

NAAN – AN AUGMENTED REALITY BASED MENU APPLICATION

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Abstract - Restaurant companies are trying to find ways to grow and retain their customers. Images of food on the menu often do not reflect the actual quantity and quality of the food. This often leads to dissatisfaction on the customer side and loss of trading customers. Gourmet restaurants can provide consistency, which helps maintain customer numbers. However, new customers are reluctant to try the experience due to portion size accuracy, ingredient identification, language barriers, and dietary preferences. This project explored how digitizing traditional printed menus could improve the consumer experience in fine dining restaurants. A proposed solution is to introduce an interactive menu application that includes augmented reality functionality. The digital menu offers language selection buttons and diet filter options. Augmented reality features allow you to accurately determine portion sizes and ingredient placement. Photogrammetry is used to recreate the 3D images of meals presented in the augmented reality feature. Our job was to demonstrate the ease of creating and updating this digital menu. The fusion of technology and cuisine helps build trust between customers and restaurateurs.

Key Words: uniformity, digitization, augmented reality, 3D.

1. INTRODUCTION

The visual design of food served on a plate is a key factor in influencing human taste and willingness to pay. Our expectations and actual enjoyment of food are influenced by our vision. Also, these days, visual presentations can keep customers distracted while waiting for their meals to arrive. Some customers find it difficult to order due to their limited cooking and language skills. Others may have difficulty choosing meals that do not affect their health, religion, or ethics. Such concerns are less likely to arise when customers are visually prepared. Become. A visually translated menu also eliminates the problem of portions unwittingly associated with cost. The visual representation builds trust between the customer and the restaurant owner, suggesting that it can help eliminate problems that may arise when visiting a restaurant for the first time.

1.1 Need

Also, these days, visual presentations can keep customers distracted while waiting for their meals to arrive. Some

customers find it difficult to order due to their limited cooking and language skills. In addition, some customers find it difficult to choose foods that do not interfere with religion, ethics, or health. Such concerns are less likely to arise when customers are visually prepared. A visually interpreted menu also eliminates portion issues unwittingly associated with pricing.

The motivation for developing such an application is to integrate a digital menu to enhance the gourmet experience. It suggests that visual representations help build trust between customers and restaurant owners and eliminate potential problems for first-time restaurant goers.

1.2 BASIC CONCEPTS

The basic concept is to create an interactive tablet menu that includes augmented reality functionality. The digital menu also offers language selection buttons and diet filter options. Augmented reality features allow you to accurately determine portion sizes and ingredient placement. The food drawn with the augmented reality function is reproduced in 3D images.

2. PURPOSE

This project aims to demonstrate through a proof of concept how to leverage current or advanced design techniques to easily use and create cost-effective, affordable and visually appealing digital menus.

3. SCOPE

In today's world, the integration of technology in restaurants has resulted in owners getting rid of paper menus. Some restaurants have already embraced the idea of using iPad menus instead of traditional paper menus. A very common complaint from restaurant customers is that the portions are too small. Customers feel cheated when the dish they ordered does not appear in the picture associated with the particular dish. Each dish should have manageable expectations and be consistent in size and appearance to avoid size complaints. Augmented Reality (AR) is also an interactive way for handheld device users to see the world in front of them by displaying additional information, objects, or data. It is your ability to change your reality. Augmented reality can therefore handle the issue of portion and size and provide a proper real-world representation of the dish.

4. LITERATURE SURVEY

[1] "The Future of Augmented Reality in the Restaurant Industry." Adams, Kerri.

This paper describes how augmented reality can help enhance consumers' interactions with the real world. Augmented reality technology does not have to be strictly applied to particular display technology, such as head-mounted displays. Augmented Reality (AR) could potentially be applied to other senses. B. Enhance the sense of touch, smell and even hearing. The main display types are head-mounted displays (HMDs), wearables, and spatial displays.

[2] "A Stereo Photogrammetry Scanning Methodology, for Precise and Accurate 3D Digitization of Small Parts with Sub-millimeter Sized Features." Galantucci, L.m., M. Pesce, and F. Lavecchia.

In this paper, the authors propose an accurate, fast, and inexpensive rotary stage photogrammetry scanning system suitable for scanning small parts with complex surfaces and submillimeter features. This approach allows scanning small free-form objects with high aspect ratio and high depth of field. The main limitations highlighted by this instrument are the need to scale the digital model by additional instruments and the need to consider a calibration process to remove model bias.

[3] "Digital Food Menu Application for Restaurants Based on Augmented Reality", Prathmesh Rane, Ahmer Usmani.

