. FUTURE SCOPE

Many things and modules can be added to this project in the future to make it more interactive and gain customer's interest. Some of the things can be where-

- A game could be added at the end so that the customers can play the game and pass their time until their order arrives.
- Show how the chef is preparing the dish that has been ordered by the customer on the application. This can be shown in the animated form to make it more interesting[9].
- Dishes can be ordered online using the app of the restaurant.

VI. CONCLUSION

The main objective is to create and execute a successful augmented reality mobile application for a restaurant where the customer can easily see the food in the three dimensional model before ordering. Customers can see the ingredients of the dish by scanning them on the menu. Customers can rate the dish which they have ordered which helps in giving feedback to the restaurant. The app is also helping in removing all the language barriers and odd names of dishes. It allows the restaurant to promote their restaurant in a unique way. The customer engagement and awareness can be improved and the brand can be promoted in its own way.

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