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QR Based Food Ordering System including Sentimental Analysis

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Abstract: ***Ordering food directly has never been easier for the customers. This all-in-one QR Menu solution is for simplifying the food ordering process for customers and streamlining operations for businesses in the food service industry. The system offers the capability to upgrade for online food delivery through various digital channels, including websites and social media platforms, with a backend CRM facilitating the management of special customer requests. The primary target is quick-service restaurants, kiosks, takeout establishments, and food delivery services and the platform eliminates the need for customers to download additional mobile applications. By easily integrating with any POS system and supporting credit card payments, it provides a proper solution for online ordering and payment processing. Also, this platform combines sentiment analysis to understand customer preferences and easily make personalized menu suggestions and ranking of food items. This feature helps in enhancing the overall customer experience by offering specific recommendations based on individual tastes and preferences. Also, the system has user-friendly management tools for QR code generation and customization, ensuring compatibility with a wide range of QR code readers and scanning devices. The in-built QR code generator provides unique QR codes. As a cloud-based solution, it offers scalability and easy management of online menus, and allows businesses to list their offerings on various marketplaces. This system has unique capabilities in providing a seamless and integrated solution for online food ordering, payment processing, and customer engagement in the food service industry.***

I. INTRODUCTION

Food ordering is an important part of restaurant services, yet traditional methods usually lead to issues such as miscommunication between waitstaff and customers and causes delays and frustration. The approach depends on paper-based systems, direct interaction between customers and waitstaff, leading to delays and misunderstandings. To solve these problems, a Food Ordering System based on QR Code technology is a real-time solution for managing the ordering process simply. With the help of QR Code technology, this system offers an efficient alternative to paper-based ordering and eliminates the need for direct interaction between waitstaff and customers. Customers simply scan QR Codes provided on the menu using their smartphones and get instant access to the restaurant's menu and help in order placement without delays. Also, this system helps customers to confirm their orders and enhances order accuracy and customer satisfaction. Also, the system provides restaurant staff with tools to manage menus and view order lists efficiently. Additionally, sentiment analysis integrated into the system helps in understanding customer preferences and personalized recommendations. This helps in enhancing customer satisfaction.

II. RELATED WORK

A. Touch-based Digital Ordering System on Android

Technology has entered almost every field in our lives, but still its effect is not yet that evident in the food industry, especially the food serving outlets including restaurants, and hotels. Even today, most of the restaurants in India follow the traditional pen-and-paper method to take orders from customers, which wastes a lot of time for both, the customer and the restaurant. This work goal is to substitute the traditional pen-and-paper method by automating the food-ordering process in restaurants and to improve the dining experience of the customers. This paper proposes an automated system that uses wireless communication, a centralized database, and an Android application to place orders without even waiting for a waiter. The Android application installed in the touch screen device, fitted at the table, contains all the menu details with pictures of each item. The ordered details are wirelessly sent to the chef and the cashier. The manager has his own Android application that is used to update the menu that updates the central database, view and manage table-wise customer orders, and receive feedback from the customer. This system improves efficiency and accuracy for restaurants by saving time, eliminating human errors, and getting customer's feedback easily.

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As the system is automated, it becomes cheaper even from the restaurant's point of view, as it reduces manpower and just requires a one-time investment in installing the devices at tables.

B. Survey on intelligent food menu ordering system

The increasing growth of wireless technology and mobile services in this era is creating a great impact on our lifestyles. Some efforts have already been taken to carry out the process of ordering in hotels by using hardware components like Avr16 Microcontroller, LCD module, and Zigbee module.

The Existing system is fully dependent on hardware, and it is very difficult to club and integrate all the components to make a system. In addition to that understanding and operating the system is very difficult for some users and this system is not going to manage the business model properly. In this field, the touchscreen-based advanced menu display and ordering system concept is a new innovative idea.

C. Smart Ordering System via Bluetooth

The conventional method that usually been used in restaurants is by taking the customer's orders and writing them down on a piece of paper. Many ordering systems have been proposed to undertake this issue. The project is proposed with Bluetooth technology as the communication medium and a Peripheral Interface Controller (PIC) as the hardware which implements a faster ordering system. It consists of a keypad at the customer's table as a remote control and a monitor at the kitchen or counter to display the ordering information systematically.

This project aims to build and design both hardware and software for the ordering and delivering system at restaurants by using the keypad, and display screen via Bluetooth communication. The project also targeted to receive information that works around 100m away from the specific location. The result shows that the hardware and software are successfully functional and able to be used as a smart ordering system.

