Exploratory Data Analysis

Landmark Distribution by Category

- Heritage & Culture — 51.7%
- Arts & Entertainment — 17.7%
- Nature & Eco-Tourism — 12.7%
- Beaches & Coastlines — 10.8%
- Urban Life & Nightlife — 2.9%
- Adventure & Outdoors — 1.9%
- Religious & Spiritual Sites — 1.6%
- Festivals & Events — 0.9%
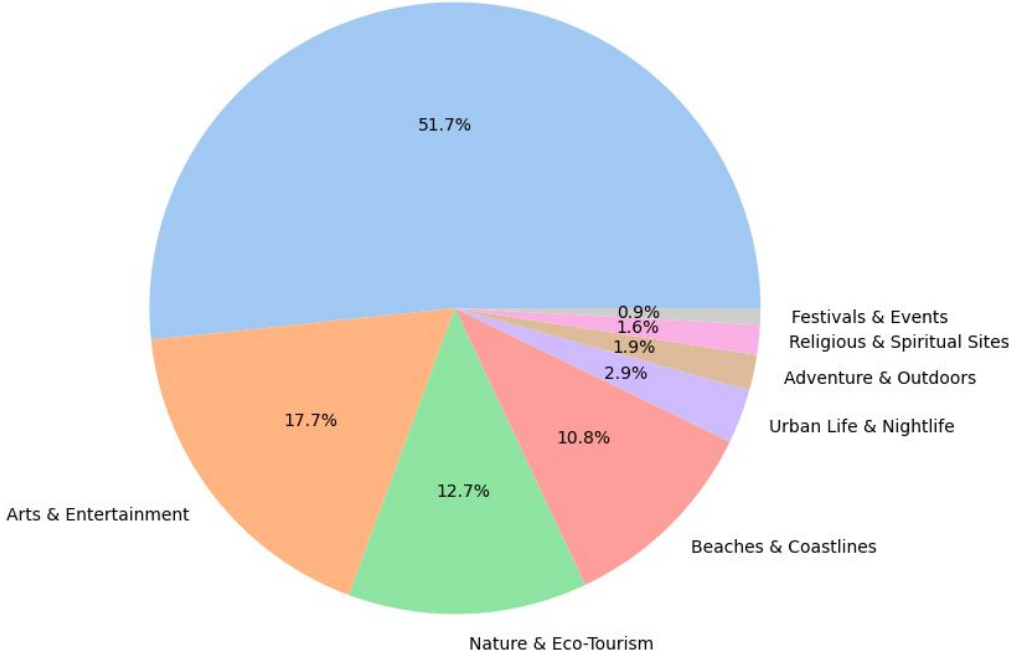
Top 5 Municipalities by Landmark Count

- San Juan — 45.8%
- Ponce — 35.4%
- Arecibo — 6.8%
- Mayagüez — 6.5%
- Aguadilla — 5.5%
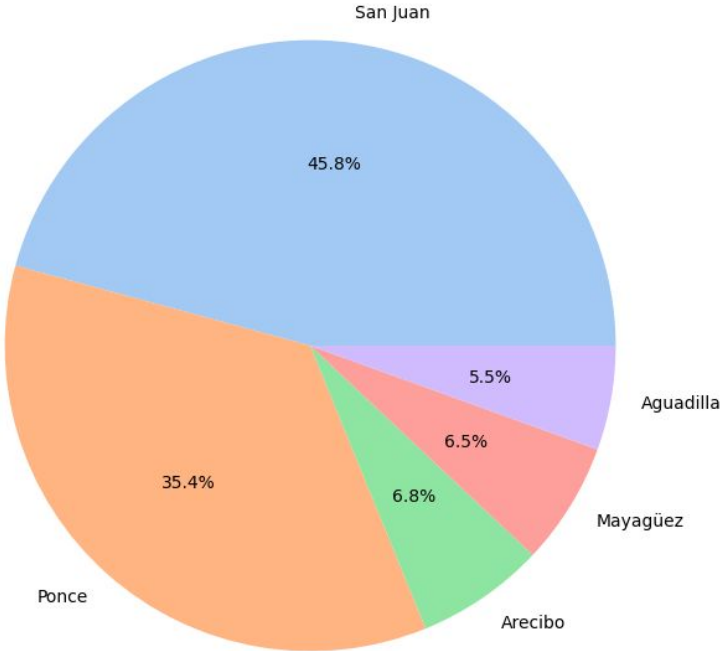
Implementation - RAG Framework

