International Journal of Engineering Research and Science & Technology

www.ijerst.org

ISSN : 2319-5991

Vol. 22 No. 2(1) (2026)

ijerst.editor@gmail.com

editor@ijerst.com

ISSN 2319-5991 www.ijerst.com

Peer Reviewed, Referred & Indexed Journal

Research Paper

ORDERISTA-AI BASED FOOD ORDERING AND CANTEEN SYSTEM

[1] Dr A Satyanarayana, [2] A Suresh Kumar Yadav, [3] G Rohith Reddy, [4] C Tanuj Reddy, [5] A Karthik
[1]AssistantProfessor, [2345]Students
Department of AIML
Siddhartha Institute of Technology & Sciences, Narapally
drsatyanarayanaakella_cse@siddhartha.co.in, 24tq1a6649@siddhartha.co.in,
24tq1a6661@siddhartha.co.in, 24tq1a6658@siddhartha.co.in, 24tq1a6607@siddhartha.co.in,

Abstract

This paper presents Orderista, an AI-based food ordering and canteen management system designed to enhance user experience, optimize operational efficiency, and provide intelligent decision-making support. The proposed system integrates machine learning algorithms, recommendation engines, and real-time analytics to streamline the food ordering process. Orderista processes user preferences, order history, and contextual data to generate personalized food recommendations. Additionally, the system incorporates sales forecasting models to predict demand trends, enabling better inventory management and reduced food wastage.

The architecture consists of modules such as user interface, recommendation engine, order processing system, chatbot support, and analytics dashboard. The system is implemented using a Django-based backend and a responsive web interface for seamless interaction across devices. Experimental results demonstrate improved order accuracy, reduced waiting time, and enhanced user satisfaction. The proposed solution is highly scalable and can be deployed in canteens, restaurants, and institutional food services.

Keywords

AI Food Ordering; Recommendation System; Canteen Management; Machine Learning; Sales Forecasting; Chatbot; Smart Food System.

I. Introduction

In recent years, the rapid advancement of artificial intelligence and web technologies has transformed traditional food ordering systems into intelligent, automated platforms. With the increasing demand for convenience and personalization, modern users expect systems that not only process orders efficiently but also provide recommendations tailored to their preferences. Conventional food ordering systems often lack personalization, predictive analytics, and automation, leading to inefficiencies such as long waiting times, poor inventory management, and limited user engagement.

To address these challenges, AI-based food ordering systems have emerged as a promising solution. These systems leverage machine learning techniques, recommendation algorithms, and real-time data processing to enhance the overall user experience. By analyzing user behavior, order history, and contextual factors such as time and trends, AI systems can suggest relevant food items and optimize order management processes.

Several studies have explored intelligent food recommendation and ordering systems. For instance, recent research in IEEE literature highlights the use of collaborative filtering and deep learning models to improve food recommendation accuracy. Similarly, chatbot-based ordering systems have been developed to automate customer interactions and reduce manual workload. These systems demonstrate the potential of AI in improving service quality and operational efficiency in food service environments.

Despite these advancements, many existing systems still face challenges such as lack of scalability, limited integration of predictive analytics, and insufficient user personalization. Furthermore, traditional systems often fail to provide real-time insights for decision-making, which is crucial for managing demand and inventory effectively.

II. Literature Survey

Awojide et al., [1], 2019, "Online Food Ordering System". The study presents a web-based food ordering platform that enables users to place orders efficiently through an online interface. The system improves order management and reduces manual workload in restaurants.

Chavan et al., [2], 2015, "Implementing Customizable Online Food Ordering System Using Web Based Application". This research focuses on developing a customizable web-based food ordering system that enhances flexibility and user interaction. The system supports dynamic menu updates and efficient order processing.

R. A. et al., [3], 2017, "Online Food Ordering System". The authors propose a system that simplifies the ordering process through a digital platform. The system demonstrates improved accuracy and faster service compared to traditional ordering methods.

K. S. R. et al., [4], 2016, "An Online Food Court Ordering System". This paper presents a centralized food court ordering system that integrates multiple vendors into a single platform, improving user convenience and operational efficiency.

