Milestone 1: Proposal Submission

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Trip Planning Agentic Application

Project Idea: The main idea behind this project is to create an application to plan a trip, based on the destination where the user is going to and also factors like the duration of the trip. In today's fast paced world, planning a trip can be a time consuming process. Our application will function as a digital travel agent capable of planning trips and giving recommendations based on user input. It will be a more personalized, automated, and conversational trip planning assistant that can decide where to go and book tickets much faster than a person normally would, saving a lot of time and effort. Also based on the specific destination and time of the year on where the user is going to, it can also recommend important activities that are performed during that specific time period.

Objectives:
- Enable users to plan complete trips through a conversational interface so there isn't the need for research
- The assistant should be able to provide recommendations and list things to do and places to visit at a specific location
- The assistant should be able to compare different places based on time and cost and how good of a vacation it would be
- The assistant should utilize user preferences and travel history to provide the best travel plans
- The assistant should be adaptable and react to changes like flight delays, cancellations, or updated preferences
- The assistant should take into consideration the audience of who is going on the trip, whether it is a family trip or a group of college going kids, and plan the activities based on the audience.

Use Cases:
The Trip Planning Agentic Application is designed to enhance travel planning through intelligent, user-centric functionalities. The primary use cases include:
1. **Personalized Trip Generation**
   Users input their destination, travel dates, constraints, etc. The application generates a dynamic, day-by-day itinerary tailored to these inputs, drawing from real-time data and third-party travel sources.

2. **Real-Time Travel Assistance**
   Users can ask natural language questions such as "Where can I eat?" And the application responds with context-aware suggestions based on current location, time, and itinerary.

3. **Booking Assistance**
   Displays flight information, such as cost and timings, making sure the user doesn't spend too much money.

Expected Outcomes:
- ☐ **User Impact**
  - Reduced cognitive load and planning time
  - Increased satisfaction through context-aware recommendations
  - Greater confidence in travel decisions due to good recommendations
- ☐ **Milestones**
  - System Architecture & Design, including diagrams and workflow
  - Designing RAG pipelines and multi-agent workflows
  - Use more advanced rag techniques like hyde and subqueries to be able to solve problems of hallucinations of rag and also be able to retrieve the correct information
  - A fully functional application with a UI
  - A report that explains the development process, challenges, solutions, and future improvements
  - A video explaining the project concept and system functionality
  - A GitHub repository that includes all the project files, including the code, report, and video
  - Pretty scalable and innovative for demonstrating the Generative AI concepts that were taught in the course.

Techniques:
Framework: We will be using langchain and maybe langgraph.
Backend: The rag techniques and the pipeline like document loading, splitting and chunking, embedding the chunks, and putting this in a vector store.
Frontend: A typical chatbot with a user interface for the user to type in a question and a button to generate a response which the system will click that button once a response is generated.

Possible Questions:
1. What are some tropical places I should go visit with my family during Christmas time?
2. Can you plan a 1 week Itinerary to Punta Cana? I am planning on going there for spring break with my college friends.
3. What are the best places to travel in the summer with weather that isn't too hot and has fun things to do?
4. When can I find the cheapest tickets?
5. Is there any traditional Mexican food near the destination?
6. What are the best places to go on a cruise and when is the best time of year for that?

7. What are some strict cultural rules I should be aware of when traveling to Morocco?
8. What are some of the strict civil laws I should be aware of when traveling to Singapore?
9. Do US citizens need a visa to travel to India?
10. What are some of the significant historical places to see in Italy?