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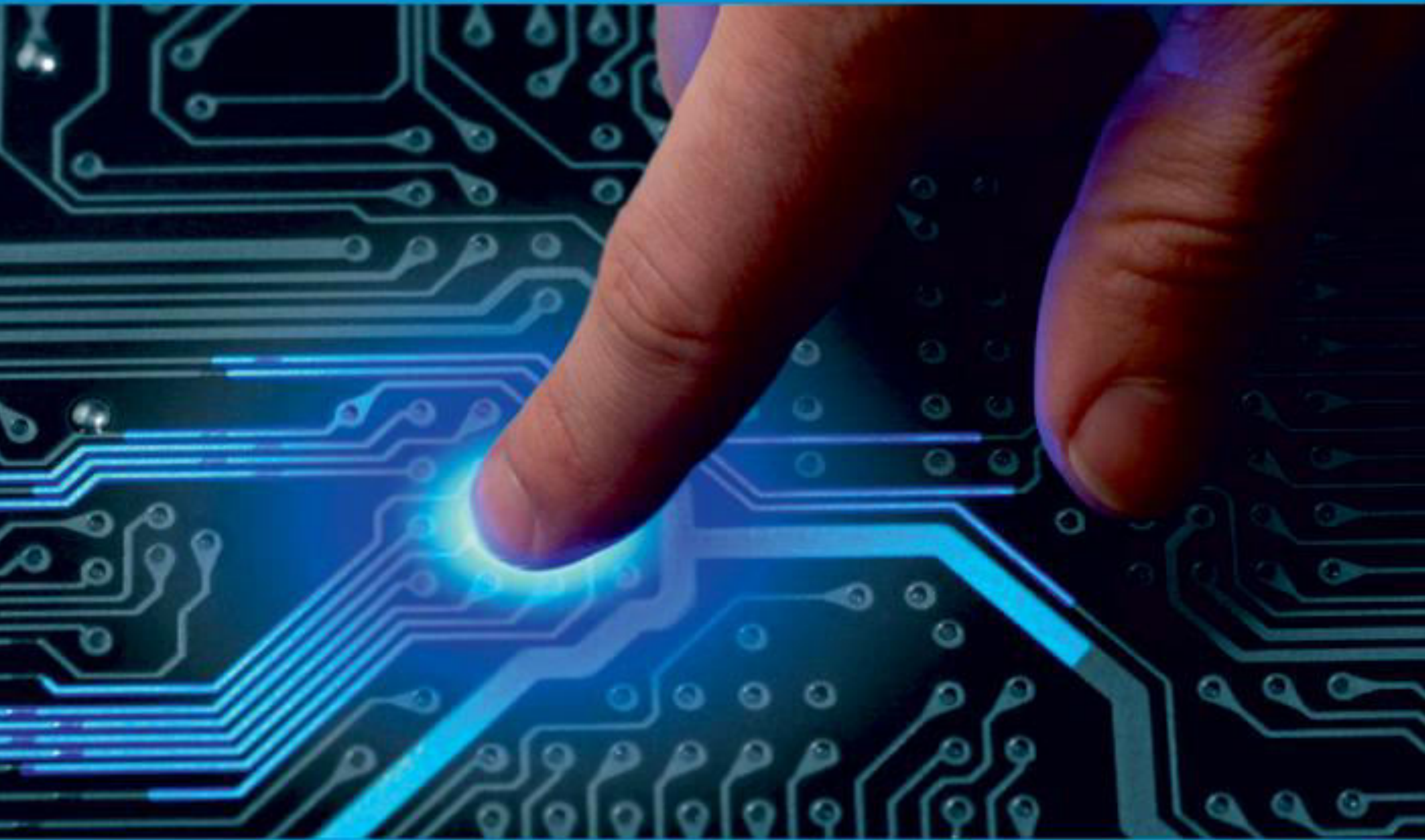

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International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

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Design & Development of Online Chatbot Based Ticketing System

Sumer Jilalla[1], Karan Pawde[2], Salil Koyal[3], Nirjara Bhide[4], Anmol Tiwari[5], Jerom Francis[6], Shankar Gadhve[7]