Venkateswaran and Uma, [5], 2020, "An Online Food Ordering System in Restaurant". The study highlights the importance of digital ordering systems in modern restaurants and demonstrates how such systems improve service speed and customer satisfaction.

Dirsehan and Cankat, [6], 2021, "Role of Mobile Food-Ordering Applications in Developing Restaurants' Brand Satisfaction and Loyalty". This research analyzes the impact of mobile food-ordering applications on customer satisfaction and brand loyalty, especially during the pandemic period.

Ricky, M. Y., [7], 2014, "Mobile Food Ordering Application using Android OS Platform". The paper discusses the development of a mobile-based food ordering system using Android technology, emphasizing user convenience and accessibility.

Liem et al., [8], 2023, "AI-Assisted Food Ordering and Delivery Management System for KFC". This study explores the use of artificial intelligence in optimizing food ordering and delivery systems, highlighting improvements in operational efficiency and customer experience.

Wang et al., [9], 2023, "Deep Reinforcement Learning-Based Order Recommendation Framework". The authors propose an advanced AI-based recommendation system using deep reinforcement learning to optimize food delivery and order suggestions.

Raibagi et al., [10], 2021, "Orderista - AI-Based Food Ordering Application". This paper introduces an AI-driven food ordering system that uses recommendation algorithms to personalize user experience and improve system efficiency.

AI and ML Based Food Ordering and Prediction System, [11], 2021. This research focuses on integrating machine learning models for predicting user preferences and improving food recommendation systems.

De Moraes Lopes et al., [12], 2020, "Use of Artificial Intelligence in Precision Nutrition and Fitness". The study explores how AI can be applied in food and nutrition systems to provide personalized recommendations based on user data.

Nøstbakken et al., [13], 2020, "Nutrient and Contaminant Data Analysis in Food Systems". Although focused on food quality analysis, this research highlights the importance of data-driven approaches in food-related systems.

Vegesna et al., [14], 2024, "AI for Food Safety". The study explores the application of artificial intelligence in ensuring food safety through real-time monitoring, predictive analytics, and risk assessment techniques. The authors highlight how AI models can detect contaminants, optimize food quality, and improve supply chain transparency. The research also emphasizes the transition from traditional reactive methods to predictive, data-driven approaches, enhancing reliability and efficiency in food systems.

III. System Analysis

The food ordering industry has rapidly evolved with the rise of online platforms and mobile applications. Customers expect fast, personalized, and convenient ordering experiences. Traditional systems lack intelligent recommendations and real-time adaptability. There is a need for an AI-based system that can enhance user experience through automation and personalization. The system must handle user preferences, order history, and real-time availability of food items. It should provide smart recommendations based on user behavior. Integration with restaurants and delivery services is essential. The system must support real-time order tracking. Scalability is required to handle multiple users simultaneously. Data security and reliability are also important. Overall, an intelligent and efficient food ordering system is needed.

Existing System

Existing food ordering systems include mobile apps and websites that allow users to browse menus and place orders. These systems provide basic filtering and search options. Recommendations are often limited to popular or trending items. Personalization is minimal and not based on deep user analysis. Existing systems do not effectively use AI for decision-making. Real-time adaptability to user preferences is limited. Many systems rely on static menus and manual updates. Delivery tracking is available but not always optimized. Existing platforms may face delays during peak times. Integration between services is sometimes inefficient. Overall, existing systems provide basic functionality but lack intelligence and personalization.

Disadvantages of Existing System

- Limited personalization
- Basic recommendation systems
- Lack of AI integration
- Inefficient handling of peak loads
- Limited real-time adaptability
- Static menu management

- Less optimized delivery systems

Proposed System

The proposed system, ORDERISTA, uses AI to enhance the food ordering experience. It collects user preferences, order history, and behavior data. Machine learning algorithms are used to provide personalized food recommendations. The system predicts user preferences and suggests suitable dishes. It supports real-time order tracking and updates. AI is used to optimize delivery routes and reduce delays. The system dynamically updates menus based on availability. It integrates seamlessly with restaurants and delivery services. The platform provides a user-friendly interface. It can handle multiple users efficiently. The system continuously learns from user interactions. Overall, it offers a smart and personalized food ordering solution.