In this article, the author has implemented an application that uses virtual augmented reality to allow consumers to see realistic 3D models of food served in restaurants. Each participating restaurant will receive a sticker. The user has to scan a sticker available at the restaurant. The food list will appear on your screen when you select a specific food. The system could be improved by not linking applications to stickers, as consumers would have to rescan the stickers if the application flow was interrupted, which does not seem like a good user experience.

[4] "Smart Restaurant Menu Card by Using Augmented Reality" Amitkumar Chaurasiya, Sayali Mhatre, Ravina Chaudhari, Pratiksha Pawar.

This paper includes a combination of mobile devices and web services that facilitate the development of mobile applications. The Volley framework proposed by Google in 2013 has the advantages of simple and convenient usage and fast network requests, but does not support web services. An extension of Volley to support web services. This not only facilitates web service application development, but also improves web service access performance. Based on analysis

and research of Volley, Java Web Services, and Ksoap2, it implements an HTTP stack interface and extends JSON object requests for web service support. The JSON format is used in schemas to transfer data, support SSL/TLS protocol requests, support custom parameter sets, or retrieve request headers. This method is compatible, easy to use, and suitable for applications on the Android platform.

[5] "AUGMENTED REALITY IN MOBILE DEVICES", Sneha Kasetty Sudarshan.

In this article, we will briefly discuss mobile augmented reality. It also discusses challenges and concerns related to mobile augmented reality [MAR]. This document describes the general framework required to develop an augmented reality application. This document also describes existing Mobile Augmented Reality [MAR] applications available in various fields such as medical, military, gaming, advertising and promotion.

[6] What does an Augmented Reality menu bring to the table for a Dutch restaurant? Idriss Iziyi.

This research helped experiment with the first commercial augmented reality application of its kind. Augmented Reality (AR) is a technology that integrates virtual 3D objects into real-world environments in real time (Azuma, 1997). AR has been around since his 1960s, but it wasn't until 2009, when major companies began investing in the technology, that the development of AR really picked up momentum. AR currently has hundreds of millions of potentials (or actual) technology users (Moon, 2018; Mudrick, 2019) and is estimated to be a \$75-120 billion market by 2023. It could cannibalize the smartphone market (Digi-Capital, 2019). This interest and expectation was the reason for this study.

5. PROPOSED SYSTEM

All the users of the application are provided with the following options: Food Menu, Main Menu, View in 3D, Review Order, Order Confirmation.

(NAAN): An augmented reality based interactive menu application System Module Users of the application must specify the language in which they want to interact with the application before its use.

Users will be able to interact with application through an easy-to-use top navigation menu.

- **Food Menu Option:** allows the users to see all the different types of cuisine/ type of ingredients available in the restaurant.
- **Main Menu:** allows the users to see all the different types of dishes/ food items available with nice 2D images as well as select an item to place an order.

- **View in 3D:** allows the users to see the image of the dish in 3D/ Augmented Reality and interact with it, for example, to zoom in/out, to rotate the image.
- **Review Order:** allows the users to review their selected dishes/food items before placing an order as well as give the users an option to add/remove items.
- **Order Confirmation:** allows the users to confirm the order after selecting food items and specify an additional information regarding the order placed.

6. RESULTS

Digital food experienced through AR, is a more accessible and innovative way to interact with your audience than VR. Digital food is environmentally friendly, avoids overconsumption, avoids waste, and does not require transportation. The new trend in digital nutrition is also reflected in all the changes in how we exist online and share what we consume. their roots grow rapidly. The Augmented Reality Menu application iterates through PHP queries developed in Unity, Vuforia and connected to a MySQL database. The Menu Application has proven effective in solving big problems in the food industry with precision testing. These systems deliver reliability, cost savings, and accelerate the decision-making process. An easy-to-access interface allows customers to use the application to work through tempting menu dishes and easily order specific dishes. The proposed system will help solve many customer-related problems and digitize the food industry.

FLOWCHART:

