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# CAPSTONE PROJECT

## WANDERBOT: THE AI-POWERED TRAVEL PLANNER

Presented By:

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CSE

# OUTLINE

- **Problem Statement** (Should not include solution)
- **Proposed System/Solution**
- **System Development Approach** (Technology Used)
- **Algorithm & Deployment**
- **Result (Output Image)**
- **Conclusion**
- **Future Scope**
- **References**

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# PROBLEM STATEMENT

Planning a trip often involves juggling multiple factors like destinations, budgets, schedules, weather updates, and local insights—all of which can change rapidly. Travelers struggle to make informed decisions quickly, leading to stress, missed opportunities, or poorly optimized itineraries. The challenge lies in addressing these dynamic needs efficiently while catering to personal preferences and real-time changes.

# PROPOSED SOLUTION

- This project aims to streamline travel planning using Agentic AI built on IBM Agent Lab. The system will automate itinerary creation, destination selection, and real-time adjustments by deploying intelligent agents that collaborate to meet user goals. Key components include:
- **Data Collection:**
  - Gather user preferences like budget, dates, and destination.
  - Integrate real-time data such as weather, transport, events, and accommodation.
- **Data Preprocessing and Intent Understanding:**
  - Use NLP to extract travel needs and preferences from user input.
  - Clean and structure data for accurate processing.
- **Agentic AI System:**
  - Implement goal-driven agents for itinerary planning, booking, and real-time updates.
  - Real-time adjustments based on disruptions or user changes
- **Planning and Optimization:**
  - Create dynamic travel itineraries that account for time, cost, preferences, and real-time factors.
  - Ensure adaptability to sudden changes such as delays, cancellations, or budget shifts by triggering replanning automatically.
- **Evaluation:**
  - Evaluate the system based on user satisfaction, plan relevance, adaptability, and response time.
  - Use feedback loops to improve agent behavior and performance over time. Monitor the system's ability to reduce manual planning efforts and deliver high-quality travel outcomes.

# SYSTEM APPROACH

- **System Requirements**

- Since the project is fully cloud-based, local system requirements are minimal. The key requirements are:
  - IBM Cloud Account with access to:
    - IBM Agent Lab.
    - IBM Watson NLP / Assistant IBM .
    - Latest version of Chrome, Firefox, or Edge for accessing the deployed interface.
    - Internet Connection: Required for accessing IBM Cloud services and real-time data .

- **Libraries and Services Used**

- All components are built using IBM Cloud-native services
  - IBM Agent Lab – for building modular agent workflows that handle planning, booking, and updates.
  - IBM Watson NLP / Assistant – for understanding natural language queries and extracting intent.
  - IBM Code Engine / Cloud Functions – for serverless backend logic and real-time data processing.

# ALGORITHM & DEPLOYMENT

- Platform:
  - Entire system is built and deployed on IBM Cloud using IBM Agent Lab.
- Language Model:
  - Utilizes granite-3-3-8b-instruct, a powerful pre-trained LLM, to understand user input and generate personalized travel plans through prompt-based interaction.
- Agent Design:
  - A single autonomous agent handles all tasks—from interpreting user preferences to generating complete travel itineraries—without needing external coordination.
- Logic & Planning:
  - Combines the reasoning of the LLM with internal rule-based workflows to ensure relevant and optimized travel suggestions.
- Prediction Flow:
  - User data is processed in real time to produce tailored travel outputs based on dynamic constraints like destination, budget, and time.

# RESULT

A

You 07:50 PM

Plan a 5-day budget trip from Delhi to Manali for two people in September, including travel, hotel, and local sightseeing under ₹20,000.



WanderBot 07:50 PM

To create a detailed budget itinerary for your 5-day trip from Delhi to Manali for two people under ₹20,000, I'll need some more information:

1. Preferred mode of travel: By car (with or without a driver) or by public transport (bus)?
2. Accommodation preference: Budget hotels, homestays, or guesthouses?
3. Meal preference: Do you prefer included meals in the hotel or eating out?
4. Interests: Are there any specific attractions or activities you're interested in, like adventure sports, temples, markets, etc.?

Once I have this information, I can provide a more tailored itinerary.

For now, let's gather some general information:

- **Travel (Delhi to Manali):** The most budget-friendly options are buses or shared taxis, which can cost around ₹1,500-₹3,000 per person for a one-way journey.
- **Accommodation:** Budget hotels or guesthouses in Manali can range from ₹500 to ₹1,500 per night.
- **Meals:** Eating out locally can cost around ₹200-₹500 per meal.