The project was able to solve the lack of workers and reduce lateness and the errors in ordering food by the customers. For the future target, using a touch screen display and compressing the device to a more compact device is recommended as the nowadays demand to interact young generation for using this system.

D. A Customizable Wireless food Ordering System with Realtime Customer Feedback

The existence of wireless technology and the emergence of mobile devices enable a simple yet powerful infrastructure for business applications. Some early efforts have been made to utilize both technologies in food ordering system implementations.

However, the food ordering systems that were proposed earlier exhibit limitations, primarily in cost-effectiveness, allowing customizations, and supporting real-time feedback to customers. In this paper, we discuss the design and implementation of a customizable wireless food ordering system with real-time customer feedback for a restaurant (CWOS-RTF). The CWOS-RTF enables restaurant owners to set up the system in a wireless environment and update menu presentations easily.

Smartphones have been integrated with the CWOS-RTF implementation to facilitate real-time communication between restaurant owners and customers. Preliminary testing suggests that the CWOS-RTF has the potential to eliminate the limitations of existing food-ordering systems

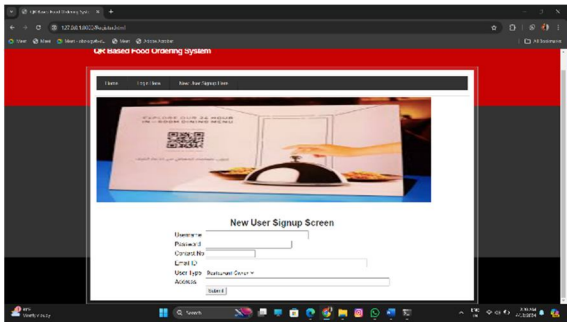
III. METHODOLOGY

To implement this project, we have designed the following module:

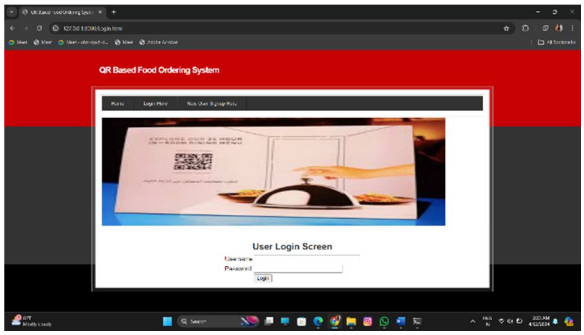
1) Add chairs: by using this module the owner can add chairs.
2) Add area: by using this module the owner can add the area of restaurant.
3) Create menu: by using this module the owner can add menu.
4) View menu: by using this module the customer can see menu.
5) View orders: by using this module the customer can order the food
6) View restaurants: by using this module the customer can see the restaurants.
7) Scan QR codes: by using this module the customer can scan QR code for ordering food.
8) View bills: by using this module the customer can see and pay the bill.

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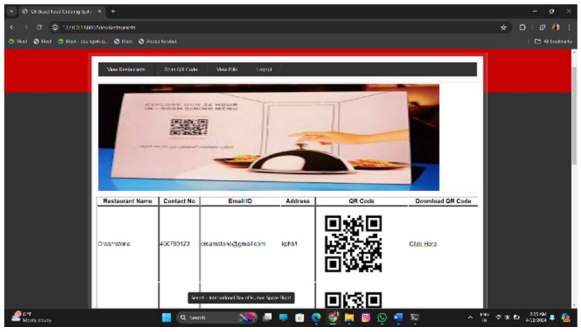
IV. RESULT AND DISCUSSION



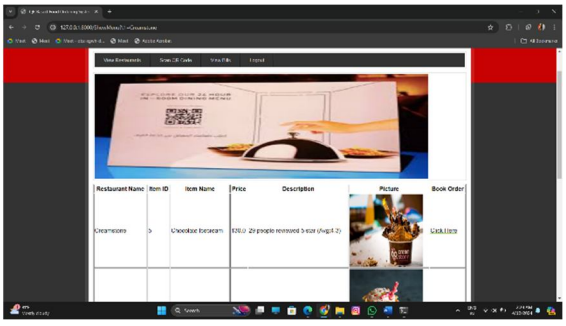
In the above screen we click on 'New User Signup Here' link to register restaurant owner or customer.



In above screen we click on 'User Login Screen' where the user can login to the web page.



In above screen the customer can see all the restaurants, menu of the restaurants and pay bills online here.



From above screen customer got menu details and then click on 'Click Here' link to Book Order and get below output.

