CSE7101- Capstone Project

Review-3

PSCS_481_ Online chatbot based museum ticketing system

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Abstract

Concise overview:

Problem introduction: booking tickets for museums is often time-consuming, confusing, and not multilingual.

Objective: build an efficient, multilingual AI chatbot for museum ticket booking that supports gate entry, shows, and time slots.

Approach: chatbot interface (web/mobile), natural language processing for multiple languages, secure online payment integration, and QR-code generation for tickets.

Literature Survey

- Dr. R. Indhumathi, Y. Punith Chowdary, V. Akhilesh, “Multilingual Museum Ticketing System using Chatbot,” (Scribd publication).—Details a multilingual AI-powered chatbot built on HTML/CSS/JavaScript, supporting English, Hindi, Tamil, enabling ticket booking, reservations, secure payments via UPI QR codes, booking history, session management—enhancing inclusivity and usability.

- Authors (anonymous), “Chatbot-Driven Museum Ticketing System using NLP and ML,” Computer Science Journal of Science and Technology, (dates unspecified).—Develops a museum ticketing chatbot integrating NLP for contextual understanding and Machine Learning, streamlining ticketing workflows.

- Authors (anonymous), “MuseAme: AI-Powered Smart Museum Ticketing System,” IRJMETS, Mar 2025.—Showcases MuseAme, which leverages AI with integrated QR-code–based payments to fast-track secure transactions and modernize museum visitor experiences.

- Huan Wang, “Enhancing Art Museum Experience With a Chatbot Tour Guide,” Master’s Thesis (KTH, Sweden), June 2024.—Presents a ChatGPT-powered chatbot tour guide that introduces artworks, uses image recognition to detect paintings, provides text/audio descriptions and navigation—demonstrating enhanced visitor engagement and usability.

- Filip J. Kucia, Bartosz Grabek, Szymon D. Trochimiak, Anna Wróblewska, “How to Make Museums More Interactive? Case Study of Artistic Chatbot,” arXiv Preprint, Aug 30, 2025.—Describes an LLM-powered, voice-to-voice RAG chatbot (Artistic Chatbot) deployed at an art exhibition in Poland, responding in Polish using a specialized knowledge base, enhancing interactivity and informal learning in cultural heritage site.

Literature Survey

S#	Article Title, Published Year, Journal Name	Methods	Key Features	Merits	Demerits
1	*Application of Chatbots and Virtual Assistants in Ticket Booking System*Guravana Bhavani Shankar et al., 2023	Mixed Methods: Surveys + Statistical Analysis (Regression, ANOVA)	Quantitative analysis of chatbot integration impact on customer satisfaction; high correlation between VA integration and user experience	Validated statistical impact of chatbots; identifies integration issues; suggests standards	Limited to one travel agency; small sample size; lacks technical implementation depth
2	*A Dialogflow-Based Chatbot for Karnataka Tourism*N. M. Madhu Manjunath & S. Ravindra, 2023	Dialogflow (Google NLP), Template-Based Responses	Tourism-focused chatbot for destination info, hotel booking, FAQs; intent recognition via NLP/NLU	Easy integration using Dialogflow; supports automation of basic queries	No full transaction support; lacks backend/payment integration; limited handling of slang or errors
3	*Online Chatbot Based Ticketing System*Dr. Pallavi R et al., IJRAS-ET, 2023	State-Based Chatbot, Flask, Bootstrap, SQLite	Conversational ticket booking for museums; UPI/payment gateway; QR code generation	Reduces queueing and human effort; simple and cost-effective	Lacks scalability, advanced NLP, fallback handling; SQLite limits concurrency
4	*Online Chatbot-Based Ticketing System*S. Parvathi et al., IRJAEH, 2023	Multilingual NLP (Basic), Analytics Dashboard, Mobile App	Multi-language support, secure payments, real-time booking updates, admin analytics	User-friendly; supports mobile access; includes admin-side dashboard	Weak NLP discussion; performance/security not addressed; no fallback or recovery logic
5	*Chatbot Ticketing System*Ayush Pratap Singh et al., IJSREM, 2023	TensorFlow, LLMs, Firebase + Go Backend, Flutter Frontend	Advanced features: LLM chatbot, dynamic pricing, crowd heatmaps, SMS booking	Rich feature set; future-ready design; supports sustainability (digital passes)	High resource cost; lacks detail on model training and error handling; no test benchmarks

Objectives

- Develop a fully software-driven AI chatbot for ticket booking.
- Enable real-time automated customer support with instant ticket generation.
- Integrate secure online payment gateways within the chatbot.
- Design a simple conversational UI accessible to all age groups.
- Reduce manpower costs while improving user satisfaction.
- Minimize operational costs by reducing dependency on human agents.

