

# WanderWise: Your Friendly Travel Planner

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## 1. Topic Selection

### Title of the Project

**WanderWise: Your Friendly Travel Planner**

### Project Overview

WanderWise is here to make your travel planning simple and fun! It uses smart AI to understand what you like and gives you personalized travel recommendations. By connecting a language model with a Pinecone database and information from YouTube videos, WanderWise can find the best travel tips, places to visit, places to stay, and more just for you. The system has two main helpers:

- **RAG Helper:** Finds relevant information from our Pinecone database, which includes data from YouTube videos and other sources.
- **Web Search Helper:** Looks up the latest information from the internet to keep your plans fresh and up-to-date.

Together, these helpers make WanderWise an intelligent chatbot that offers customized travel plans, suggestions, and real-time updates. Plus, if you're not happy with your plan, you can easily change it or download it as a PDF for your convenience.

## Domain

**Travel and Tourism — Personalized Travel Planning**

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## 2. Project Goals

### Primary Objectives

- **Create WanderWise:** Build a smart travel planning tool that gives you personalized help for your trips.
- **Use YouTube Data:** Include information from YouTube videos to make your travel experience richer.
- **Develop Helper System:** Set up a system with two helpers that use both our database and live web searches to find information.
- **Build a Chatbot:** Design an easy-to-use chatbot interface for interacting with WanderWise.

### Secondary Objectives

- **Real-Time Updates:** Provide the latest travel information by searching the web in real-time.
  - **Personalized Responses:** Make WanderWise learn and adapt based on your preferences and feedback over time.
  - **Plan Modification:** Allow users to change their travel plans if they're not satisfied.
  - **Downloadable Plans:** Enable users to download their customized travel plans as PDF documents.
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## 3. Tasks

### Task Breakdown

#### 3.1 Define the Travel Planning Scope

- **Set Boundaries:** Focus on creating travel itineraries, finding places to stay, suggesting local attractions, providing travel advice, and sharing safety tips.

## 3.2 Collect and Prepare Data

- **YouTube API:**
  - **Gather Data:** Get transcripts, titles, descriptions, and details from travel-related YouTube videos like destination guides and travel reviews.
  - **Extract Information:** Use language processing to find key points in the video transcripts for easy searching.
- **Prepare Data:**
  - **Clean Data:** Remove unnecessary information to keep the data high quality.
  - **Create Embeddings:** Turn the processed data into a format that our system can easily search through using OpenAI's Text Ada model.

1	ID	VALUES			
	tdNIFCxdtA...	0.00978629198, -0.00999017339, 0.00650380692, -0.00646982668, -0.00246186415, 0.0374869369, 0.00776786963, 0.0...			
SCORE	-0.0008	METADATA			
		text: "prisoners faced harsh punishments imagine the Despair and Desperation that echoed with Within These Walls beyond the convict history Port Arthur offers a glimpse of c..." timestamp: 414.319 title: "Tasmania Travel Guide 2024 - Tasmania Best Places to visit - Things to do in Tasmania Australia" video_id: "tdNIFCxdtA"			
2	ID	VALUES			
	HmHSuGGFI...	0.0284892265, -0.0105662066, 0.0113769295, -0.0257019456, -0.0183853321, 0.0473837741, -0.0319197252, -0.027712002...			
SCORE	-0.0017	METADATA			
		text: "the landscape is rugged distinctly northern anesthetic and breathtakingly beautiful the small town of Californian forests and soaring snow-capped mountains it's a perfect..." timestamp: 82.29 title: "Why You Need to Travel to Antarctica   MojoTravels" video_id: "HmHSuGGFIWA"			

## 3.3 Set Up the Vector Database

- **Use Pinecone:** Store and manage our data efficiently using Pinecone.
- **Generate Embeddings:** Create vector representations of YouTube and other travel data using OpenAI's **Text Ada** model.
- **Index Data:** Organize the embeddings in Pinecone for quick and accurate searches.