UG Students, Department of Information Technology, St.Vincent Pallotti College of Engineering and Technology, Nagpur, India[1,2,3,4,5,6]

Assistant Professor, Department of Information Technology, St.Vincent Pallotti College of Engineering and Technology, Nagpur, India[7]

ABSTRACT: Chatbots have an influence on the fast-growing field of conversational AI. This paper aims to examine how users experience chatbot apps in museums and art galleries. It gives an overview of chatbot basics how to make them, and how to test them. The paper explains ways to evaluate user experience and lists indicators to assess how users interact with chatbots. It covers the history and types of museum chatbots They wanted to answer two questions: (1) What chatbots have museums and galleries created? and (2) Did anyone study visitor experiences with these chatbots? They found a gap in research about measuring how visitors experience chatbots.

KEYWORDS: Application, chatbot, conversation, museum, tourism

I. INTRODUCTION

Research in artificial intelligence (AI) since its inception has focused on ways to mimic human communication in natural language as faithfully as possible, among other things (chatbots) classify allpotential searches (absolute number of applications and users, profitability, time and labor savings for companies, communication channels). share in the middle etc) and growing in application areas .Museums usually only have space to display about 5% of their collections at any one time, butcollections are now digitized, so applications including chatbots are lacking anything to stop their online presence , finance,healthcare) compared to museums, galleries, And in cultural institutions, developing chatbots for specific uses is a creative strategy because they can be combined with gamification, augmented reality , or virtual reality has enhanced the role of chatbots. Chatbots make museums more appealing to younger generations of visitors, who use digital devices and social networks almost constantly during the day. Concept Status Principles of Chatbots A chatbot is software that interacts with the user in a natural ways. Recent developments in Information Communication Technology (ICT) have created new opportunities for remote access to cultural heritage information and services The importance of these developments has increased due to the COVID-19 pandemic and subsequent evacuation sites, demand an increase in virtual services to cultural heritage sites. Research in artificial intelligence (AI) since its inception has focused on ways to mimic human communication in natural language as faithfully as possible, among other things. chatbots) break down all searchable metrics etc.) and growing in application areas .Museums usually have room to display about 5% of the collection at any one time, but now they are made up of collections digitized, so applications including chatbots have nothing to block their online access Traditional chatbot application areas (such as online commerce, telecom, finance). , health) Comparatively, developing chatbots for specific use in museums, galleries and cultural institutions is a creative approach because the functionality of chatbots can be enhanced with gamification, augmented reality , or virtual reality. Chatbots make museums more appealing to younger generations of visitors, who use digital devices and social networks almost constantly during the day. Concept Status Principles of Chatbots A chatbot is software that interacts with the user in a natural way.

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II. LITERATURE SURVEY

Research shows that chatbot-based ticketing systems have a big impact on the user experience. They solve many problems that come with old-school manual systems. These systems use computers to handle important jobs like giving out tickets, setting up schedules, and keeping records. This cuts down on human mistakes such as booking the same thing twice or giving out wrong tickets. Chatbotsalso answer right away, which means users don't have to wait around. This makes the whole processof booking tickets smoother and faster for everyone. Despite these advances, problems persist. A main worry is how well chatbots can grasp and answer tricky or unclear user questions. Natural language processing (NLP) has boosted chatbots' talking skills, but they need to get better at handling subtle, context-based inputs. Another issue is fitting chatbots into old ticketing systems, which can be hard and take a lot of resources. Also, people's trust in chatbots is key when dealing with private info like payment details. Worries about keeping data safe protecting privacy, and getting transactions right can make users hesitant to rely on these systems. Linking up with secure payment systems and putting strong data protection measures in place are also tackling safety and privacy worries building more user trust in these setups.

III. PROBLEM STATEMENT

The manual way of booking tickets by hand at museums is full of problems and mistakes that hurt both visitors and the museum itself. Things like giving out wrong tickets, booking the same spot twice,and losing records don't just mess up how things run, they also make people wait longer and get annoyed. These issues create long lines during busy times, make people wait forever, and often leavethe staff swamped with questions and complaints. All these headaches make the whole visit less enjoyable leaving people unhappy and damaging the museum's good name. In the long run, this unhappiness can lead to fewer visitors, stop people from coming back, and hit the museum's wallet hard. Putting a chatbot into action for ticket booking at a museum tackles these key problems head- on by making the ticketing process automatic and smoother. A chatbot offers a dependable and easy-to-use system that gets rid of human mistakes making sure tickets are issued and avoiding double bookings. By keeping a central digital record of all transactions, the system stops data from being lost, which allows for smooth ticket handling for both visitors and museum workers. Also, chatbots work around the clock, so visitors can book tickets whenever they want without being limited by when the museum is open.