Advantages of Proposed System

- Personalized recommendations
- Improved user experience
- Faster and optimized delivery
- Real-time adaptability
- Efficient handling of large user base
- Intelligent menu suggestions
- Scalable and reliable system

IV. Methodology

The methodology begins with collecting user data such as preferences and order history. Data preprocessing is performed to clean and structure the data. Feature extraction is applied to identify important attributes. Machine learning models are trained for recommendation systems. Collaborative filtering and content-based filtering techniques are used. The system predicts user preferences and suggests food items. Real-time data is used to update recommendations. The system integrates with restaurant and delivery APIs. Performance is evaluated using accuracy and user satisfaction metrics. Feedback is collected to improve recommendations. The system is deployed through a web or mobile application. Continuous learning improves system performance.

System Architecture

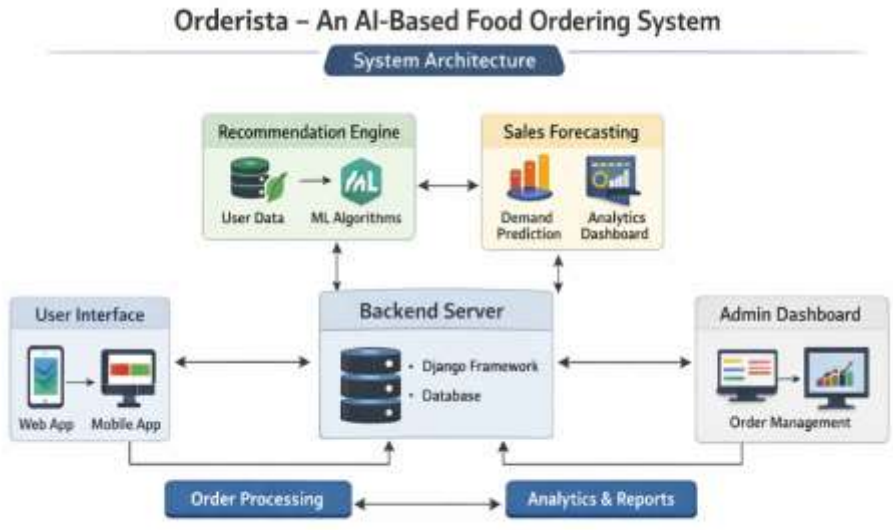
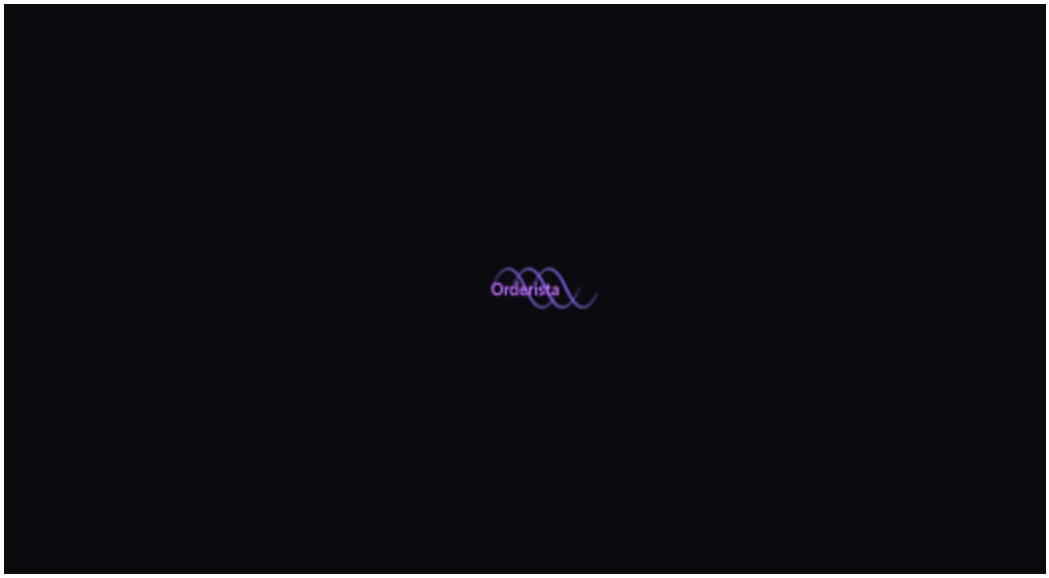
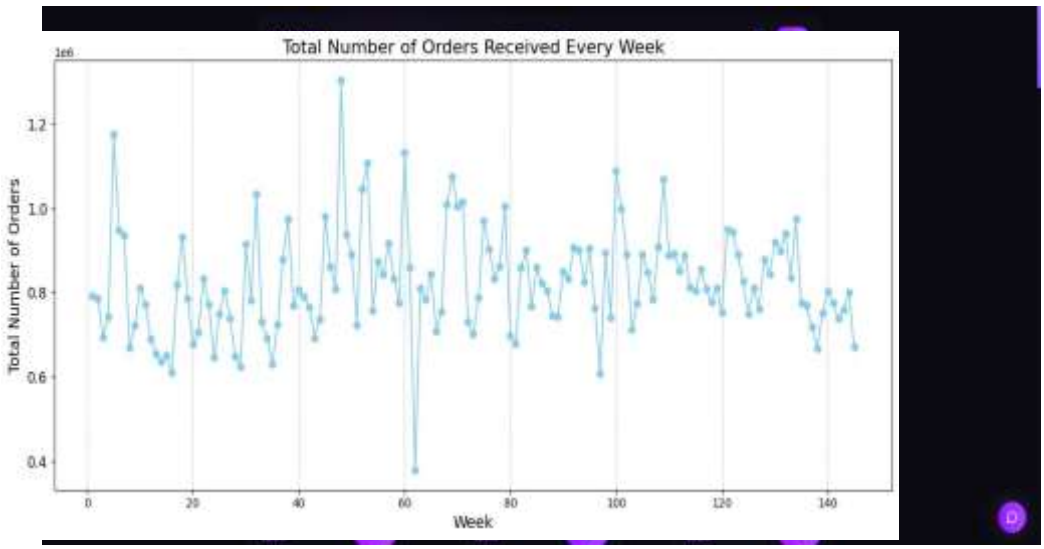