Total of 200 transcripts of youtube videos were used to create a vector database and metadata is being stored to keep track of the information for what videos are being indexed.

<a href="#">Back to indexes</a>	<a href="#">Connect</a>	
youtube-query-index •		
<small>Metric</small>		
Metric	DIMENSIONS	HOST
cosine	1536	<a href="https://youtube-query-index-8wpg5un.svc.aped-4627-b74a.pinecone.io">https://youtube-query-index-8wpg5un.svc.aped-4627-b74a.pinecone.io</a>
<small>Cloud</small>		
CLOUD	REGION	CAPACITY MODE
aws AWS	us-east-1	Serverless
<small>Record Count</small>		
RECORD COUNT 2,205		
BROWSER	METRICS	
NAMESPACES (1)	CONFIGURATION	

### 3.4 Develop the Helper System

- **RAG Helper:**
  - **Connect Database:** Link the helper to the Pinecone database to retrieve stored information.
- **Web Search Helper:**
  - **Implement Search:** Create a helper that can perform live web searches using APIs like Tavily.
- **Coordinate Helpers:** Make sure both helpers work together to provide both stored and up-to-date information.
- **Query Filtering:** Ensure that all user queries are related to travel to prevent irrelevant or inappropriate requests.

### 3.5 Build the Application

- **Chatbot Interface:**
  - **Frontend Development:** Use Streamlit to create an interactive chatbot for users.
- **Backend Integration:**
  - **Connect GPT-3.5 Turbo:** Link the chatbot with GPT-3.5 Turbo to handle user questions and generate answers.
  - **Ensure Smooth Interaction:** Make sure the chatbot and helpers communicate seamlessly to deliver personalized travel plans.
- **Additional Features:**
  - **Plan Modification:** Allow users to request changes to their travel plans if they're not happy with them.
  - **Download as PDF:** Enable users to download their customized travel plans as PDF files for easy access and sharing.

### 3.6 Test and Improve

- **Evaluate System:** Check how accurate and relevant the information is and how fast the system responds.
  - **Gather Feedback:** Collect user opinions to improve recommendations and the chatbot's performance.
- 

## 4. Tools and Technologies

### Generative AI Models

- **GPT-3.5 Turbo:** Used for understanding and generating text, creating embeddings, and responding to user queries.
- **OpenAI Text Ada:** Utilized for creating embeddings of text data.

## Databases and APIs

- **Vector Database:** Pinecone for storing and searching through data efficiently.
- **YouTube API:** To get video transcripts, titles, descriptions, and other travel-related information.
- **Web Search API:** Tavily API to allow the Web Search Helper to find the latest information online.

## Development Tools

- **Frontend:** Streamlit for building the user-friendly chatbot interface.
  - **Backend:** FastAPI to connect and manage all parts of the system.
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## 5. Introduction

