

Development and Execution of A QR Code-Enabled Intelligent Food Ordering System

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Abstract: *In recent years, the demand for faster and contactless services in restaurants has increased significantly. Traditional food ordering methods often involve manual interaction with waiters, which can lead to delays and mistakes. To overcome these issues, this project introduces a QR code-based food ordering system that allows customers to access the menu, place orders, and view bills directly from their smartphones.*

The system is developed using web technologies such as Python (Django) and MySQL. By scanning a QR code placed on the table, users can browse the menu and order food without waiting. This solution improves service speed, reduces human errors, and simplifies restaurant management..

Keywords: QR Code, Smart Ordering System, Restaurant Automation, Django, Digital Menu

I. INTRODUCTION

Technology is playing a major role in transforming traditional business operations, including the restaurant industry. Most restaurants still depend on manual methods where waiters take orders using paper, which can cause delays and miscommunication.

The proposed system offers a digital solution where customers can scan a QR code using their mobile devices to view the menu and place orders instantly. This eliminates the need for physical interaction and speeds up the ordering process. The system also helps restaurant staff manage orders more efficiently and improves overall customer satisfaction.

II. LITERATURE REVIEW

Various systems have been developed to automate food ordering in restaurants. Some use touch-screen devices placed on tables, while others rely on wireless communication technologies like Bluetooth. Although these systems improve efficiency, they often require additional hardware and higher costs.

In comparison, QR code-based systems are easier to implement and more economical since they use customers' smartphones. They provide a flexible and user-friendly approach to digital ordering without the need for complex infrastructure.

III. DATASET DESCRIPTION

The system operates on a structured database created using MySQL to manage all application data. It includes multiple tables such as user details, menu items, restaurant information, and order records. The data is generated dynamically as users interact with the system, including placing orders and managing menus. Basic data processing such as validation and formatting is performed before storing the information. This structured data enables efficient retrieval, real-time order processing, and smooth communication between customers and restaurant management.

IV. SYSTEM ARCHITECTURE

The system is designed as a web-based application that connects customers and restaurant management through a central database.



Main Components:

- Customer Interface (Mobile browser)
- Admin Interface (Restaurant owner)
- QR Code System
- Backend Server (Django)
- Database (MySQL)
- Working Flow:
- QR code is placed on each table
- Customer scans the code
- Menu is displayed on mobile
- Customer selects items
- Order is stored in database
- Restaurant processes the order
- Bill is generated

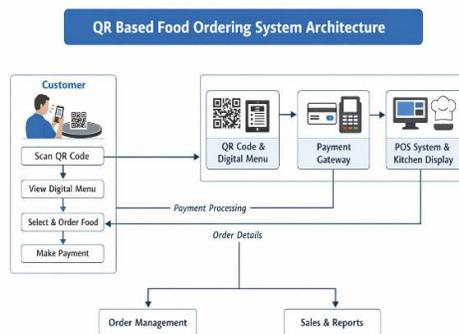


Fig. 1. Proposed System Architecture

V. MATHEMATICAL MODEL OF GENETIC ALGORITHM

The system focuses on efficient order processing and data management rather than optimization techniques. The total bill is calculated using the formula:

Total Amount = $\sum (P_i \times Q_i)$, where P_i represents the price and Q_i represents the quantity of each selected item.

VI. PROPOSED METHODOLOGY

The working of the system follows these steps:

- Customer scans the QR code using a smartphone
- The system loads the digital menu
- User selects desired food items
- Order details are recorded in the database
- Restaurant staff views the order in real-time
- Bill is generated automatically
- Order confirmation is shown to the customer



VII. RESULTS AND DISCUSSION

The developed system successfully reduces the time required to place orders and minimizes errors caused by manual communication. Customers can easily browse the menu and order food without waiting for a waiter.

The system also improves efficiency for restaurant staff by providing real-time updates of orders. Overall, the solution enhances both customer experience and operational performance.

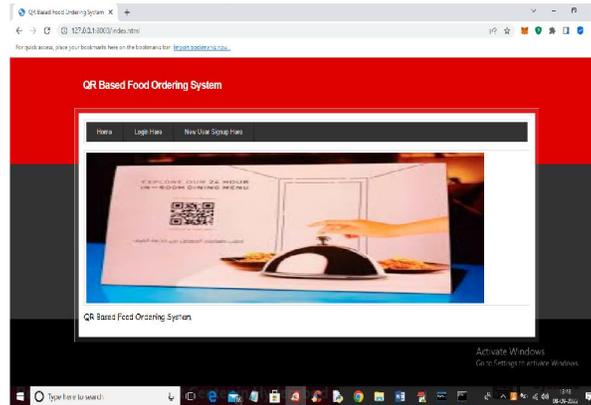


Fig. 2. GUI Output Interface

VIII. PERFORMANCE METRICS

The effectiveness of the system can be evaluated using:

- Order Accuracy: Correct processing of customer orders
- Response Time: Speed of menu loading and order placement
- User Friendliness: Ease of navigation and use
- Efficiency: Reduction in waiting time

IX. APPLICATIONS

- Restaurants and hotels
- Cafeterias and food courts
- Cloud kitchens
- Self-service dining systems

X. FUTURE SCOPE

The system can be further improved by adding:

- Online payment integration (UPI, cards)
- AI-based food suggestions
- Mobile application version
- Voice-based ordering system
- Cloud deployment for scalability

XI. CONCLUSION

The QR code-based food ordering system provides a practical and efficient alternative to traditional ordering methods. It reduces dependency on manual processes, improves accuracy, and speeds up service.

This system is easy to implement and can be widely used in modern restaurants to enhance customer satisfaction and streamline operations.



REFERENCES

- [1]Ashwini Bankar, Mamta Mahajan ‘Touch-based Digital Ordering System on Android’, IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE)
- [2] Sowndarya H K, Abhinaya R, Prathiba B S.’Survey on intelligent food menu ordering system’in International Research Journal of Engineering and Technology (IRJET)
- [3]N. M. Z. Hashim, N. A. Ali, A. S. Jaafar , N. R. Mohamad, L. Salahuddin, N. A. Ishak’Smart Ordering System via Bluetooth’ International Journal of Computer Trends and Technology (IJCTT) – volume 4 Issue 7–Month 2013
- [4] Noor AzahSamsudin, Shamsul Kamal Ahmad Khalid, MohdFikry Akmal MohdKohar, ZulkifliSenin, Mohd Nor Ihkasan.‘A customizable wireless food ordering system withrealtime customer feedback’ in proceedings of the IEEE Symposium on Wireless Technology and Applications (ISWTA), September 25-28, 2011, Langkawi, Malaysia.