RAG Framework Architecture
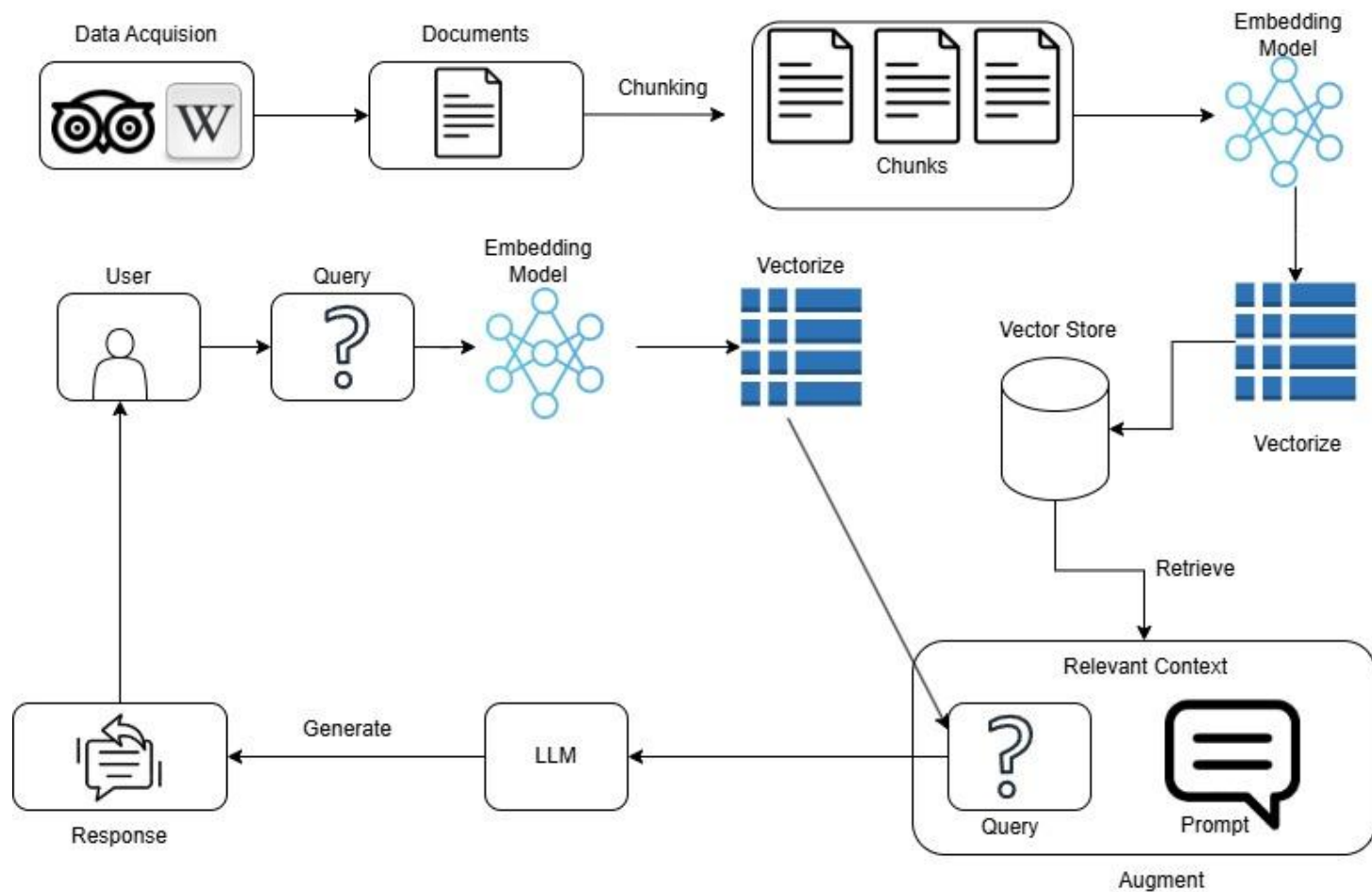
Ground Truth Test

Question 1: What famous events are there in December?
Human Answer - Festival de las Máscaras, Fiesta Jíbara, Christmas
Model Answer - Christmas and Festival de las Máscaras

Question 2: What places would a coffee lover enjoy?
Human Answer - Casa Pueblo, Hacienda Lealtad, Hacienda Buena Vista
Model Answer - Hacienda Lealtad, Hacienda Buena Vista, Hacienda Juanita, Hacienda El Jibarito

Question 3: ¿Qúe lugares son buenos para ir con niños?
Human Answer - Museo del Niño, Parque de la Ciencias Luis A. Ferré, Albergue Olímpico
Model Answer - Parque de la Ciencias Luis A. Ferré, Museo de Vida Silvestre, Cueva Ventana