### Background Information

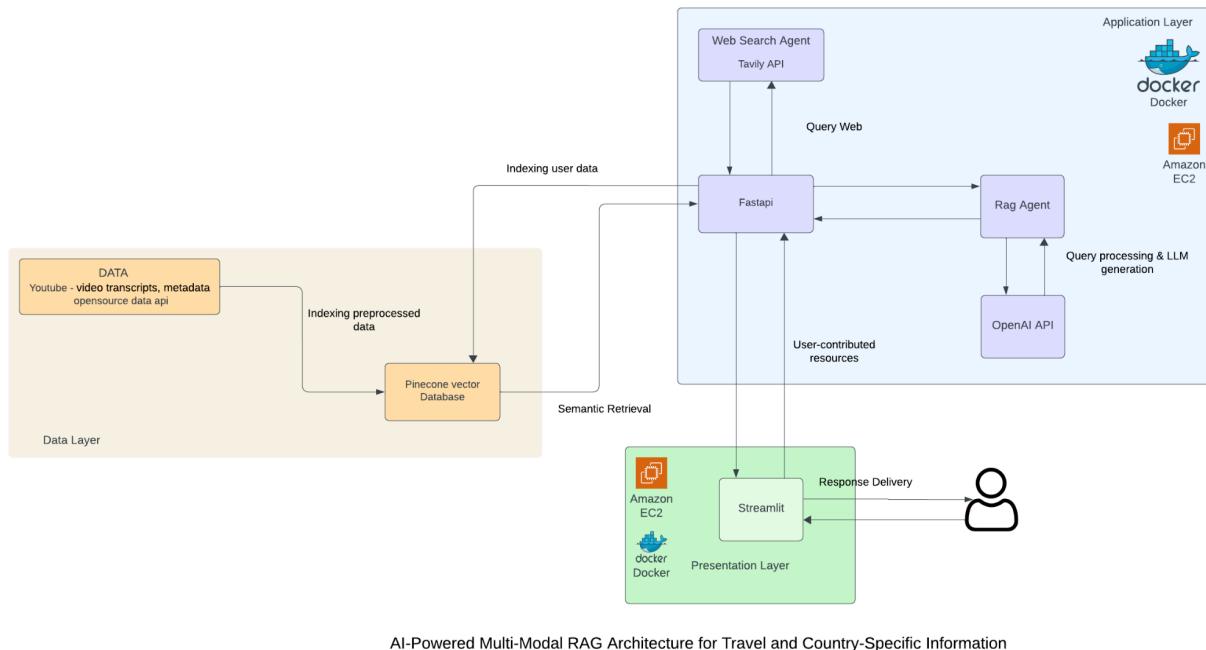
Planning a trip can be overwhelming with information scattered across different websites and platforms. WanderWise simplifies this process by bringing all the necessary travel information into one place. By using advanced AI, a smart database, and YouTube videos, WanderWise helps you create personalized and detailed travel plans easily.

### Context in Machine Learning

WanderWise uses the latest in language processing, smart databases, and helper systems to give you tailored travel recommendations. By pulling information from YouTube and other sources, it builds a rich knowledge base that understands and responds to your unique travel needs.