IV. SYSTEM ARCHITECTURE

The RECBOT system is designed as a modular and layered framework that integrates conversational AI, hybrid recommender systems. and advanced data management tools to enhance the virtual museum experience. Below is the detailed structure and architecture.

1. Level of user interaction

Chatbot interface: Type of interaction: button or text based data entry. Supports multiple languages(e.g. English, local language) for ease of access.
efficiency: Provide exhibition details Access to educational programs Take a themed tour or play aneducational game. Responsible design for web and mobile platforms.
Session management: Track and maintain session continuity Stores user preferences, preferences,and interaction history. It also ensures a personalized and customized experience.

2. Natural Language Processing (NLP) Level

Introduction to Intent: Specify user intent, such as searching for an exhibition. Joining the tour or requesting specific details Frameworks/Tools: Rasa NLU, Google Dialog Flow, spacy Named Entity Recognition (NER): 1.1. Extract relevant information (such as display name, category, location) fromuser queries. A custom trained model for handling paleontological domain-specific terminology. Natural language generation (NLG): . It converts structured data into human-readable responses.
technique: Default template for consistent responses Machine learning-based models for each dynamic output Multi-language support: Allows questions to be asked in multiple languages (e.g.English, local language)..

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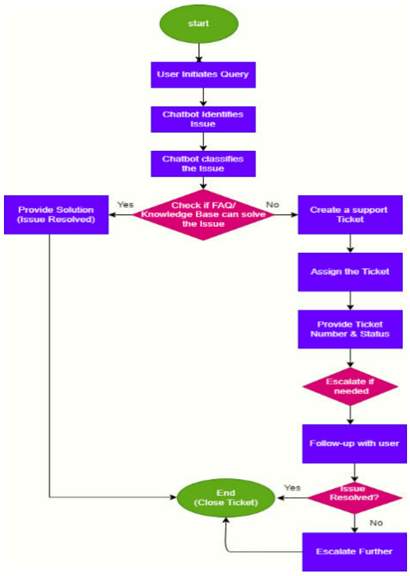

FIGURE 1. OVERVIEW CHART OF CHATBOT.

Knowledge management level Knowledge Graph (KG): . Central repository for museum information(artifact Thematic area educational program It is structured using Ontologies (e.g. RDF, SPARQL) for semantic reasoning and query optimization Content management system (CMS): The repository will display metadata. Multimedia content andrecord user activities Provides an admin interface for curators to dynamically update and manage content.

Continuing Education: Stores user preferences and browsing patterns to improve systemresponsiveness. Adapt through supervised learning and reinforcement.

4. Recommender unit layer hybrid approach: content-based filtering: uses important to importantrelationships betwixt exhibits (eg mature case location) finds exhibits like to the ones presently viewed away the Operator
collaborative filtering: leverages by visitant conduct to advocate exhibits matches exploiter seanceInformation with like visitant profiles
explainability: provides recommendations founded along joint attributes (eg like thematic field or era) Produces visceral explanations for exploiter understanding
dynamic ranking: combines content-based and collaborative filtering lots to prioritize recommendations
filtering mechanisms: avoids suggesting exhibits the exploiter has already viewed highlights less-explored just pertinent exhibits

5. Multimedia Integration Layer
Media Management: Collects and retrieves multimedia content (e.g. images audio videos) related toexhibits. Ensures optimal delivery of high-reAnswer content for web and mobile platforms.
Dynamic API Delivery: Enables real-time content delivery and updates via APIs. Supports interactive multimedia Encounters.

6. Information psychoanalysis and coverage layervisitor conduct analysis: tracks exploiter interactions and preferences for Checkimonial optimization evaluates employment metrics to value unit Effectiveness reporting:Produces Understandings for curators and administrators to down exploiter Encounters Backend Infrastructure
Main AI Engine: Combines NLP (Google DialogFlow Rasa NLU spaCy) and NLG tools for interactionMethoding.

