Project Report: AI-Powered Travel Assistant

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Post Graduate program in ML and AI
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Logo Name

Introduction

The AI-powered Travel Assistant leverages Function Calling API to provide travel and food recommendations based on user preferences. This project integrates travel and food datasets to enhance user experience by offering personalized suggestions for destinations, accommodations, and dining options.

Objectives

- Develop an AI chatbot to assist users in travel planning.
- Integrate Function Calling API for improved query handling.
- Provide personalized travel recommendations based on budget and duration.
- Suggest accommodations and food options using structured datasets.

System Design & Architecture

- **Core Components**:
  - TravelFoodBot: Handles travel and food recommendations.
  - ToolCallingBot: Implements Function Calling API for processing user queries.
- **Data Sources**:
  - `travel_data.csv`: Contains travel destinations, costs, and durations.
  - `food_data.csv`: Includes restaurant details, pricing, and sales data.
- **Technology Stack**:
  - Python, OpenAI API, Pandas for data processing.

Implementation

- **Data Processing**: Loaded and cleaned travel and food datasets.
- **Function Calling API Integration**:
  - Defined functions for travel search, accommodation recommendations, and

food suggestions.
  - Implemented API calls to analyze queries and determine the appropriate function to execute.
- **Recommendation Logic**:
  - Filtered travel destinations based on budget and duration constraints.
  - Extracted top accommodations per destination.
  - Recommended restaurants based on popularity and budget.

Challenges & Solutions

- **Data Cleaning**: Some fields contained missing or inconsistent values. Used Pandas to handle missing data.
- **API Response Handling**: Structured responses to return meaningful results in a user-friendly format.
- **Performance Optimization**: Filtered datasets efficiently to return top recommendations within seconds.

Benefits of Function Calling API

- **Enhanced Query Handling**: Automates function selection based on user input.
- **Improved Accuracy**: Ensures recommendations are tailored to user preferences.
- **Scalability**: Enables seamless expansion by adding new recommendation functions.

Lessons Learned

- Importance of structured datasets in AI-driven applications.
- Efficient API integration improves chatbot responsiveness.
- Handling edge cases enhances the robustness of recommendation systems.

Conclusion

The AI-powered Travel Assistant successfully integrates Function Calling API to provide efficient travel and food recommendations. This approach enhances the chatbot's ability to deliver personalized and relevant suggestions, improving overall user experience.