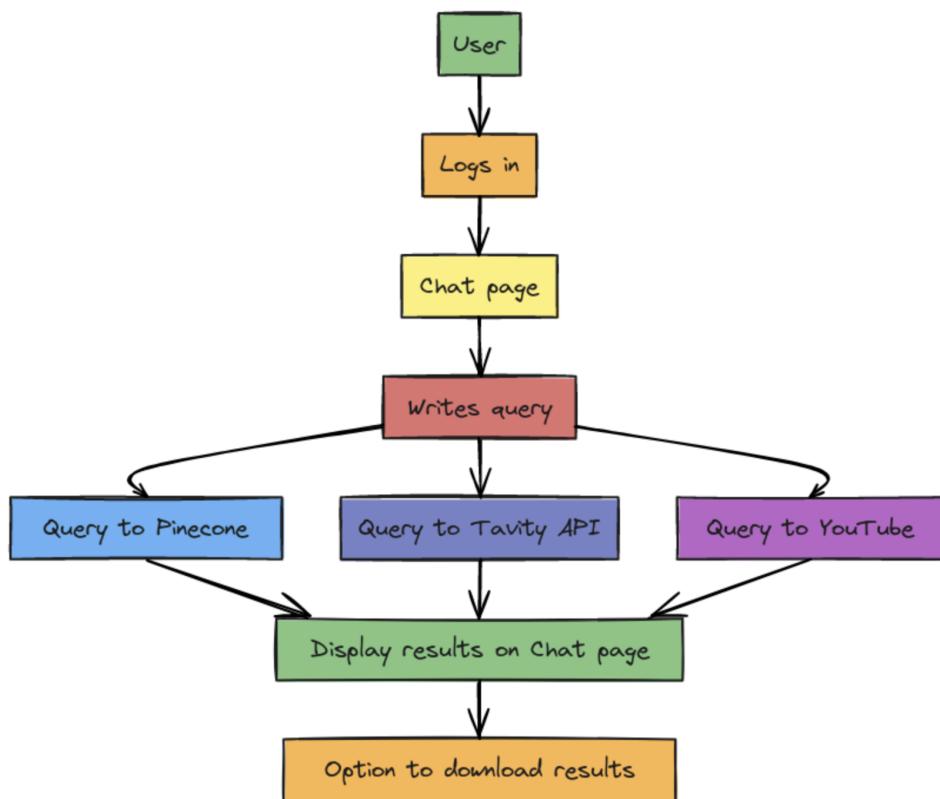
### Unique Aspects

- **YouTube Integration:** Uses videos as a rich source of travel information, providing diverse and multimedia content.
- **Dual-Helper System:** Combines the RAG Helper and Web Search Helper to offer both stored knowledge and live updates.
- **Personalized Chatbot:** Features a friendly chatbot that learns from your preferences and adapts its responses to better suit your needs.
- **Plan Modification and PDF Downloads:** Allows users to adjust their plans and download them for convenience.

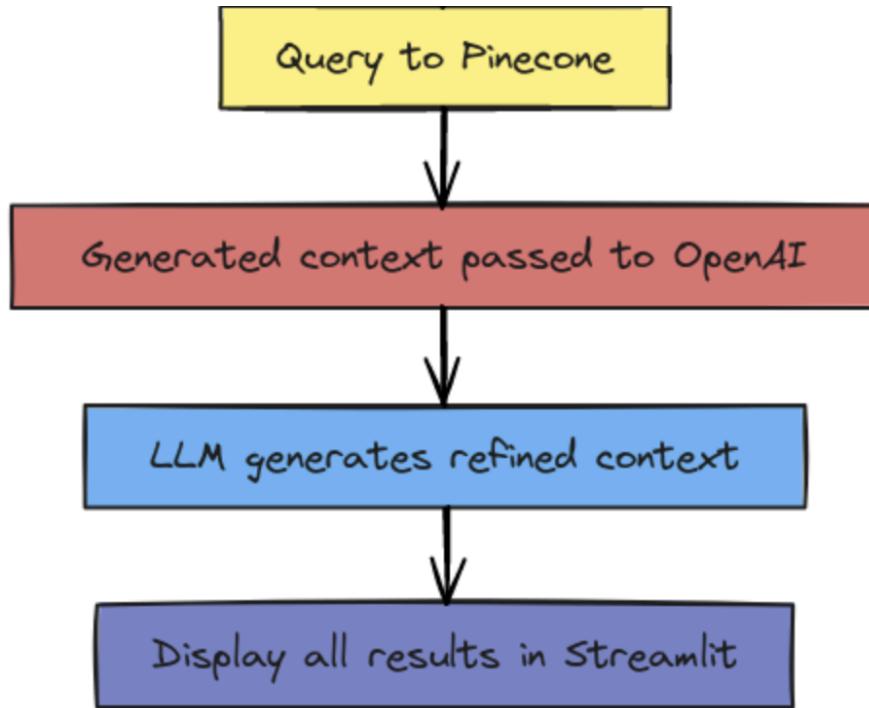


AI-Powered Multi-Modal RAG Architecture for Travel and Country-Specific Information

Above is the architecture diagram and the below is the flow diagram how does the backend work



For the query to pinecone there are 2 extra steps that the route takes to reach the chat page:



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## 6. Relevance

### Significance of the Topic

Travel planning often requires visiting multiple websites to gather all necessary information, which can be time-consuming and confusing. WanderWise addresses this problem by combining data from YouTube and other sources into one easy-to-use system, making travel planning faster and more personalized.

### Real-World Applications

- **Travel Planning Help:** Offers customized travel schedules, activity ideas, places to stay, and safety tips based on what you like.
- **Customer Service Support:** Helps travel agencies provide personalized recommendations and support to their customers.

