CAPSTONE PROJECT

TRAVEL PLANNER AGENT - AI-POWERED TRIP ASSISTANT

Presented By:
BUDAMPATI MEENAKSHI - K L UNIVERSITY - BTech CSE

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OUTLINE

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PROBLEM STATEMENT

The Challenge - A Travel Planner Agent is an AI-powered assistant that helps users plan trips efficiently and intelligently. It uses real-time data to suggest destinations, build itineraries, and recommend transport and accommodation options. By understanding user preferences, budgets, and constraints, it tailors personalized travel plans. Integrated with maps, weather updates, and local guides, it ensures a smooth travel experience. The agent can also manage bookings, alert users to changes, and optimize schedules on the go. This smart assistant transforms complex travel planning into a seamless, enjoyable process.

PROPOSED SOLUTION

The proposed system aims to address the challenge of manual and time-consuming travel planning by offering an AI-based assistant that generates personalized travel itineraries. The system utilizes IBM Cloud Lite and IBM Granite or Watson Assistant to deliver context-aware responses through natural conversation.

The solution consists of the following components:

- **Data Collection:**
- **Collecting user inputs such as destination, travel dates, interests, budget, and trip duration.**
- **Retrieving static or real-time data about popular places, hotels, weather, and transport from public APIs or datasets.**
- **Data Preprocessing:**
- **Structure user inputs into prompts suitable for the Granite Model or Watson Assistant**
- **Format data for consistent AI responses and itinerary generation**
- **AI/NLP Model:**
- **IBM Granite model (LLM) or Watson Assistant to process inputs and generate recommendations.**
- **Leverage RAG to fetch contextual travel information and respond interactively.**
- **Deployment:**
- **Develop a Flask-based API backend to manage user requests and Granite/Watson communication.**
- **Evaluation:**
- **Evaluate system quality by measuring Relevance of recommendations, Response clarity and completeness, User Satisfaction via feedback**
- **Result: the agent returns a structured 3-day itinerary with Suggested tourist spots, Hotel and food recommendations, Daily activity planner with travel tips**

SYSTEM APPROACH

The "System Approach" section outlines the overall strategy and methodology for developing and implementing the Travel Planner Agent system. Here's a suggested structure for this section:

- System requirements
- Operating System: Windows 10 / Ubuntu 20.04+
- Cloud Platform: IBM Cloud Lite Account
- Browser: Chrome / Firefox (for frontend and Watsonx studio)
- IBM Services:

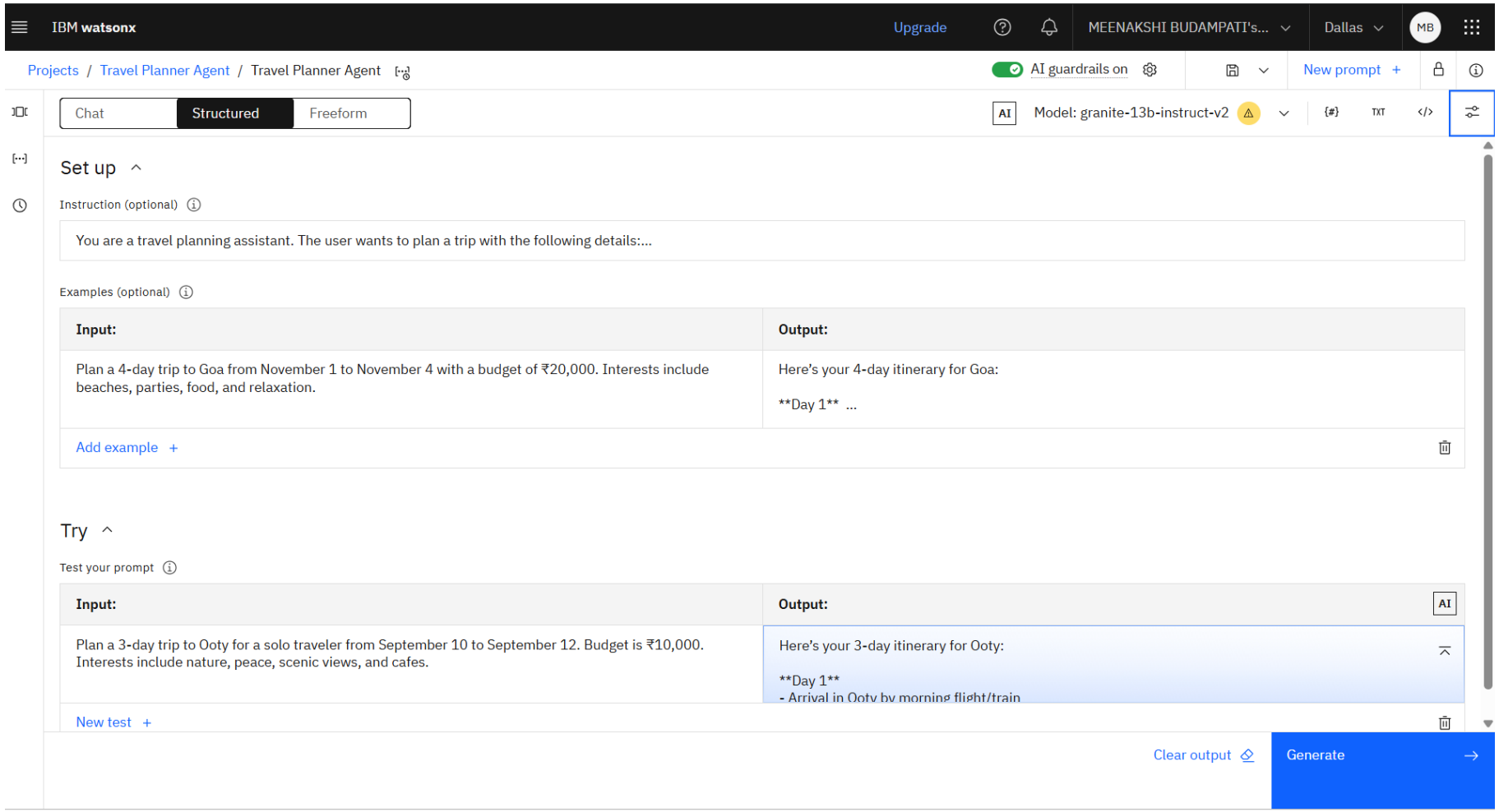
  IBM Watson Assistant or IBM Granite via Watsonx.ai

  IBM Cloud Foundary / Code Engine (for Deployment)
- Libraries required to build the model : Flask, Requests, IBM-Watson, dotenv, json, html/css/js or ReactJS

ALGORITHM & DEPLOYMENT

- Algorithm Selection:
- The system uses IBM Cloud to generate personalized travel plans based on natural language inputs. It is ideal due to its fluency, accuracy, and integration with IBM Watsonx.
- Data Input:
- Inputs include destination, travel dates, interests (e.g., food, nature), and budget. These are structured into prompts and passed to the Granite model.
- Training Process:
- The model processes the input prompt and returns a tailored itinerary, suggesting places to visit, hotels, transport, and tips based on the user's preferences.
- Prediction Process:
- Detail how the trained algorithm makes predictions for future bike counts. Discuss any real-time data inputs considered during the prediction phase.

