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Online Chatbot Based Ticketing System

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ABSTRACT: In today's digital age, museum visitors have higher expectations for faster, more efficient, and userfriendly experiences. Traditional ticketing methods, which often result in long lines, booking issues, and frustrated guests, simply can't meet these needs anymore. The "Online Chatbot-Based Ticketing System" concept proposes the introduction of an AI-powered chatbot capable of handling all ticketing tasks, from bookings to gate access and special show reservations, without human involvement.

By automating the reservation process and integrating a secure payment gateway, the chatbot also provides real-time analytics, helping museums make smarter, data-driven decisions. This system promises to enhance visitor satisfaction, reduce operational costs, and streamline museum operations through seamless automation and 24/7 availability. Embracing this technology will not only offer a quicker, more personalized experience for visitors, but also provide museums with valuable insights for continuous improvement and targeted marketing. It's a step forward in creating a modern, efficient, and visitor-friendly museum experience.

KEYWORDS: Chatbot, Ticket Booking, Automation, Museum, Payment Gateway, Visitor Experience, Data Analytics, User Interface, Error Reduction, Operational Efficiency, Scalability, Accessibility, Admin Dashboard

I. INTRODUCTION

Museums attract visitors from around the world, offering cultural, educational, and recreational experiences. However, managing the flow of visitors—especially during weekends, busy seasons, and special exhibitions—can be a significant challenge. Traditional manual ticketing systems often lead to long lines, booking errors, and frustrated guests, which can harm the museum's reputation and hinder its potential growth.

As technology rapidly advances and visitor expectations rise, it's becoming increasingly clear that museums need smarter, more efficient solutions. The Online Chatbot-Based Ticketing System offers a way forward, integrating AI-powered chatbots to handle ticket bookings seamlessly and independently. This system not only streamlines the ticketing process but also collects valuable visitor data to help museum administrators plan better, understand visitor behavior, and even run targeted marketing campaigns.

By automating ticket sales, reducing human error, and offering 24/7 access, the chatbot enhances the overall visitor experience and operational efficiency. It also integrates with secure online payment systems for smooth, hassle-free transactions. With the ability to access real-time data analytics, museums can make informed decisions about events and services, ensuring that they remain relevant, accessible, and attractive to today's tech-savvy audiences. Adopting such a system is a crucial step in modernizing museum services and keeping them in tune with the needs and expectations of their visitors.

II. RELATED WORK

In [1] McTear (2017) discusses how chatbots, particularly in customer service, are transforming the industry by offering real-time, 24/7 support. He asserts that chatbots streamline support operations by delivering quick responses, reducing the workload of human agents, and ensuring consistent communication. The study emphasizes the positive impact of chatbots on customer satisfaction, thanks to their ability to provide easy-to-use services across multiple platforms, such as websites and mobile apps. McTear further highlights the role of natural language processing in enabling chatbots to understand user intent, thus delivering more personalized interactions. This research establishes



the foundation for chatbot deployment in customer service, as well as their role in improving engagement and service quality.

In [2] Følstad and Brandtzaeg (2017) examine the effect of conversational agents on user engagement, focusing on how these agents can create more intuitive and natural interactions with service users. They argue that modern AI-powered chatbots are capable of handling increasingly complex tasks, such as bookings and troubleshooting, making them ideal for use in environments like museums. The authors highlight the ongoing improvements in AI technologies, which enhance the functionality and application of chatbots in a variety of service settings, thereby contributing to higher customer engagement and satisfaction.

In [3] Brynjolfsson and McAfee (2017) emphasize the importance of data collection and analytics in AI-driven systems. They argue that the ability of chatbots to gather user data—such as visitor behavior, popular exhibitions, and peak visiting hours—enables more informed decision-making for museums and other service providers. The paper discusses how data-driven strategies can improve service offerings, optimize resource allocation, and enhance marketing efforts, which are crucial for the efficient operation of museums. This study supports the idea that chatbots can be instrumental in transforming how museums manage visitor interactions and operational planning.