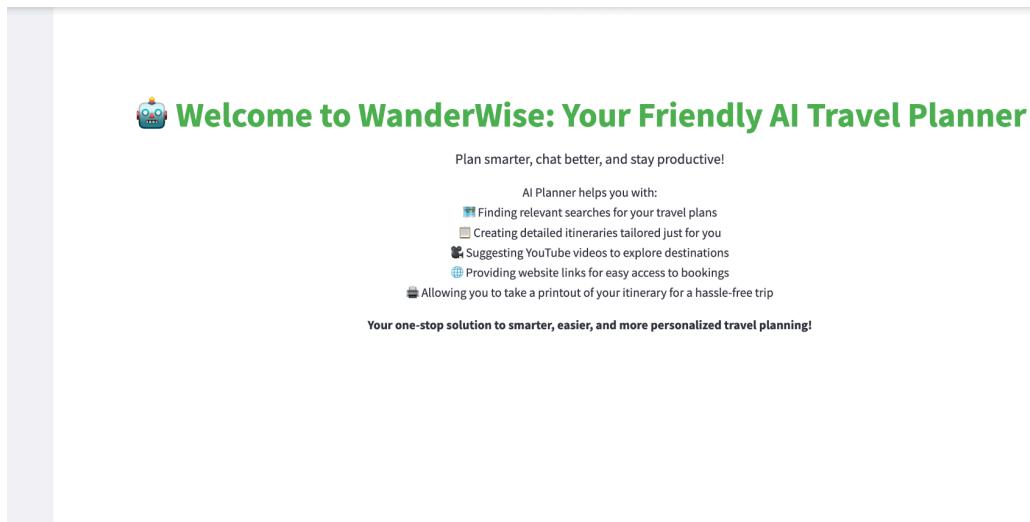
- **Easy Access to Information:** Makes it simpler to find and use comprehensive travel information, including videos, to make better travel decisions.
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## 7. Outcomes - GUI and Application

### Anticipated Results

- **Working Chatbot:** A smart chatbot that can give you personalized travel plans and suggestions based on your questions.
- **Rich Knowledge Base:** A well-organized database filled with YouTube video information and other travel data, searchable through Pinecone.
- **Dual-Helper System:** A reliable system that pulls information from both the stored database and live web searches for complete travel information.
- **User-Friendly Features:** Ability for users to modify their plans and download them as PDFs for easy use.

Welcome page:



User cannot access the chat page without logging in first and all the logged in information and sign in information is being stored in snowflake table

## Login

 Username

Enter your username

 Password

Enter your password

**After logging in:**

## Login

 Username

nishi

 Password

....

 Login successful! Redirecting to Chat...

## Travel Itinerary & Vlogs

⚠ Enter your travel-related query:

e.g., 'Plan a 5-day itinerary for Paris'

Generate Full Travel Suggestions

Deploy

Now this is the main interface where in the user and query and get an itinerary built

## Travel Itinerary & Vlogs ↗

⚠ Enter your travel-related query:

how to make tea?

Generate Full Travel Suggestions

👉 Your Query: how to make tea?

💡 Generating your personalized travel itinerary...

✗ Failed to call /generate-openai-response: 500 Server Error: Internal Server Error for url: <http://127.0.0.1:8000/generate-openai-response>

⚠ Could not generate a proper itinerary. Please try refining your query.

Only relevant query has to be entered for getting results in this case only travel related information

# Travel Itinerary & Vlogs

Enter your travel-related query:

sydney 5 day trip

**Generate Full Travel Suggestions**

Your Query: sydney 5 day trip

Generating your personalized travel itinerary...

## Sydney 5-Day Trip Itinerary

Day 1:

- Morning: Start your day with a visit to the iconic **Sydney Opera House**, marvel at its unique architecture, and snap some photos at the Opera House forecourt.
  - Tip: Arrive early to avoid crowds and enjoy the peaceful surroundings.
- Afternoon: Explore the historic **Rocks District**, wander through its cobblestone streets, and visit the **Museum of Contemporary Art**.
  - Tip: Stop by **The Rocks Markets** for local artisan crafts and souvenirs.
- Evening: Head to **Circular Quay** for dinner with a view of the Sydney Harbour Bridge and Opera House at one of the waterfront restaurants.

