

Gemini Historical Artifact Description

Project Documentation format

1. Introduction

- **Project Title:** Gemini Historical Artifact Description

2. Project Overview

- **Purpose:** To provide a Generative AI-powered curatorial tool that generates scholarly, long-form historical descriptions of artifacts based on text or image inputs.
- **Features:**
 - **Multimodal Input:** Support for both text-based artifact names and image uploads.
 - **Customizable Length:** Generates content from 100 up to 1500 words.
 - **Engagement Features:** Real-time historical facts displayed during AI processing.
 - **Data Export:** One-click "Copy to Clipboard" and "Export as Text" functionality.

3. Architecture

- **Frontend:** Built using **Streamlit**, providing a responsive, museum-themed user interface.
- **Backend:** Logic layer handled via **Python**, managing prompt engineering and state management.
- **AI Engine (Database/Intelligence):** **Google Gemini 1.5 Flash API** acts as the intelligent core for identifying artifacts and generating text.

4. Setup Instructions

- **Prerequisites:** Python 3.10+, pip, and a Google AI Studio API Key.
- **Installation:**
 1. Clone the repository: git clone [Your Repo Link]
 2. Install dependencies: pip install -r requirements.txt
 3. Set Environment Variables: Create a .env file and add
GOOGLE_API_KEY=your_key_here.

5. Folder Structure

- **Main Application:**
 - app.py: Contains the Streamlit UI and Gemini API logic.
 - requirements.txt: Lists libraries like google-generativeai, streamlit, and Pillow.
 - .gitignore: Configured to exclude .env for security.

6. Running the Application

- Navigate to the project directory and run:
 - **Command:** streamlit run app.py

7. API Documentation

- **Model:** gemini-1.5-flash-latest
- **Input Parameters:** prompt (String), image (PIL Image object), word_count (Integer).
- **Response:** A Markdown-formatted historical blog post.

8. Authentication

- **Method:** API Key-based authentication.
- **Handling:** The key is securely loaded from a .env file using the python-dotenv library to ensure it is never exposed in the source code.

9. Known Issues & Resolutions

Issue Found	Resolution Applied
Credential Leak: API key was initially visible in the commit history.	Resolved: Rotated the API key in Google Cloud, added .env to .gitignore, and force-pushed a clean history.
Repetitive Content: AI generated similar paragraphs for very high word counts (1500+).	Resolved: Refined the system prompt to require specific scholarly headings (e.g., 'Craftsmanship', 'Legacy') to force diverse content.
Image Recognition Failure: Uploading an image without a name sometimes confused the model.	Resolved: Implemented a "Smart Prompt" that explicitly instructs Gemini to "Identify the artifact in the image first if no name is provided."

State Reset: UI refreshed and cleared results when users clicked the "Copy" button.	Resolved: Used st.session_state to preserve generated text across button-click reruns.
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10. User Interface & Screenshots

The screenshots illustrate the user interface of the Gemini Historical Artifact Description application. The application is titled "Gemini Historical Artifact Description".

Initial State (Top Screenshot):

- Artifact Name: The Rosetta Stone
- Time Period: Ancient Egypt
- Desired Word Count: 800
- Buttons: Start Artifact Research, Generate Description

State After Click (Bottom Screenshot):

- Artifact Name: Tutankhamun's Golden Mask
- Time Period: Ancient Egypt
- Desired Word Count: 1200
- Buttons: Start Artifact Research, Generate Description

In both screenshots, the UI is clean with a white background and a dark sidebar. The sidebar contains the application logo, a search bar, and navigation links. The main content area features a title, a welcome message, and input fields for artifact name, time period, and word count. A "Start Artifact Research" button is present in the center. On the right side, there is a file upload section with a "Drag and drop file here" placeholder and a "Browse files" button. The status bar at the bottom shows system information like weather, battery level, and date/time.

The screenshot displays two windows of the Gemini Artifact Explorer application. The top window shows the main search interface with fields for artifact name, time period, and word count, along with a progress bar and a 'Generate Description' button. The bottom window shows a detailed summary card for 'Tutankhamun's Golden Mask', featuring a large image, a title, a detailed description of its discovery, and a note about its significance.

Gemini Historical Artifact Description

Enter artifact name? Tutankhamun's Golden Mask

Which time period? (Optional) e.g. Ancient Egypt

Desired word count? 1200

Generate Description

Researching...

Did you know? Tutankhamun's tomb was discovered in 1922 by Howard Carter.

Welcome to the Digital Museum

Enter an artifact name or upload a photo to begin.

Upload an image (Optional)

Drag and drop file here Limit 200MB per file • JPG, JPEG, PNG

Browse files

Start Artifact Research

Gemini Historical Artifact Description

The History of Tutankhamun's Golden Mask

The Golden Discovery

The story of the mask begins deep within the Valley of the Kings, a silent and dusty place where the pharaohs of Egypt were laid to rest thousands of years ago. For centuries, the tomb of a young king named Tutankhamun remained hidden under the sand and the rubble of other tomb constructions. It was not until November 1922 that a British archaeologist named Howard Carter finally discovered the stone steps leading down into the darkness. After years of searching and almost losing his funding, Carter found the most intact royal tomb ever discovered in Egypt. When he first peeked through a small hole in the sealed door, his patron, Lord Carnarvon, asked if he could see anything. Carter famously replied, "Yes, wonderful things." Among those wonderful things, the most iconic and breathtaking was the golden death mask that covered the head and shoulders of the king's mummy. It was tucked inside a series of nested coffins, the innermost one being made of solid gold, protecting the king for his journey into the afterlife.

The discovery of the mask was a moment that changed archaeology forever. It took Carter and his team months of careful work to

11. Future Enhancements

- Voice Narrator:** Integration of Text-to-Speech (TTS) to provide audio museum tours.
- Language Support:** Translating historical descriptions into multiple international languages.
- Database Integration:** Saving user history and favorite artifacts to a persistent database.