In [4] Lord and Piacente (2014) highlight the unique challenges faced by museums, such as diverse visitor demographics and the need for educational engagement. They explain how traditional, paper-based systems limit the capacity of museums to handle large crowds and modern marketing initiatives. By implementing chatbot-driven digital ticketing systems, they argue that museums can enhance accessibility, ease congestion at entry points, and offer a more inclusive visitor experience. This research provides valuable insights into how AI can address these operational challenges within the context of museum management.

In [5] an Accenture report (2017) discusses the impact of AI-powered ticketing systems in industries such as airlines, entertainment, and transportation. The report emphasizes how these systems streamline booking processes, reduce operational costs, and offer personalized promotions to customers. In addition, it highlights how chatbot-driven ticketing solutions have proven effective in managing high volumes of visitors at amusement parks and movie theaters, leading to increased customer satisfaction. The paper strongly supports the implementation of AI-based ticketing systems in museums, illustrating the benefits of AI technology in enhancing organizational efficiency and improving the visitor experience.

III. PROPOSED ALGORITHM

A. Initialization and User Authentication:

Upon initial launch, users are prompted to log into their accounts using a secure authentication system. Once logged in, users can access their personalized dashboard, which provides seamless navigation through the ticket booking process. The system ensures that users have a smooth, intuitive experience by leveraging the authentication features provided by JWT (JSON Web Tokens). This security mechanism verifies user identities, ensuring that only authorized users can access and manage their bookings.

B. Ticket Booking through Home Page or Chatbot:

Once authenticated, users are provided with multiple ways to book tickets. They can either use the traditional method through the home page interface, which is built using React JS, or they can engage with the integrated chatbot. The chatbot is powered by OpenAI's API, which supports natural language processing (NLP). The chatbot is specifically trained to understand user queries related to ticket bookings, allowing users to interact with it in a conversational manner. This provides a convenient and modern approach for users who prefer a more interactive and conversational method for booking their tickets.

C. Chatbot Integration with OpenAI API:

The chatbot utilizes OpenAI's API for natural language processing. This integration allows the chatbot to understand and process user input, converting queries into actionable requests. For instance, when a user asks the chatbot to book tickets for a specific event, the system processes the request, checks availability, and presents the user with options. The AI's NLP capabilities ensure that the chatbot can understand a variety of user inputs and respond accordingly, helping users with ticket bookings, cancellations, and other queries related to their bookings. www.ijircce.com



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D. Payment Gateway Integration:

The payment process is integrated into the application to provide users with a seamless booking experience. Once the tickets are selected, users are prompted to make payments using a secure payment gateway. The payment system supports payment via various methods, ensuring that the transaction is valid and secure. This is achieved by storing card details in the database and verifying their authenticity before processing any payments. The integration guarantees a smooth and secure checkout experience, making it convenient for users to complete their bookings.

E. Database Integration using MongoDB:

To store all relevant data, including user information, ticket details, and transaction records, MongoDB is employed as the database solution. MongoDB's NoSQL architecture allows for flexible, scalable data storage, making it ideal for handling varied types of data such as user profiles, ticket bookings, payment records, and chat logs. The Ticket schema in MongoDB accurately stores details such as event name, date, price, and booking status, ensuring that all booking data is consistently organized and easily accessible for users and administrators.

F. Frontend Development with React JS:

The frontend of the application is developed using React JS, providing a responsive and dynamic user interface. React's state management features ensure that data flows smoothly between components, allowing users to view their ticket bookings, make selections, and interact with the chatbot. The user interface is designed to be intuitive and user-friendly, ensuring that users can easily navigate through the booking process. Additionally, API calls to the backend are optimized for speed and reliability, ensuring that the application delivers real-time updates and an engaging user experience.

G. Real-Time Ticket Booking and Interaction:

The application allows users to interact with the chatbot in real time for booking tickets. The chatbot processes each query using the NLP model and provides real-time responses, ensuring an interactive and personalized experience. This chatbot-driven process allows users to quickly and easily book tickets through natural conversation. Additionally, users can track their booking status and receive updates directly from the chatbot, enhancing engagement and user satisfaction.