Day 2:

- Morning: Embark on a ferry to **Manly Beach**, enjoy a scenic ride across the harbor, and spend the morning relaxing on the beach or strolling along the Corso.
  - Tip: Try some fish and chips at one of the local cafes overlooking the beach.
- Afternoon: Visit the **Taronga Zoo** for a unique wildlife experience with stunning views of the city skyline.
  - Tip: Attend an animal show or take a cable car for breathtaking views.
- Evening: Explore **Darling Harbour**, dine at one of the waterfront restaurants, and visit **SEA LIFE Sydney Aquarium** for a glimpse into the underwater world.

Day 3:

Deploy

- Evening: Explore **Darling Harbour**, dine at one of the waterfront restaurants, and visit **SEA LIFE Sydney Aquarium** for a glimpse into the underwater world.

Day 3:

- Morning: Discover the **Royal Botanic Garden**, a serene oasis in the heart of the city, and walk to **Mrs. Macquarie's Chair** for panoramic views of the Sydney Opera House and Harbour Bridge.
  - Tip: Pack a picnic and enjoy it in the garden overlooking the harbor.
- Afternoon: Explore the trendy neighborhood of **Surry Hills**, known for its cafes, boutiques, and street art.
  - Tip: Shop for unique finds at **Bourke Street Bakery** and local designer stores.
- Evening: Experience Sydney's vibrant food scene at **Chinatown**, indulge in Asian cuisine, and visit the bustling night markets.

Day 4:

- Morning: Take a day trip to the **Blue Mountains**, marvel at the Three Sisters rock formation in Katoomba, and enjoy a scenic bushwalk in the national park.
  - Tip: Visit the **Echo Point Lookout** for the best views of the Blue Mountains.
- Afternoon: Explore the charming village of **Leura**, known for its boutique stores, galleries, and cafes.
  - Tip: Don't miss the chance to try traditional Australian meat pies at a local bakery.
- Evening: Relax and unwind at a cozy mountain lodge or return to Sydney for a leisurely evening by the harbor.

Day 5:

- Morning: Visit **Bondi Beach**, famous for its golden sands and surf culture, take a coastal walk to **Bronte Beach** for stunning ocean views.
  - Tip: Grab breakfast at a beachside cafe and watch the surfers catch waves.
- Afternoon: Explore the **Art Gallery of New South Wales** for a dose of culture and admire its impressive collection of Australian and international art.
  - Tip: Check out any temporary exhibitions or guided tours for a deeper understanding of the artworks.
- Evening: Conclude your trip with a sunset cruise on Sydney Harbour, admire the city skyline as it lights up, and savor a farewell dinner at one of the harborfront restaurants.

Enjoy your 5-day adventure in Sydney!

Fetching additional web suggestions...

Here is more information if you would like to read more and explore more about the places:

Plantrip: Trip Planner AI. Get an itinerary in seconds.

>Description: Create a custom travel plan for anywhere in the world in seconds. Plantrip is the most accurate AI trip planner. ... 9-Day Family-Friendly Road Trip from Delhi to Ahmedabad via Diu, Sompnath, and Kutch. December 6, 2024 - 55 views ... Save hours of research and planning by letting the AI handle the itinerary creation. Quickly get a detailed

Deploy

Enjoy your 5-day adventure in Sydney!

Fetching additional web suggestions...

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Learn More: [Link](#)

Fetching related YouTube videos...

