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# CAPSTONE PROJECT

## TRIPGENIE - SMART TRAVEL PLANNER AGENT

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# 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

Modern travel planning is a complicated, time-intensive process. Travelers often struggle with researching destinations, comparing transport and accommodation options, constructing detailed itineraries, and adapting to real-time changes like weather or delays. The lack of personalized guidance, integrated systems, and up-to-date information can result in inefficient plans, increased cost, and significant stress.

# PROPOSED SOLUTION

The Travel Planner Agent is an AI-powered assistant designed to automate and personalize the travel planning process. Leveraging IBM Cloud services and IBM Granite models, the agent

- Analyses user preferences, budgets, and constraints.
- Suggests customized travel destinations.
- Builds dynamic, flexible itineraries.
- Recommends transport and accommodation options.
- Integrates with live maps, weather data, and local guides.
- Manages bookings and provides real-time alerts.
- Continuously optimizes schedules and plans on the go.
- This system transforms travel planning into a seamless and enjoyable experience, reducing manual effort and making efficient, data-driven decisions for travelers.

# SYSTEM APPROACH

- **Backend & AI Model:** IBM Granite Foundation Models for natural language understanding and advanced recommendations.
- **Cloud Platform:** IBM Cloud Lite services for serverless deployments, storage, web hosting, and integration.
- **APIs & Integrations:** Connectivity with third-party, weather, maps, and booking APIs.
- **Data Handling:** Secure processing and storage of user preferences, itineraries, and bookings.

# ALGORITHM & DEPLOYMENT

## Algorithm

- Profile & Intent Analysis - Capture user input: preferences, budgets, travel dates, constraints. Use IBM Granite's NLU to extract requirements.
- Destination & Activity Recommendation - AI model evaluates user profile and suggests destinations, routes, and local activities.
- Dynamic Itinerary Generation - Cluster attractions and activities based on proximity, available time, and personal interests. Integrate live data (weather, transport availability).
- Real-Time Monitoring & Alerts - Track itinerary for disruptions (flight delays, weather changes).
- Continuous User Interaction - AI agent answers queries, adapts plans, and accepts feedback for real-time optimization.

## Deployment

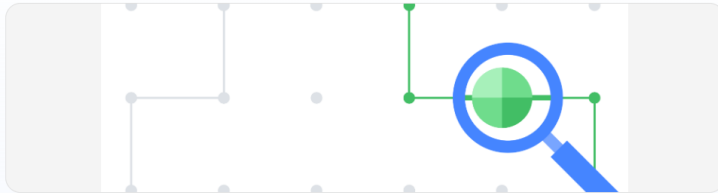
- Login to IBM Cloud and launch Watsonx services (use IBM ID/Gmail).
- Create Project & Sandbox: Set up Watsonx.ai projects and storage with IBM Cloud Object Storage.
- Build AI Agent in Agent Lab:
  - Select foundation model (Granite/mistral-large).
  - Define task instructions and integrate required tools (APIs for search, weather, bookings, etc.).
- Customize and Save Agent for continued development.
- Deploy as a service with IBM Watsonx AI Runtime, and generate an API key for authentication.
- Integrate Frontend Application: Connect web/mobile app to backend via secured API calls for real-time interactions

# RESULT

TripGenie 05:59 PM

## Welcome to TripGenie

AI travel planner creating real-time personalized itineraries with booking, weather & insights.



### Sample questions

Plan a 5-day trip to Paris within a \$1,000 budget.



Suggest the best time to visit Japan for cherry blossoms.



Type something...



LS You: 06:53 PM

Suggest the best time to visit Japan for cherry blossoms.

TripGenie 06:53 PM

The best time to visit Japan for cherry blossoms is typically from late March to early April, although the exact timing varies by region and weather conditions. It's recommended to check the cherry blossom forecast before planning your trip to ensure you catch the blooming period. Some popular destinations for cherry blossom viewing include Tokyo, Kyoto, and Hokkaido.

► How did I get this answer?



Type something...



LS You: 06:00 PM

Plan a 5-day trip to Paris within a \$1,000 budget.

TripGenie 06:00 PM

To plan a 5-day trip to Paris within a \$1,000 budget, here's a rough outline:

#### Day 1: Arrival and Settling In

- Flight: Look for budget airlines or deals. A round-trip flight from major US cities to Paris can range from \$400-\$800.
- Accommodation: Consider staying in a hostel or budget hotel. Prices can range from \$15-\$40 per night.

#### Day 2: Explore the City

- Sites to visit: Eiffel Tower, Louvre Museum, Notre-Dame Cathedral.
- Transportation: Use Paris' extensive metro system. A 5-day pass costs around \$20.
- Food: Budget around \$30-\$40 per day for meals. Consider picnics with baguettes and cheese, which are quite affordable.

#### Day 3: More Sightseeing

- Visit Montmartre, the Sacré-Cœur Basilica, and explore local markets.

Type something...



# CONCLUSION

- The implementation of the Travel Planner Agent utilizing IBM Cloud and Granite models demonstrates the transformative potential of AI-driven solutions in the travel industry.
- The agent delivers highly personalized, efficient, and adaptive travel planning by seamlessly integrating user preferences, real-time data, and automated decision-making.
- Leveraging IBM's powerful cloud infrastructure and advanced AI models ensures that itineraries are optimized, bookings are streamlined, and updates are managed proactively.
- This not only reduces the effort and complexity for users but also enhances travel satisfaction by adapting quickly to changing circumstances.
- Overall, the Travel Planner Agent redefines how journeys are planned, making the experience smoother, smarter, and more enjoyable for travelers.



# FUTURE SCOPE

## **Incorporation of Additional Data Sources**

- **Local Events and Festivals:** Integrate feeds for real-time information on local events, festivals, and concerts to enrich itineraries with unique experiences.
- **User Reviews and Social Media Insights:** Use opinions and ratings from platforms like TripAdvisor, Yelp, or social media to improve recommendations and build trust.
- **Traffic and Public Transport Feeds:** Include live public transport and traffic data for better route planning and time management.

## **Multi-Region and Global Expansion**

- **Multilingual Support:** Support multiple languages for users across different regions.
- **City/Region Coverage:** Expand itinerary intelligence to include rural areas, offbeat locations, and multi-country trips.
- **Currency and Local Regulation Integration:** Easily handle local currencies, regulations, and travel restrictions.

## **Algorithm Optimization**

**Personalization:** Further adapt AI algorithms to learn from user feedback and travel history, delivering even more tailored suggestions.

**Dynamic Pricing Analysis:** Integrate predictive models for flight and hotel price fluctuations, helping users secure the best deals.

# REFERENCES

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- <https://www.ibm.com/docs/en/environmental-intel-suite?topic=components-weather-data-apis>
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**THANK YOU**