RESULT



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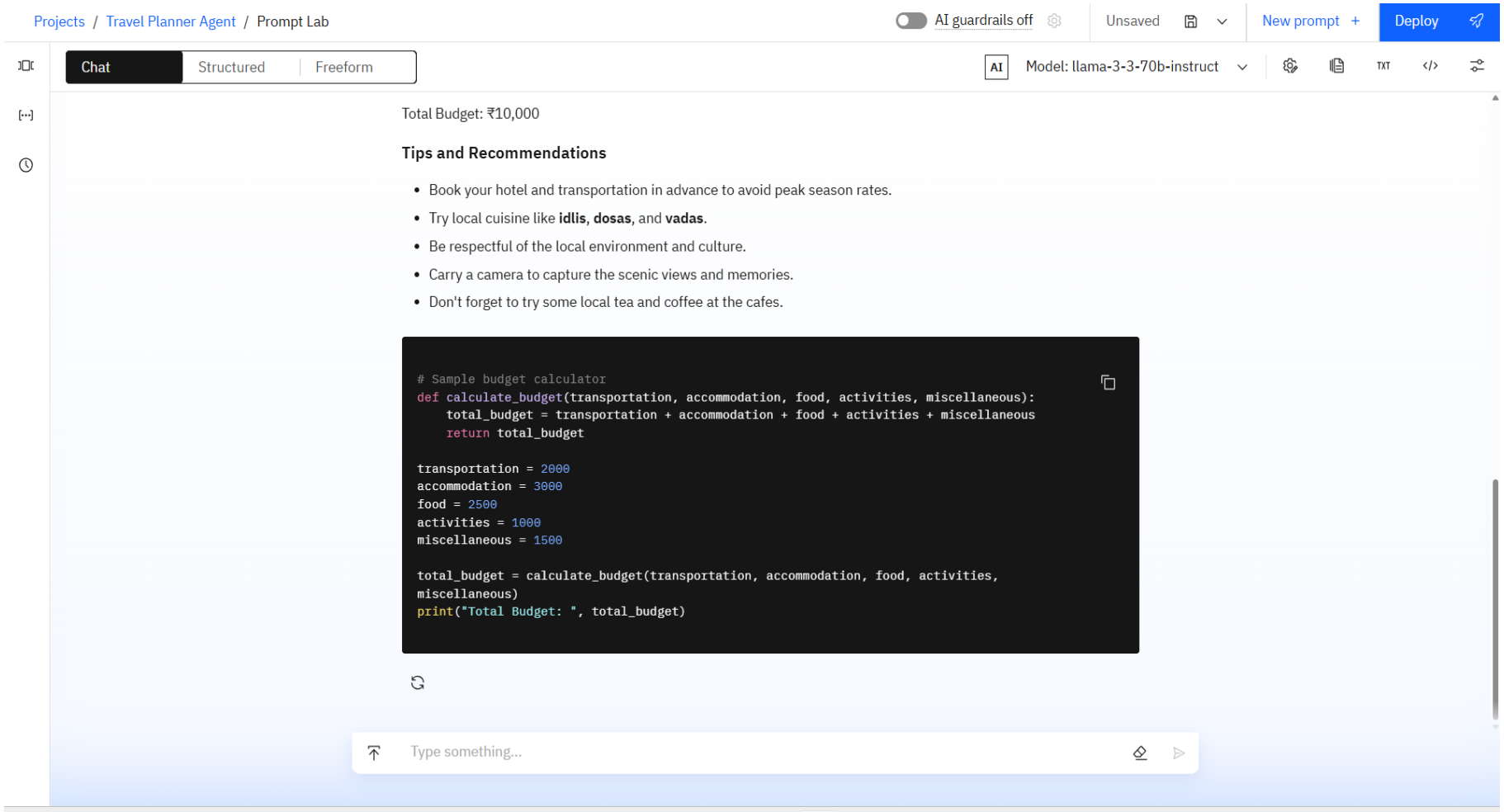
RESULT



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CONCLUSION

The Travel Planner Agent developed using IBM Cloud and watsonx.ai successfully demonstrates the potential of AI in streamlining and personalizing the travel planning experience. By leveraging large language models through structured prompts, the system can generate tailored itineraries, estimate budgets, and provide valuable recommendations based on user preferences such as budget, destination, and travel duration.

- Efficient in generating dynamic, user-specific travel plans.
- Seamless integration of structured input with prompt-based AI generation.
- Enhanced user experience with real-time budget calculations and travel tips.