Existing Methods and Drawbacks

Traditional methods: manual ticket counters (time-consuming, limited language support).

Websites/apps: limited personalization, poor multilingual integration, navigation issues.

Existing chatbots: often single-language, limited transaction handling.

Drawbacks: inefficiency, poor accessibility, lack of real-time updates, security concerns.

Proposed Method & Feasibility Study

Proposed Method:

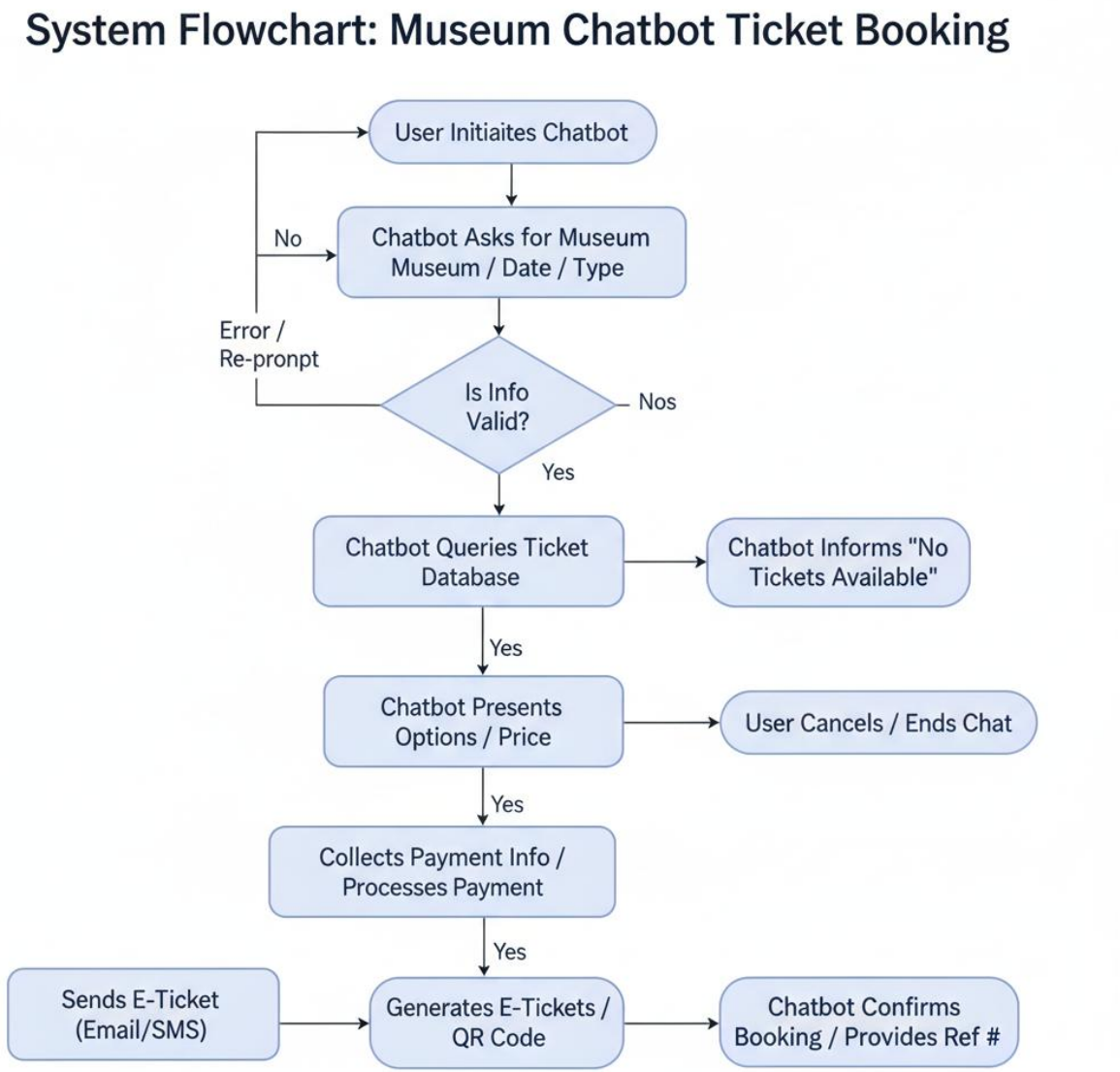
Build a web-based chatbot system.
Use NLP (Dialogflow/Rasa) for multilingual understanding.
Integrate with payment APIs (Razorpay/Stripe/UPI).
QR code generation for bookings.
Cloud deployment for scalability.