### Watch these YouTube videos and see what places you find good:

Sydney's Best Day Trip - Beautiful Town Near Sydney - YouTube



Deploy

### Watch these YouTube videos and see what places you find good:

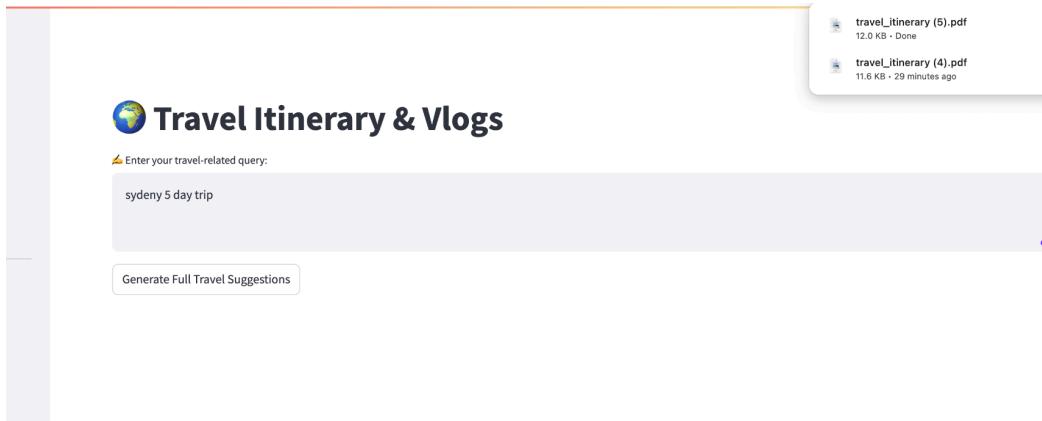
Sydney's Best Day Trip - Beautiful Town Near Sydney - YouTube



 Download Your Itinerary as a PDF and save the itenary. Happy Travels!!!

 Download PDF

User can also download the pdf where in all the rag generated summary will be visible



The screenshot shows a travel itinerary application interface. At the top, there's a button labeled "Download PDF". A download dialog box is overlaid on the screen, containing two files: "travel\_itinerary (5).pdf" (12.0 KB - Done) and "travel\_itinerary (4).pdf" (11.6 KB - 29 minutes ago).

**Travel Itinerary & Vlogs**

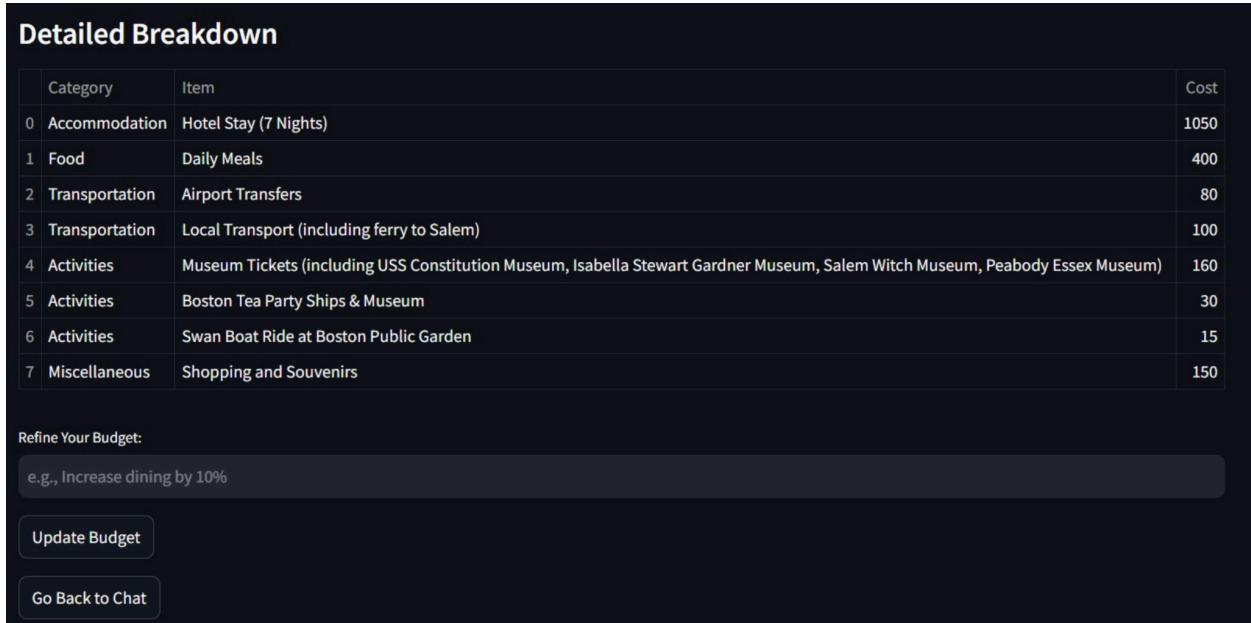
Enter your travel-related query:

sydney 5 day trip

Generate Full Travel Suggestions

Travel itinerary has been downloaded and saved to the desktop.