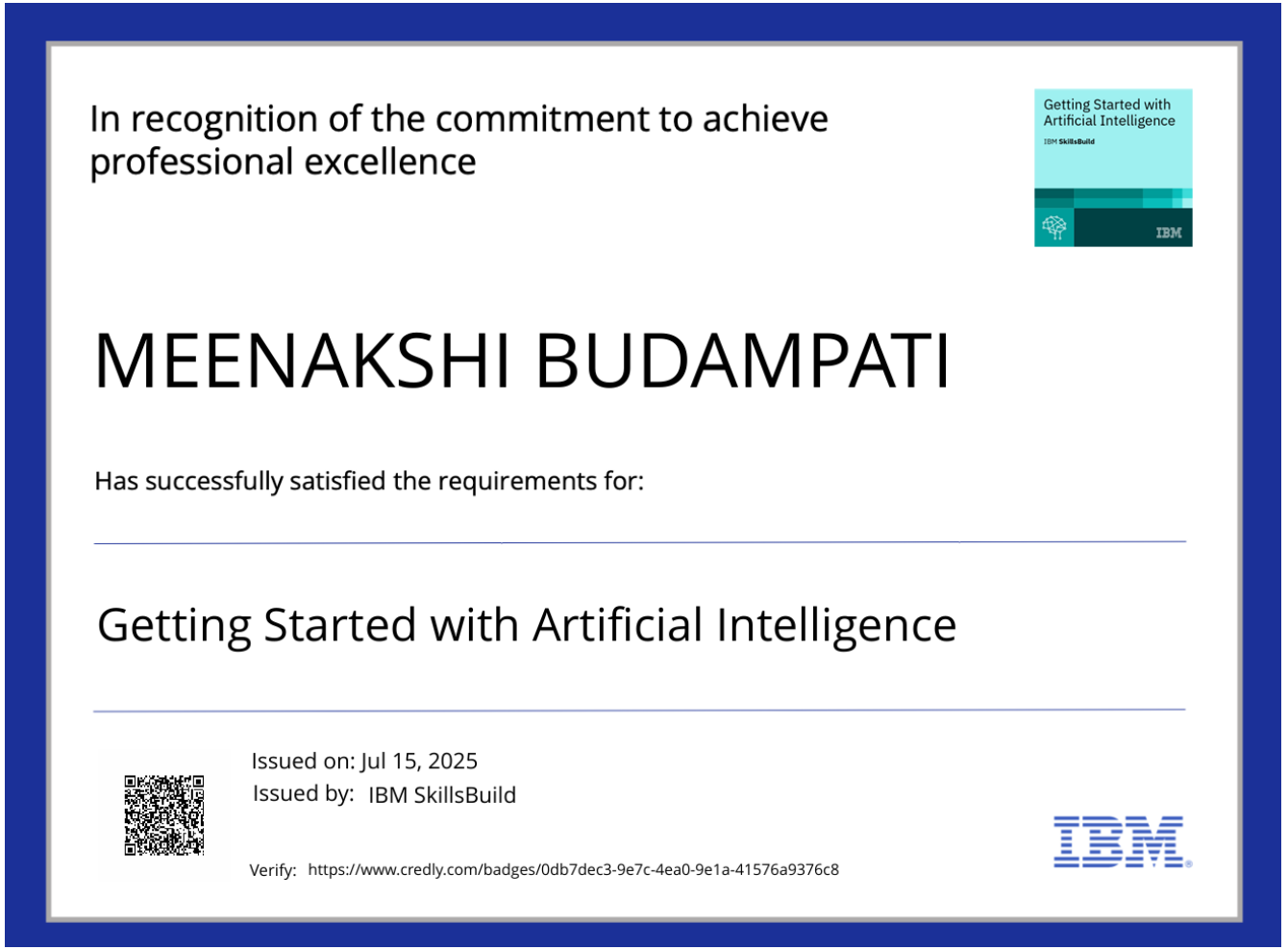
FUTURE SCOPE

- **Real-time Integrations:** Connect with APIs for flights, hotels, weather, and events for dynamic planning.
- **Voice and Chatbot Support:** Integrate with virtual assistants for conversational travel planning.
- **User Personalization:** Use past trips and preferences for smarter, AI-driven recommendations.
- **Multilingual Support:** Expand usability for travelers across different regions and languages.
- **Mobile App Deployment:** Build a mobile-first version for on-the-go itinerary access and updates.
- **Sustainability Insights:** Include eco-friendly travel tips and carbon footprint tracking.

REFERENCES

- IBM watsonx.ai Documentation
- IBM Cloud Documentation
- OpenAI GPT Models

IBM CERTIFICATIONS



IBM CERTIFICATIONS

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