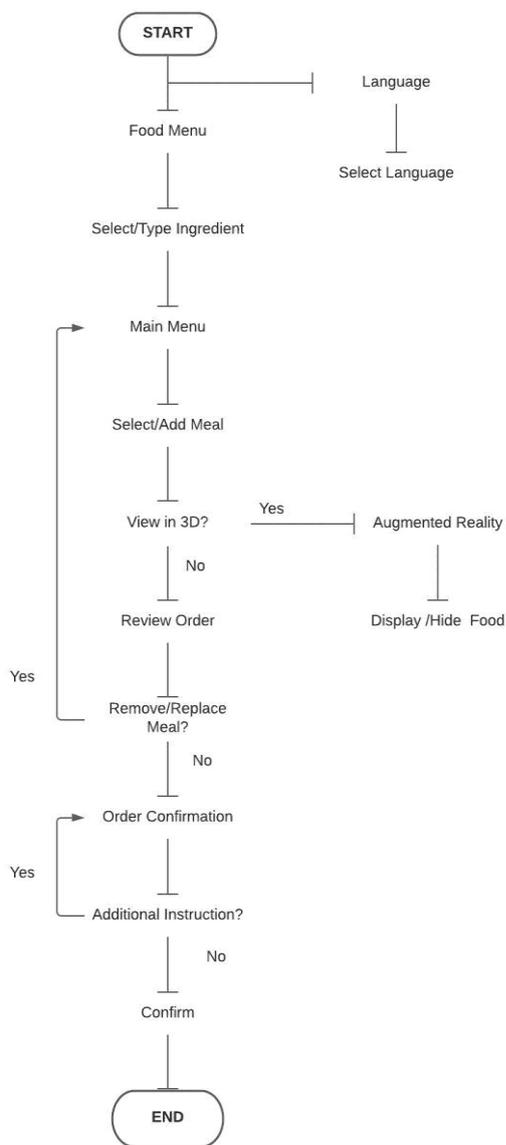


Fig-4: Flowchart

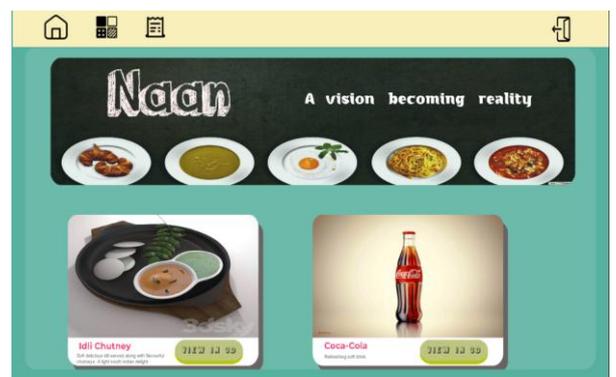


Fig-7.1: Home Page



Fig-7.1: Categories Page

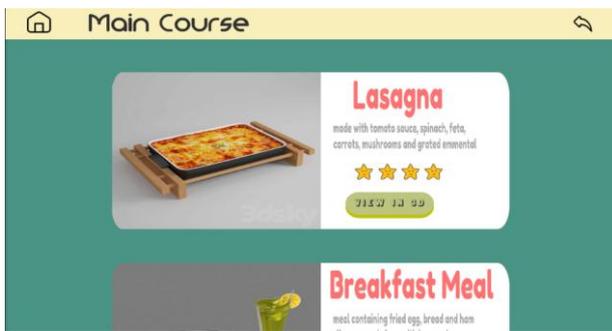


Fig-7.1: Main Course Page

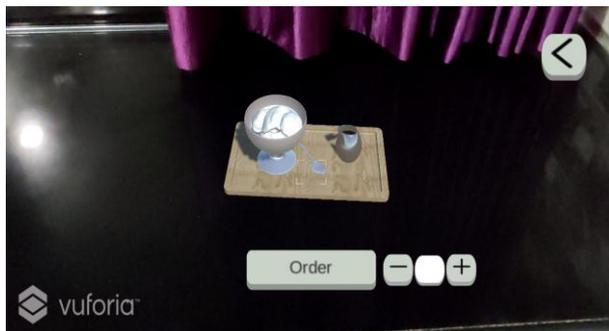


Fig-7.2: Displayed AR 3D Image

[4] Sneha Kasetty Sudarshan “AUGMENTED REALITY IN MOBILE DEVICES”, San Jose State University, May 2018.

[5] Steel, Erik. “What Is Gourmet Food?” EHow. Accessed October 15, 2016.

[6] Bellingham, Linda, Bybee, Jean Ann, and Rogers, Brad G. 2012. “More Food Styling for Photographers & Stylists: A guide to creating your own appetizing art.” Saint Louis, USA: Focal Press. Accessed November 30, 2016.

7. CONCLUSION

The system delivers reliability, cost savings and accelerates the decision-making process. An easy-to-access interface allows customers to use the application to work through tempting menu dishes and easily order specific dishes. Restaurants can now easily track orders and help reduce the amount of work involved. It helps restaurants modernize and attract new customers by showcasing their best cuisine in an engaging, technology-driven way. The proposed system will help solve many customer-related problems and digitize the food industry. Based on the literature research and the proposed system, we came to the conclusion that the proposed system would not only help customers and restaurants, but also digitize the food industry and make it more efficient.

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