Feasibility:

Technology: uses existing frameworks (low development cost).
Cost: mostly open-source tools; payments via existing APIs.
Resources: student-level feasible with available computing resources.

Architecture Diagram

Chatbot messenger



Modules

- User Interaction Module: multilingual chatbot UI.
- NLP & Intent Recognition Module.
- Museum Database Module: shows, slots, tickets.
- Payment Gateway Module.
- QR Code Generation Module.
- Admin Module: manage museums, schedules, users.

Hardware and Software Details

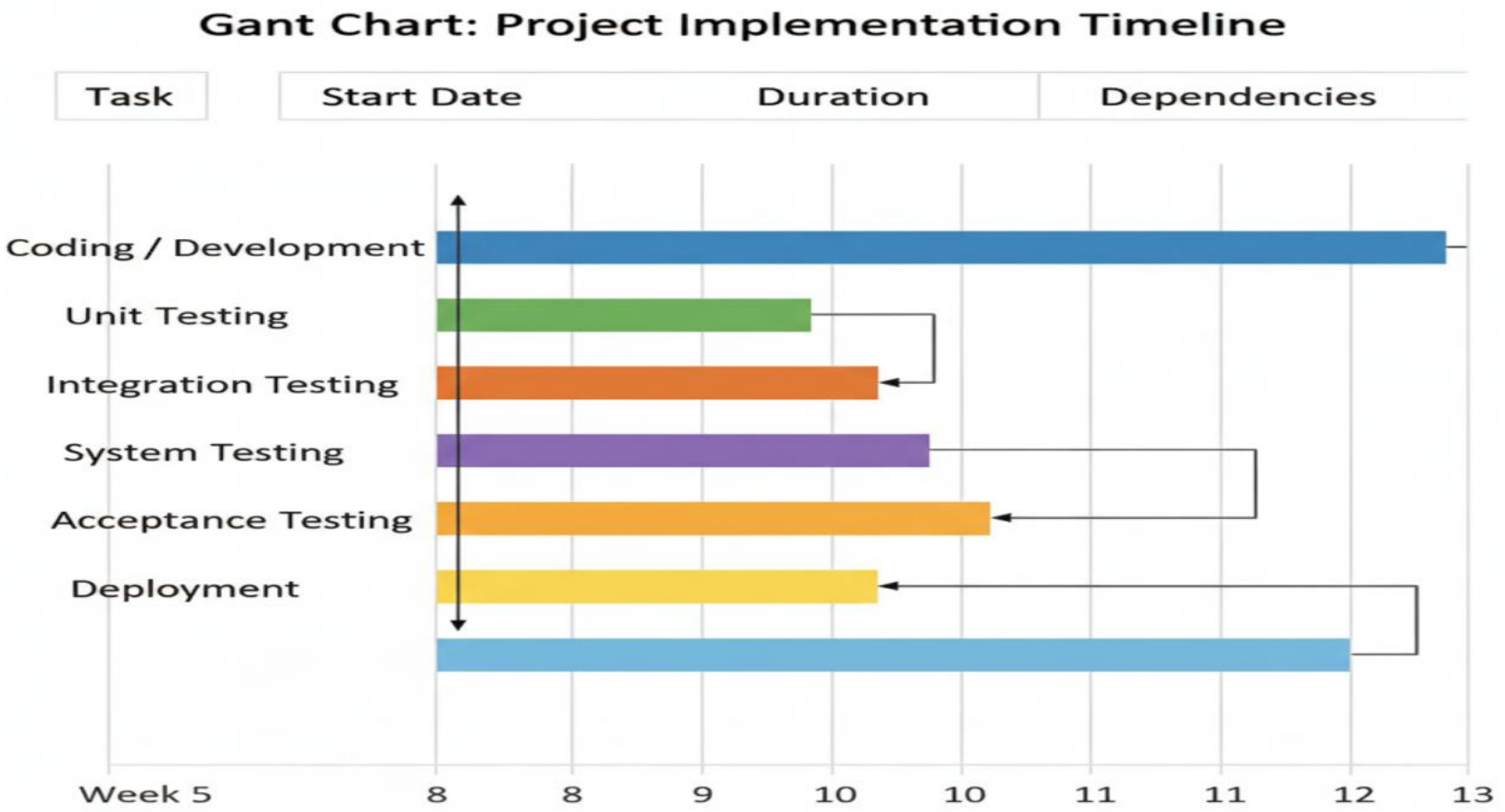
Hardware:

Laptop/server,
Internet.

Software:

Python/JavaScript,
Flask/Django (backend),
React (frontend),
Rasa/Dialogflow (chatbot),
MySQL/MongoDB (database),
Stripe/Razorpay (payment),
QR code library.

Timeline (Gantt Chart)



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Thank
You!