FoodieSpot Restaurant Reservation System

FoodieS

📌 **OVERVIEW :-** FoodieSpot is a scalable, AI-powered restaurant reservation system designed to streamline bookings, provide real-time intelligent recommendations, and serve as a strategic asset for restaurants. This project was built as part of the AI Agent Challenge using Python, Streamlit (Frontend), and FastAPI (Backend), with LLaMA 4-based conversational AI via Together API.

🧠 **AI Model :-** meta-llama/Llama-4-Maverick-17B-128E-Instruct-FP8 (via Together API)

⚙️ SETUP INSTRUCTIONS :-

Requirements :-

- Python 3.9+
- Streamlit
- FastAPI
- Uvicorn
- requests
- Llama-4 api

🌐 Deployment :-

- Backend deployed on Render.
- Backend uses Together API for AI interactions.
- Frontend deployed on streamlit cloud .

💼 BUSINESS STRATEGY SUMMARY

🎯 Success Metrics:

✅ Number of Reservations.

✅ Average Seats Utilized per Day.

✅ Conversion Rate from AI Recommendation → Booking.

✅ Cuisine Popularity Insights.

💰 ROI Potential :-

- Each table contributes ₹1500 average revenue.
- With optimized bookings, the system can generate ~₹30k–₹45k extra revenue per day across 20 branches.

📈 Expansion Opportunities :-

- Hotels & Cafés.
- Food Courts & Malls.
- Cloud Kitchens / Online Dining.

🚀 Competitive Advantages :-

1. AI-Powered Recommendations using seat availability & cuisine preferences.
2. Built-in Metrics Dashboard for Business Intelligence.
3. Scalable Architecture for 100+ locations with minimal rework.

PROMPT ENGINEERING & TOOL CALLING STRATEGY

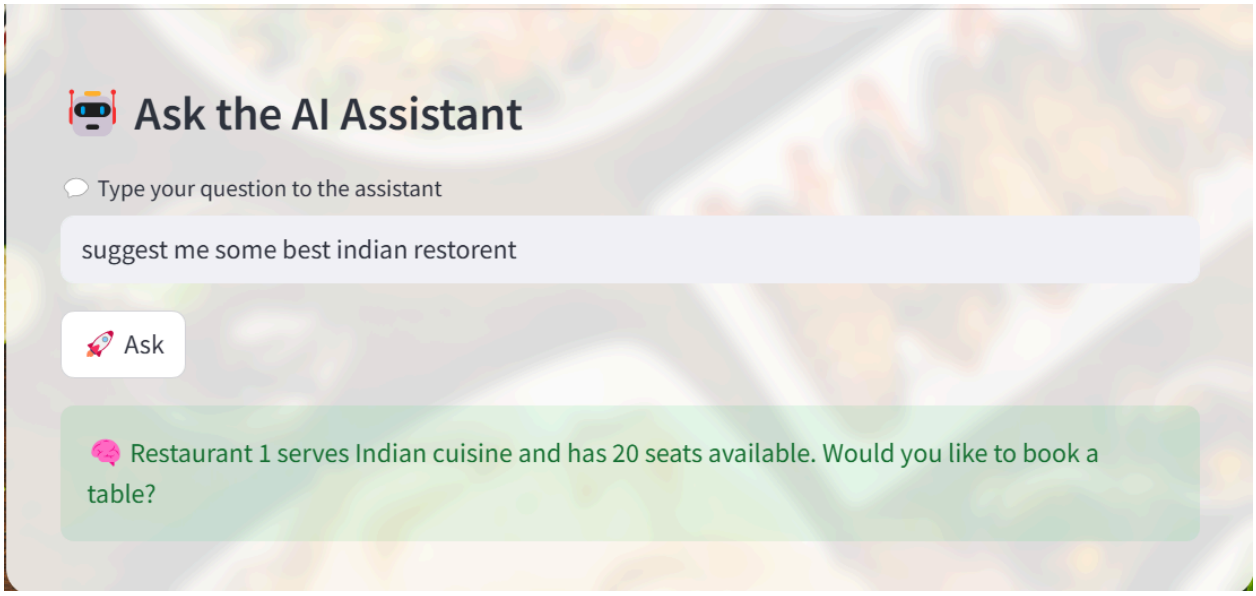
The AI Assistant uses LLaMA-4 via Together API. Prompt strategy includes:

System Prompt :-

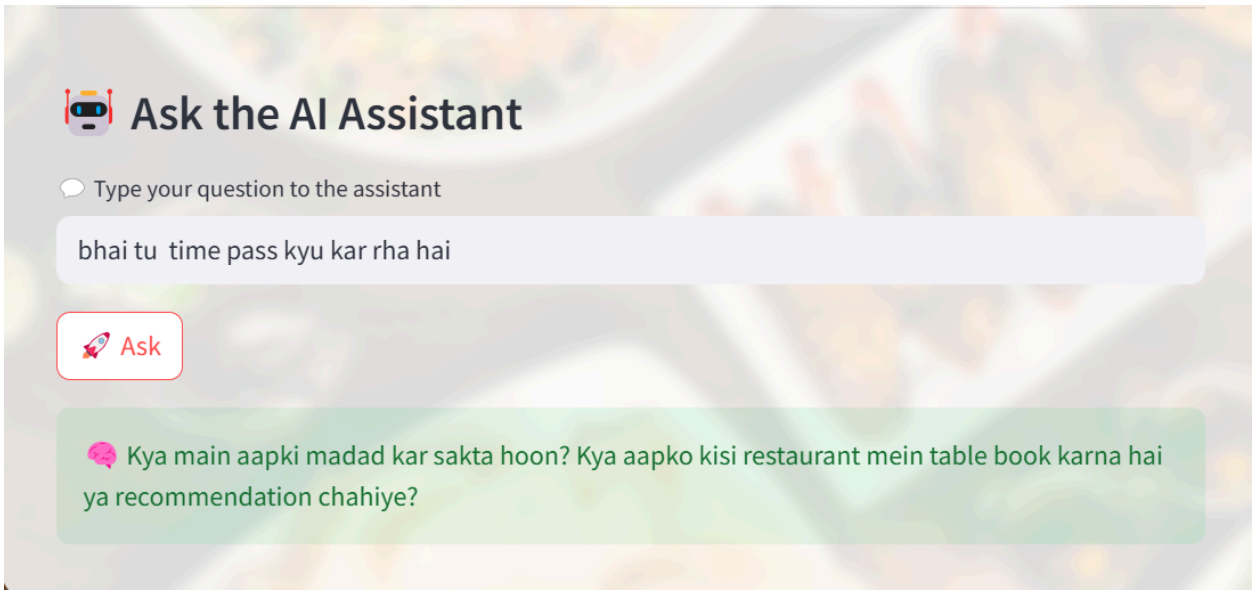
- You are a helpful restaurant reservation assistant.
- Use the provided restaurant data to assist with recommendations and bookings.
- Keep replies short, data-driven, and conversational.

EXAMPLE USER Query :-

1. **Valid query :-**



2. **Invalid query :-**



ASSUMPTIONS & LIMITATIONS

- **Assumptions :-**
  - Each table = 4 seats

- All restaurants are evenly distributed with a variety of cuisines
- Booking success depends on real-time seat availability

🔸 **Limitations :-**

- No payment integration
- No user authentication (future enhancement).
- AI doesn't persist with previous chats (stateless).
- Limited error recovery logic for extreme edge cases.

🧭 FUTURE ENHANCEMENTS :-

- Add Authentication (OAuth, Google Login).
- Payment Gateway Integration (Phonepay/Online payment)
- Persistent AI memory using session context.
- Mobile-first responsive UI.
- Geo-based restaurant suggestions using GPS.

https://foodiess.streamlit.app/