H. User Interface and Output:

The React-based frontend ensures that users can view their booking details, payment status, and chatbot interactions in real time. The interface is designed to display all relevant information clearly, with sections dedicated to ticket details, payment confirmations, and any updates provided by the chatbot. The system provides a seamless experience, displaying relevant data and allowing users to easily manage their tickets. The output from the chatbot, including booking confirmations and event details, is dynamically rendered on the frontend, ensuring the user is kept informed at all stages of the ticketing process.

IV. PSEUDO CODE

Step 1: Initialization & User Authentication.

- Step 2: Ticket Booking (via Homepage or Chatbot).
- Step 3: Select ticket details (museum name, number of tickets, and date).
- Step 4: Show payment gateway when user proceeds to payment.
- Step 5: Store user ticket in my tickets.
- Step 6: go to step 2.

Step 7: End.

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V. RESULTS



Fig 1: login









Fig 5: Storage of booked tickets

The above figures outline the sequential execution of the website's functionality, guiding the user through authentication, ticket booking, payment processing, and storing ticket details. It offers flexibility by allowing users to book tickets either through the homepage or via a chatbot. Once the payment is processed, the ticket is saved in "My Tickets," and the user can choose to book additional tickets or end the session. This process ensures a smooth, user-friendly experience from start to finish.

VI. CONCLUSION AND FUTURE WORK

Conclusion:

This system provides a seamless, user-friendly platform for booking museum tickets, with multiple options for interaction, including both the homepage and a chatbot. By integrating features like user authentication, ticket selection, payment processing, and ticket storage, it offers an efficient and personalized experience. The use of modern technologies like React for the frontend, OpenAI's chatbot for interaction, and MongoDB for data storage ensures that the system is scalable, reliable, and easy to use. The end-to-end workflow, from ticket booking to payment, is streamlined for a hassle-free user experience, making it an effective solution for modern ticketing needs.

Future Work:

Expanded Language Support: Implementing multilingual support in the chatbot and ticketing system to cater to a wider audience, especially in regions with diverse linguistic backgrounds.

Enhanced Chatbot Capabilities: Further training the chatbot to handle more complex user queries, including event details, promotional offers, and customer support, thereby improving the chatbot's role in customer service.

AI-Based Recommendations: Incorporating AI to offer personalized ticketing recommendations based on user behavior, such as suggesting exhibits or time slots that align with the user's preferences.

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Integration with Other Ticketing Systems: Expanding the system's capabilities to integrate with other venues or events, allowing users to book tickets for a variety of attractions, beyond just museums.

Mobile App Development: Developing a mobile application for iOS and Android to enable users to access the ticketing platform on-the-go, with features like push notifications for booking reminders and event updates.

REFERENCES

- 1. M. McTear, The Rise of Chatbots: Optimizing Customer Service through Automation. Springer, 2017.
- 2. A. Følstad and P. B. Brandtzæg, "Chatbots and the new world of HCI," Interactions, vol. 24, no. 4, pp. 38–42, 2017.
- E. Brynjolfsson and A. McAfee, Machine, Platform, Crowd: Harnessing Our Digital Future. New York, NY: W. W. Norton & Company, 2017.
- 4. B. Lord and M. Piacente, Manual of Museum Exhibitions, 2nd ed. Lanham, MD: Rowman & Littlefield, 2014
- 5. Accenture, Artificial Intelligence: Is It Ready for Customer Service?, 2017.
- 6. A. Murgia, S. Clarke, and G. Benassi, "Accessibility and multilingual design in digital cultural heritage applications," Int. J. Herit. Stud., vol. 24, no. 6, pp. 638–652, 2018.
- 7. A. Shawar and E. Atwell, "Chatbots: Are they really useful?" in LOAIT 2007 International Conference on Languages, Applications and Technologies, 2007.
- 8. M. Nuruzzaman and O. K. Hussain, "A survey on chatbot implementation in customer service industry through deep neural networks," in 2018 IEEE 15th Int. Conf. e-Business Engineering (ICEBE), 2018.



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