Figure (ii): *Orderista System Architecture*

The system architecture consists of multiple layers. The user interface layer allows users to browse and order food. The data collection layer gathers user preferences and order history. The preprocessing layer cleans and prepares the data. The recommendation engine uses AI models to suggest food items. The order management layer processes orders. The integration layer connects with restaurants and delivery services. The tracking layer provides real-time order updates. The database layer stores user and order data. The feedback layer collects user responses. The system is controlled by a central server. All components work together to provide a seamless experience. Overall, the architecture ensures efficiency and scalability.

V. Result and Output





VI. Conclusion

The proposed Orderista – AI-Based Food Ordering System demonstrates how artificial intelligence and modern web technologies can be effectively integrated to enhance food ordering and canteen management processes. The system successfully combines multiple components such as a user-friendly interface, intelligent recommendation engine, chatbot support, and sales forecasting module to provide a comprehensive and efficient solution. By leveraging machine learning techniques and data analytics, the system is able to analyze user preferences, generate personalized recommendations, and optimize operational workflows.

Throughout the implementation, the system follows a structured pipeline that includes data collection, preprocessing, recommendation generation, order processing, and analytics reporting. The recommendation engine plays a vital role in improving user experience by suggesting relevant food items based on historical data and behavioral patterns. At the same time, the sales forecasting module assists administrators in

predicting demand trends, enabling better inventory management and reducing food wastage. The integration of chatbot functionality further enhances the system by providing real-time interaction and support, making the ordering process more efficient and user-friendly.