7. API Integrations: Seamlessly connects with ticketing systems for creating updating and managingtickets. Provides real-time updates on ticket status and progress.
System Flow Diagram Input: Operator interacts via chatbot (text or buttons).

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NLP Methoding: Intent classification and entity recognition. Question refinement and context Removeion.
Knowledge Access: Queries KG for exhibit information or relationships.
Recommendation Engine: Combines content-based and collaborative filtering for personalizedsuggestions.
Multimedia Integration: Delivers related content (e.g. videos images) in Answer to Operator queries.
Feedback Loop: Stores Meeting Information and Operator preferences in CMS.Updates learning Representations for future interactions.This Structure ensures a personalized explainable and seamless Operator Encounter in navigating virtual museums.

The above flowchart illustrates a structured process of customer support to address the problems of the users effectively. It starts with a query initiated by the user, followed by the chatbot identifying and classifying the problem based on its type and complexity. Here, the chatbot tries to solve the problem on the spot. If the problem is solved, it ends there.

If not resolved, the system checks if a solution can be found through an FAQ or knowledge base. If a solution is found, it provides that to the user; else it creates a support ticket to escalate the matter. This ticket is then assigned to the appropriate team or person for further action and the ticket number and status update is given to the user.

If the problem is complex, then it might be forwarded further for higher-level resolution. Follow-up with the user is maintained at all stages regarding the on-going process. After the completion of a problem, the ticket is closed. If the problem continues to occur then again it gets forwarded and brought up until a satisfactory solution is reached.

This flowchart introduces a structured approach towards problem-solving, ensuring that the solution is sought at the earliest level while being open and communicating with the end-user.

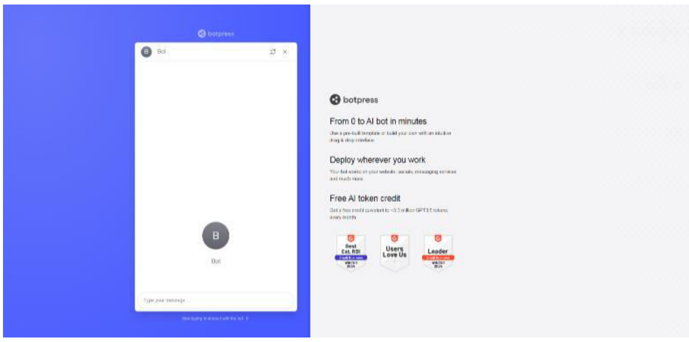

FIGURE 2. HOME PAGE OF THE CHATBOT.

V. PROBLEM SOLUTION

The challenges of guide ticket reserving systems, including wrong price ticket issuance, double bookings, or misplaced statistics, can cause sizeable delays and inconvenience for visitors. These inefficiencies now not simplest avoid operational workflows however also negatively affect the traveller enjoy, lowering delight and potentially harming the museum's popularity. Over time, such issues can result in decrease vacationer numbers and dwindled sales, threatening the sustainabilityof the institution.

To deal with these demanding situations, the implementation of a chatbot-primarily based ticketing machine offers a comprehensive and innovative solution. By automating the price ticket booking process, the chatbot minimizes human mistakes, making sure correct price ticket issuance and preventing double bookings. It maintains a centralized and secure digital record of all transactions, doing away with the chance of misplaced data and presenting real-time access to reserving statisticsfor each workforce and visitors.

Chatbots can provide other services beyond tickets, such as providing exhibit information, directing visitors through museum facilities, sharing promotional offers, and answering frequently asked questions. These functions improve the

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tourist experience by giving personalised, immediate, and accurate help, resulting in a positive image of the museum.

Overall, the use of a chatbot for ticket buying marks a considerable improvement in operational efficiency and tourist happiness. By tackling the limitations of manual processes, the chatbot contributes to improving the museum's reputation, increasing visitor engagement, and promotingcontinuous increase in attendance and revenue.