V. CONCLUSION

The objectives of our project "QR code-based Smart Dining System" is to increase the customer's dining experience by fastening the existing restaurant services and to simplify the ordering and bill payment systems to minimize the workload of the restaurant and hotel owners.

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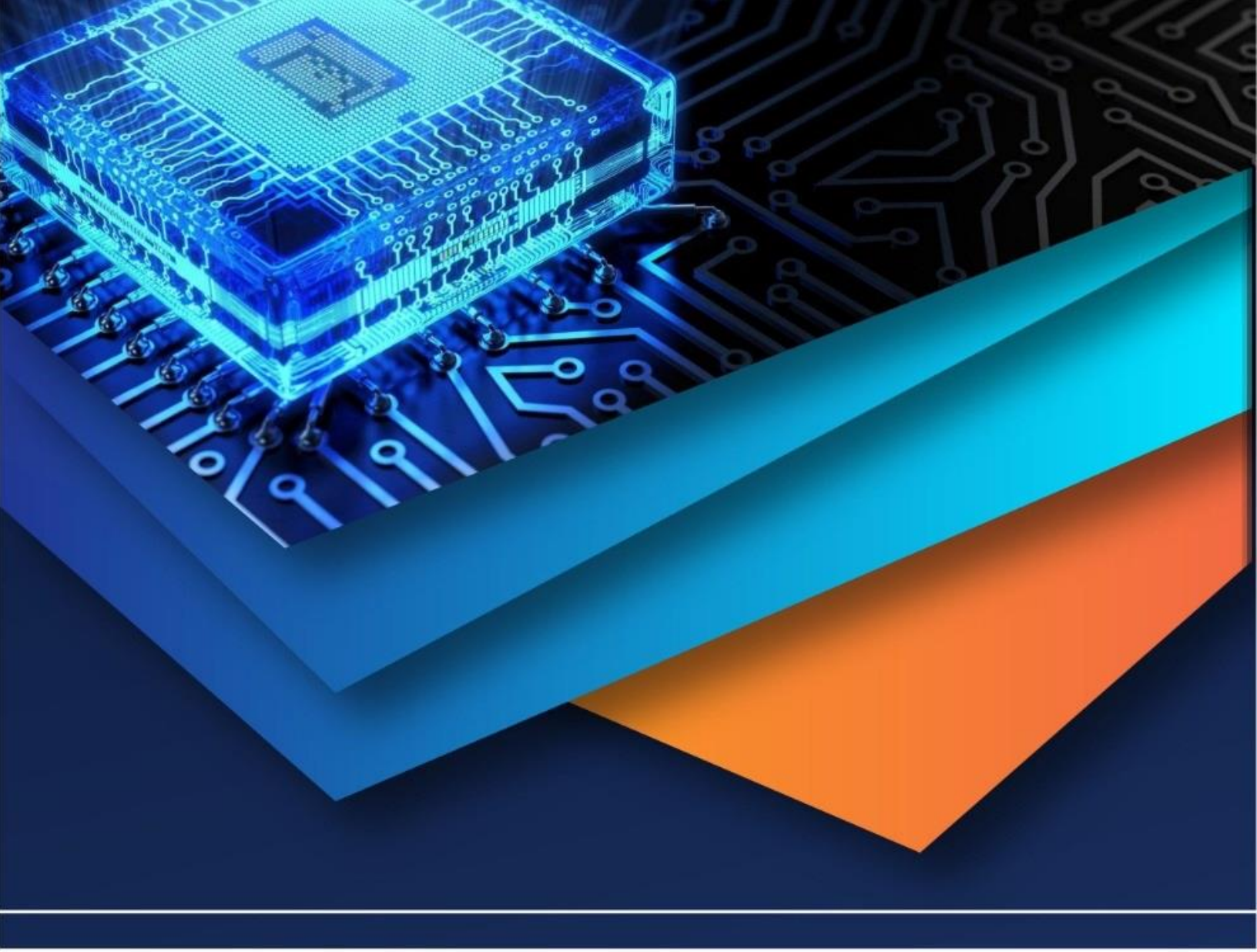
With smartphones, the customer can scan the QR code set on the table and open the current menu to order the food. Upon ordering, the notification will be delivered to the kitchen and the cashier along with the table number.

The current menu and offers will be updated on this menu. The Robot can deliver food. The presence of each component has been reasoned out and placed very carefully, thus contributing to the best and most efficient working of the device. This system will help in reducing the waiting time of customers in the restaurant. It will also reduce the manual service given by waiters and serving staff and eliminate human-made mistakes.

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