Budget Divider - Allotted certain expenses based on the importance and things that would require more money.



**Detailed Breakdown**

Category	Item	Cost
0 Accommodation	Hotel Stay (7 Nights)	1050
1 Food	Daily Meals	400
2 Transportation	Airport Transfers	80
3 Transportation	Local Transport (including ferry to Salem)	100
4 Activities	Museum Tickets (including USS Constitution Museum, Isabella Stewart Gardner Museum, Salem Witch Museum, Peabody Essex Museum)	160
5 Activities	Boston Tea Party Ships & Museum	30
6 Activities	Swan Boat Ride at Boston Public Garden	15
7 Miscellaneous	Shopping and Souvenirs	150

Refine Your Budget:

e.g., Increase dining by 10%

Update Budget

Go Back to Chat

## Potential Impact

- **Transforming Travel Planning:** Makes planning trips easier and more personalized with smart, context-aware suggestions.
  - **Multimedia Integration:** Shows how combining different types of data (text, images, video) with AI can improve user experiences.
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## 8. Evaluation Metrics

### Performance Measures

- **Accuracy:** Check how relevant and precise the information provided by WanderWise is using measures like precision and recall.
  - **User Satisfaction:** Collect and review user feedback on how easy and helpful the chatbot is.
  - **Response Time:** Ensure the system responds quickly to keep interactions smooth and enjoyable.
  - **System Robustness:** Test the helpers to handle various types of questions and maintain consistent performance.
  - **Feature Utilization:** Monitor how often users modify their plans or download PDFs to assess the usefulness of these features.
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## 9. Conclusion

### Summary

WanderWise: Your Friendly Travel Planner brings together advanced AI, a smart database, and YouTube videos to help you plan your trips effortlessly. By combining stored information with real-time updates, WanderWise provides personalized travel plans and recommendations through an easy-to-use chatbot interface. Additionally, users can adjust their plans and download them as PDFs, adding flexibility and convenience to their travel planning experience.

### Value and Contributions

WanderWise offers a scalable and versatile solution for intelligent travel planning. It lays the groundwork for future improvements, such as adding more data sources or enhancing the AI to better understand and respond to user needs. This project highlights the potential of AI to revolutionize how we plan and enjoy our travels, making the process more efficient, personalized, and user-friendly.

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## 10. References

1. LangChain Documentation. Retrieved from <https://langchain.com/docs>
2. OpenAI API Documentation. Retrieved from <https://openai.com/api>
3. YouTube API Documentation. Retrieved from <https://developers.google.com/youtube/v3>
4. LangGraph Documentation. Retrieved from <https://langgraph.com/docs>
5. FastAPI Documentation. Retrieved from <https://fastapi.tiangolo.com>
6. Pinecone Documentation. Retrieved from <https://www.pinecone.io/docs>
7. Li, Xinyi, Wang, Sai, Zeng, Siqi, Wu, Yu, & Yang, Yi. (2024). A survey on LLM-based multi-agent systems: workflow, infrastructure, and challenges. *Vicinagearth*, 1, 10.1007/s44336-024-00009-2.
8. Cheng, Y., Zhang, C., Zhang, Z., Meng, X., Hong, S., Li, W., Wang, Z., Wang, Z., Yin, F., Zhao, J., & He, X. (2024). Exploring Large Language Model based Intelligent Agents: Definitions, Methods, and Prospects. *arXiv preprint arXiv:2401.03428*. Retrieved from <https://arxiv.org/abs/2401.03428>