Conversation agent:
The chatbot serves as an interface for museum visitors. It processes input through buttons or text. Ituses natural language processing (NLP) with named entity recognition (NER) to understand user queries in English and local language. It will present a description of its performance. educational program or themed tours This depends on the user's information.

Hybrid Recommender System:
Includes filtering by content (Display similarity) with collaborative filtering (Past visitor behavior)Use the Knowledge Graph (KG) to model the relationship between exhibits and their properties such as location, age, type of animal, etc., allowing for interpretable recommendations.

Technical Applications: Continuous Learning:Chatbots develop by learning from user interactions and storing new knowledge in a knowledge base. NLP is supported by trained NER components tailored to the field of paleontology.Recommendations are ranked by similarity and filtered to avoid previously seen performance.This system enhances the virtual museum experience by providing visitors with an engaging, personalized, and easy-to-use interaction platform. Ticket management integration:

1. API Integration:
Seamlessly connect with your existing ticket system for creating, updating, and editing tickets. Real-time updates: Provide users with timely updates on ticket status and progress.
Backend components 1. Main AI engine Natural language processing (NLP): Process user queries to extract intent and entity. Frameworks/Tools: Custom implementations using Google Dialogflow, IBM Watson NLP, Rasa NLU, orPython NLP libraries such as spaCy or Hugging Face Transformers.
Natural language generation (NLG): Convert data into human-readable responses. Use predefinedtemplates or machine learning models to create dynamic responses.

2. Knowledge management
Knowledge Graph (KG): Presenting museum information (Artifacts, places, activities) in a structured format using ontologies (e.g. RDF, SPARQL).Supports reasoning and semantic questions for context-aware responses.
Content management system (CMS):Gather text, multimedia, and relational information about exhibitions and events. of the museum Admin interface for curators to update and manage content.

3. Recommender system
Filtering by content: Recommend exhibitions based on characteristics (e.g. era, style, artist)Collaborative filtering: Leverage past visitor interactions to suggest exhibits and directions. Hybrid recommendation system: It integrates content-based filtering and collaboration toimprove privacy.

4. Multimedia integration
Media storage and recovery: Collect multimedia content (images, audio, video) for exhibitions. Provides multimedia responses to user commands
API for dynamic content delivery: Ensures optimal delivery of high-resolution content for web andmobile platforms.

5. User session management Session verification: Track user interactions in sessions to ensure continuity and privacy. User profile: Save user settings Search history and display the visit log for eachrecommendation.

6. Data analysis and reporting
Visitor behavior analysis: Analyze user interactions to improve recommendations.

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VI. METHODOLOGY

The methodology behind the RECBOT system is as described. Focused on providing an effective virtual museum experience. Below are details of the conversation agent method and the hybridrecommender system method. Along with the technical implementation mentioned:

Conversation Agent Method
Input processing: Accept user input via button or text. Use natural language processing (NLP) techniques to interpret questions. Named entity identifiers (NER) are used to identify primary entities, such as display names, categories, or properties.

Language support: The chatbot works in English and local languages. Use multilingual NLP tools suchas spacy or Rasa NLU.

Intent classification: Specify the user's intent, e.g. Request exhibition details. Join a themed tourExplore study programs
Natural language generation (NLG): Convert structured data into human-readable responses: Default response template Dynamic machine learning-based NLG model for personalized interactions.

Continuing Education: Optimize user interactions by storing preferences and browsing patterns in a knowledge base. Improves over time through supervised and reinforcement learning. Hybrid recommender system methodology

Filtering by content: Use the Knowledge Graph (KG) to model relationships between exhibits (e.g. location, age, type of animal). thematic area) By comparing features and relationships in KG, userssearch and look for similar displays.

Collaborative filtering: It leverages the behavior of past visitors to recommend exhibitions. Compare user session information with similar user profiles stored in the system to identify the desired display. Instructions that should be explained: Make sure that each recommendation has attributes shared with the current one.

Technical usage Surface architecture: NLP engine: Google DialogFlow, IBM Watson NLP, Rasa NLU or Python NLP (spaCy, Hugging Face Transformers) tools.

NLG model: A pre-trained language model or template for generating answers.

Knowledge management: Knowledge Graph (KG): Organizes archived data using ontologies (e.g. RDF,SPARQL).