Question 4: What are the most unique beaches I should visit?
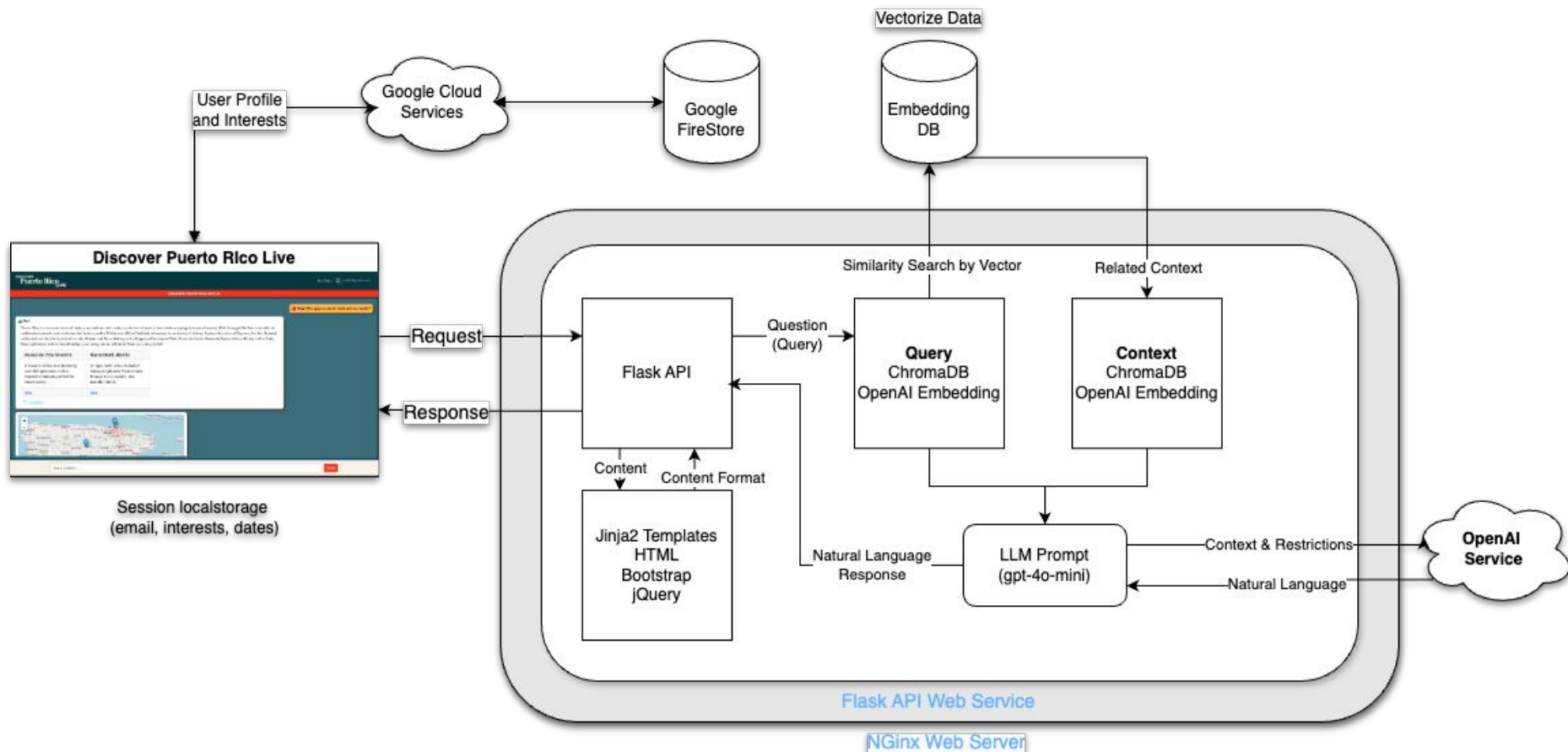Human Answer - Playa Negra, Playa Chiva,
Model Answer - Playa Chiva, Playa Flamenco, Playa Caracas

Question 5: What is the weather like in Rio Grande
Human Answer - Daily high temperatures are around 83°F, rarely falling below 80°F or exceeding 86°F. Daily low temperatures are around 74°F, rarely falling below 71°F or exceeding 77°F.
Model Answer - ''During your travel dates from December 1 to December 9, Rio Grande typically enjoys pleasant weather. Expect average temperatures around 80°F (26.9°C) during the day and cooler evenings. Rain is less common in December, making it a great time to explore the rich history and culture of the area.''

Deployment Architecture

Vectorize Data

User Profile and Interests

Google Cloud Services

Google FireStore

Embedding DB

Discover Puerto Rico Live

Request

Response

Session localstorage (email, interests, dates)

Flask API

Question (Query)

Similarity Search by Vector

Related Context

Query ChromaDB OpenAI Embedding

Context ChromaDB OpenAI Embedding

Content

Content Format

Jinja2 Templates HTML Bootstrap jQuery

Natural Language Response

LLM Prompt (gpt-4o-mini)

Context & Restrictions

Natural Language

OpenAI Service

Flask API Web Service

NGinx Web Server

DISCOVER
Puerto Rico
LIVE

My Plan | nikki27@gmail.com

DISCOVER PUERTO RICO WITH AI

LIVE BORICUA

Explore the best places in Puerto Rico with AI.
Answer the question to get started.

Link: https://discoverpuertorico.live

Ask a question ...

Send

Future Work & Insights

Enhance Query Understanding

- Explore other **pretrained transformers** (e.g., T5, mT5, or BART) to better handle **grammar issues, typos, and informal queries**.
- Fine-tune models on **tourism-related user queries** for improved response accuracy.

Add Geospatial Features

- Implement **distance calculations** between locations in a user's saved list.
- Suggest optimized **travel routes** based on location proximity and user preferences.

Improve Multilingual Support

- Fine-tune embeddings to enhance **English-Spanish** responses.
- Incorporate **translation models** for better query handling in multiple languages.

Thank You!

IRON
HACK