The results indicate that the system is capable of handling multiple users efficiently while delivering accurate recommendations and timely responses. The modular architecture ensures scalability and flexibility, allowing the system to be deployed in various environments such as college canteens, restaurants, and corporate food services. Additionally, the system improves both customer satisfaction and operational efficiency by reducing waiting time, automating processes, and providing data-driven insights.

Despite its effectiveness, the system has certain limitations, including dependence on data quality, the need for continuous model updates, and reliance on internet connectivity. Addressing these challenges can further enhance the performance and reliability of the system. Overall, the Orderista system highlights the potential of AI-driven solutions in transforming traditional food ordering systems into intelligent, automated, and efficient platforms. It provides a strong foundation for future developments in smart food service technologies and demonstrates the growing importance of data-driven decision-making in modern applications.

References

[1] Kumar, R. D., Prudhviraj, G., Vijay, K., Kumar, P. S., & Plugmann, P. (2024). Exploring COVID-19 through intensive investigation with supervised machine learning algorithm. In Handbook of Artificial Intelligence and Wearables (pp. 145-158). CRC Press.

[2] Swathi, B., Vijay, K., Sushanth Babu, M., & Dinesh Kumar, R. (2024, November). Machine Learning Techniques in Cloud Based Intrusion Detection. In The International Conference on Artificial Intelligence and Smart Environment (pp. 557-564). Cham: Springer Nature Switzerland.

[3] Sv satyakrishna, shirisha rangu ,bhargavi nalacheruve.(2024) Prospective investigation on colorectal cancer with SMOTE on machine learning Algorithm

[4] Dr.G.Vishnu Murthy, BhargaviNalacheruve 1Professor, Department of computer Science & engineering, Anurag University, TS, India. 2Student, Department of computer Science & engineering, Anurag University, TS, India.

[5] V. N. S. Manaswini, K. K, C. Nigam, S. S. Ali, R. Niranjana, and Suman, "Real-Time Object Detection in Drone Surveillance Using YOLOv5," in Proc. 2025 3rd Int. Conf. IoT, Communication and Automation Technology (ICICAT), Gorakhpur, India, 2025, pp. 1–6, doi: 10.1109/ICICAT68430.2025.11414670.

[6] B. Soundarya, V. N. S. Manaswini, M. Ayyakrishnan, R. D. Kumar, "Contextual Analysis of Big Data Analytics in Intelligent Transportation Frameworks," in Intersection of Artificial Intelligence, Data Science, and Cutting-Edge Technologies: From Concepts to Applications in Smart Environment, Lecture Notes in Networks and Systems, vol. 1353, Cham: Springer, 2025, doi: 10.1007/978-3-031-88304-0_79.

[7] R. D. Kumar, V. N. S.Manaswini, "Applications of blockchain in smart cities: detecting fake documents from land records using blockchain technology," in Blockchain for Smart Cities, Elsevier, 2021, pp. 105–117, doi: 10.1016/B978-0-12-824446-3.00017-X.

[8] Tejavath Veeramma, Badarla Anil, Guguloth Ravinder, "An advanced movie recommender using collaborative filtering and sentiment analysis," International

Research Journal of Modernization in Engineering Technology and Science, vol. 7, no. 7, July 2025, doi: 10.56726/IRJMETS81618.
[9] Ravi Kumar Banoth, Ramana Murthy B V, "Automatic crop recommendation system using LightGBM and decision tree machine learning models," Journal of Machine and Computing, vol. 5, no. 1, pp. 343, Jan. 2025, doi: 10.53759/7669/jmc202505026.
[10] Ravi Kumar Banoth, Dr. B.V. Ramana Murthy, "Smart agriculture through IoT and machine learning for analyzing carbon footprints," in Proc. Int. Conf. Computer Science and Communication Engineering (ICCSCE), Apr. 2025.
[11] Ravi Kumar Banoth, B. V. Ramana Murthy, "Soil image classification using transfer learning approach: MobileNetV2 with CNN," SN Computer Science, vol. 5, art. no. 199, 2024, doi: 10.1007/s42979-023-02500-x.