I will use this information to draft a preliminary plan, but please confirm or adjust the details as needed.

```
[{"arguments": {"query": "average cost of a bus ticket from Delhi to Manali", "name": "DuckDuckGo"}, {"arguments": {"query": "average cost of accommodation in Manali for budget travelers", "name": "DuckDuckGo"}, {"arguments": {"query": "average cost of meals in Manali for budget travelers", "name": "DuckDuckGo"}]}
```

A

You 07:51 PM

1. public transport 2. Budget hotels 3. eating out 4. temples and markets



WanderBot 07:51 PM

Great, thank you for providing the details. Here's a preliminary itinerary for your 5-day trip to Manali from Delhi for two people under ₹20,000, incorporating your preferences:

### Day 1: Delhi to Manali

- **Travel:** Take an early morning bus from Delhi to Manali. A shared jeep or volvo bus can cost around ₹1,500-₹3,000 per person. Travel time is approximately 8-10 hours.
- **Accommodation:** Check into a budget hotel in Manali. A good option could be "The Oberoi Cecil" or "Hotel Sunset View" which typically range between ₹800-₹1,200 per night.
- **Sightseeing:** Visit the local temples such as Hadimba Temple and Manu Temple.
- **Dining:** Enjoy dinner at local restaurants like "The Hangout" or "Moustache Buti Bazar" offering a variety of Indian dishes at affordable prices.

### Day 2: Manali Local Sightseeing

- **Sightseeing:** Explore the Manali Mall Road for shopping and visit the Sidh Baba Temple. Take a cable car ride to Hadimba Devi Temple for panoramic views.
- **Dining:** Lunch at "Little Buddha" or "Snow Point" followed by dinner at "Cafe Suleman."
- **Accommodation:** Stay at your budget hotel.

### Day 3: Naggar and Jana

- **Day Trip:** Visit Naggar (25 km from Manali) to see the Jana Temple and Naggar Castle. Then head to Jana (another 15 km) to explore the ancient temples.
- **Dining:** Pack snacks or dine at a local eatery en route.
- **Accommodation:** Continue staying at your budget hotel in Manali.

### Day 4: Solang Valley and Rafting

- **Activities:** Spend the day in Solang Valley for adventure activities like zorbing, skiing (depending on the season), and river rafting. Rafting can cost around ₹2,000-₹3,000 per person.
- **Sightseeing:** Visit Vashisht Hot Springs and Old Manali.
- **Dining:** Enjoy meals at local restaurants in the area.
- **Accommodation:** Stay at your budget hotel.



### Day 5: Return to Delhi

- **Travel:** Take a morning bus back to Delhi. The return journey will take around 8-10 hours and cost approximately ₹1,500-₹3,000 per person.
- **Accommodation:** If your flight is in the evening, you might consider a short rest at a budget hotel near the IGI Airport in Delhi.

### Budget Breakdown (Approximate):

- **Travel (Round Trip):** ₹3,000-₹6,000
- **Accommodation (5 nights):** ₹4,000-₹6,000
- **Meals (Breakfast, Lunch, Dinner):** ₹6,000-₹8,000
- **Sightseeing & Activities:** ₹2,000-₹3,000 (including rafting)
- **Total:** ₹15,000-₹23,000

This itinerary should fit comfortably within your ₹20,000 budget, leaving some room for unforeseen expenses. Please review and let me know if you'd like any adjustments.

# CONCLUSION

## ■ CONCLUSION & DISCUSSION

- The proposed solution successfully leverages AI to streamline travel planning, offering users tailored itineraries based on real-time preferences and constraints.
- The use of the granite-3-3-8b-instruct language model proved effective in interpreting user inputs and generating coherent, context-aware travel recommendations.
- Deployment on IBM Cloud ensured scalable, efficient access to the system with minimal latency and smooth integration.

## ■ Challenges Faced:

- Fine-tuning prompt structures to ensure consistent outputs from the LLM.

## ■ Potential Improvements:

- Enhancing the system with learning from user feedback to adapt to different travel styles.
- Incorporating external APIs to automate bookings for hotels, transport, and activities, turning the agent into a fully hands-free travel assistant.

# FUTURE SCOPE

- **Integration of Additional Data Sources:** Enhancing the system by incorporating live traffic updates, seasonal trends, event schedules, and user-generated preferences to offer even more personalized and context-aware planning.
- **Algorithm Optimization:** Improving the performance and responsiveness of the planner by fine-tuning the model, optimizing prompts for granite-3-3-8b-instruct, and reducing latency in real-time recommendations.
- **Geographical Expansion:** Scaling the system to support travel planning across multiple cities, regions, and international destinations with dynamic localization features.
- **Automation of Services:** Future integration with hotel, cab, and activity booking APIs to create fully automated, end-to-end travel experiences without manual user intervention.

# REFERENCES

- [2] IBM Corporation, Watson Machine Learning on IBM Cloud: Deployment Spaces, IBM Cloud Docs, 2024. [Online]. Available: <https://cloud.ibm.com/docs/watson-machine-learning>
- [3] IBM Corporation, Building AI-Powered Applications Using IBM Agent Chat, IBM Developer, 2024. [Online]. Available: <https://developer.ibm.com>
- [4] IBM Corporation, Creating, Training, and Deploying Models in IBM Watson Studio, IBM Cloud Docs, 2024. [Online]. Available: <https://cloud.ibm.com/docs/watson-studio>

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Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence



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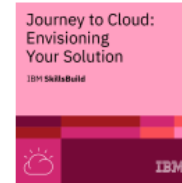
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This certificate is presented to

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(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 23 Jul 2025 (GMT)

**Learning hours:** 20 mins



**THANK YOU**