Content Management System (CMS): Stores performance data. User activity and multimedia content Provide curators with an admin interface to dynamically update museum content.

Multimedia integration: Provides high-resolution multimedia feedback to improve user experience. Dynamic API-based content delivery for web and mobile devices

Session and profile management: Monitor user sessions to ensure continuity of interaction. Save user settings Search history and save visits for a personalized experience.

Data analysis: Analyze visitor behavior to customize recommendations Review engagement metrics to assess system performance. gathering together The RECBOT system combines conversational AI with advanced recommendation strategies. Hybrid recommender system supported by knowledge account It allows for interpretation, explanation, and adaptive guidance. Integrating multimedia responsiveness and continuous learning ensures a rich and engaging virtual museum experience.

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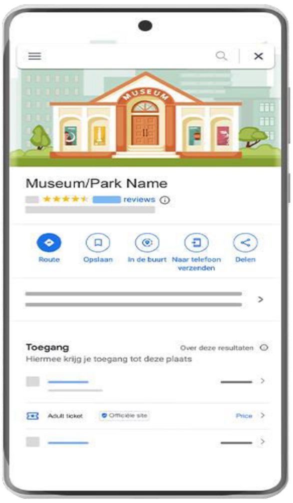
VII. EXPECTED OUTCOME

FIGURE 3. TICKET BOOKING PAGE



FIRGURE 4. MENUPAGE

VIII. CONCLUSION

Conversational AI, chatbots, in particular have been advancing at an astonishing rate and are influencing the user experience of almost every sector-business-to-consumer as well as business-to-business models-both for the customer and for companies. Chatbots give a smooth experience, which the young embrace since they're constantly exposed to mobile devices. Such users, again, are in most cases not bothered about whoever they are chatting with whether a human or a chatbot if the need is met in real time. Older generations tend to be more cautious concerning messages and interacting with a chatbot since most are concerned regarding privacy and protection over personal data. Despite these cons, there are a lot of business benefits in using chatbots, such as efficiency and customer experience. Using chatbots in museums and other similar institutions is the trend that aims to increase interactivity and interaction with exhibitions. Old and trusted institutions such as museums are uniquely placed to incorporate conversational AI into the workflow of the institution. This integration enables research into AI applications, even within the budgetary constraints that museums often face. Moreover, affordable access to chatbot platforms has been made available as well. Still, most of the chatbot applications in museums are in their prototype, as most features employed in chatbots applications are cutting-edge technologies, such as virtual and augmented reality, gamification, and even holograms. It is at this stage when chatbot applications are still under test, and traditional metrics aren't fully able to measure the user experience. Improving their capabilities step by step, from basic virtual guides to sophisticated partners who can engage in context-

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aware and emotional conversations, is fast becoming the evolving trend.

This changing environment has sparked interest in the creation of a framework to enhance virtual tours of museums by conversational AI. One such proposed solution is an open-source chatbot using a custom-trained Named Entity Recognition mechanism and a recommendation system. Optimizing performance is achieved by using a knowledge graph to hold relevant information to be well-organized in a structured way that aids smooth running. The hybrid recommendation system provides recommendations for personal exhibit exhibits based on the user's input as well as interests. Simulations were performed to analyze the performance of the NER mechanism and behavior of the system.

Future work

The real-usage usability of the system can be tested by assessing the findings based on the real-time feedback from the users, which can be collected using s

collected using suitable designed questionnaires. Future goals involve upgrading this system to make it usable for busy visitors who, in a time-effective, informative manner, can access the museum's collection. Museums have evolved into "smart museums." Rather than static and exclusive exhibitions based in the museum, digital versions and smart applications are being provided. Visitors may now spend more time with exhibits long after the museum closes, thereby enhancing experience. However, one is still very concerned about the fact that the museum's collections are not de-emphasized by the chatbots. Additionally, more painful challenges that have to be addressed include accessibility for the disabled, app security, and issues of data protection. This way, respect for visitors' privacy is ensured, while interaction with the chatbot enhances museum experiences for all.

The embedding of chatbots in museum experiences has a great potential for high quality visitor engagement, as well as personalized recommendations and a more inviting and accessible setting. Yet, this can be possible only when there is continuous research, feedback from the user, and careful design.

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