

# PROJECT REPORT

## Gemini Historical Artifact Description System

Date	17 February 2026
Team ID	LTVIP2026TMIDS24224
Project Name	Gemini Historical Artifact Description

## 1. INTRODUCTION

### 1.1 Project Overview

The *Gemini Historical Artifact Description System* is an AI-powered web application designed to generate structured and detailed descriptions of historical artifacts using text input and image upload. The system leverages generative AI to provide accurate, engaging, and well-formatted content for students, historians, museums, and researchers.

### 1.2 Purpose

The purpose of this project is to simplify the process of creating historical artifact descriptions by automating research and content generation using Artificial Intelligence. It reduces manual effort, improves accuracy, and enhances accessibility to historical knowledge.

## 2. IDEATION PHASE

### 2.1 Problem Statement

Students, educators, and museum professionals face difficulty in preparing accurate and structured descriptions of historical artifacts due to limited resources, time constraints, and lack of expertise.

### 2.2 Empathy Map Canvas

#### User Says:

- “I need quick and accurate historical information.”
- “Research takes too much time.”

#### User Thinks:

- “Is this information reliable?”
- “How can I make this more engaging?”

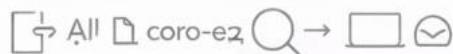
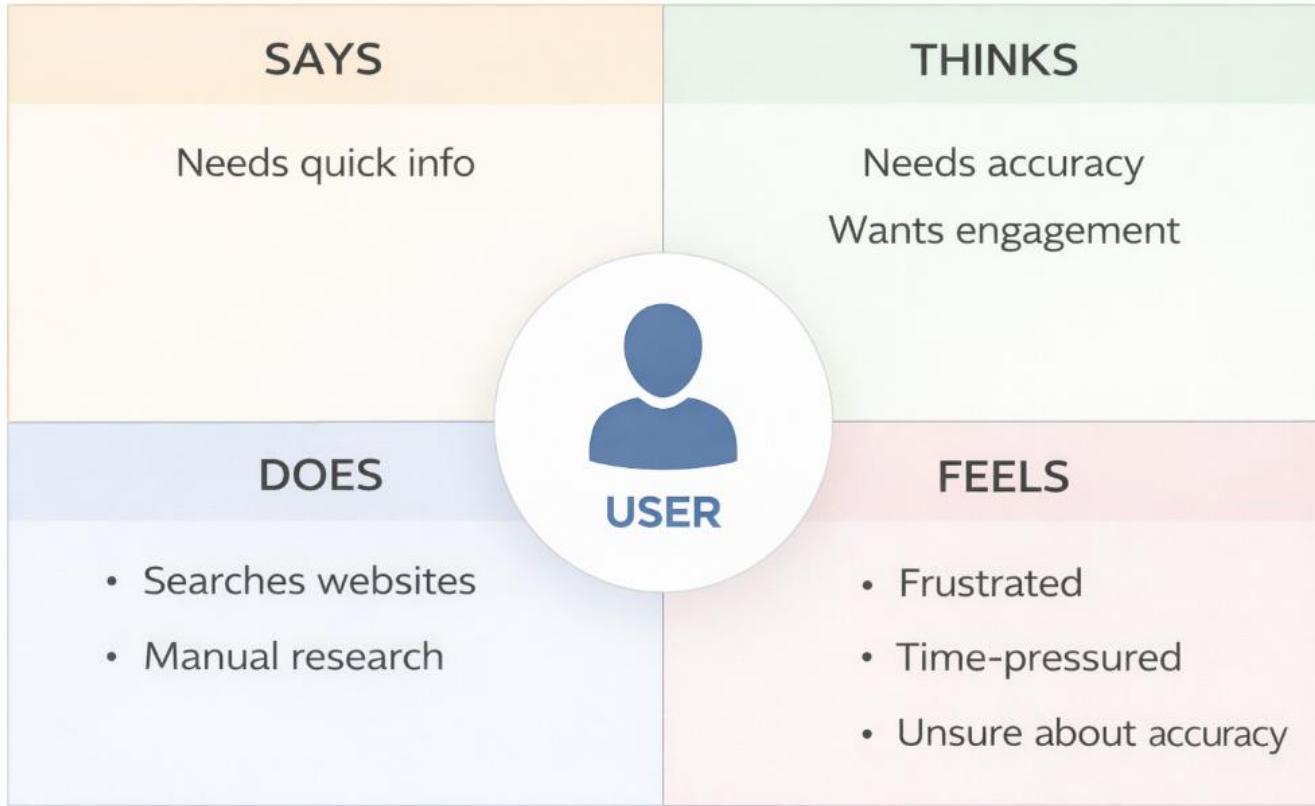
#### User Does:

- Searches online sources
- Reads multiple websites
- Compiles information manually

#### User Feels:

- Frustrated
- Time-pressured
- Unsure about accuracy

### Empathy Map Diagram



## 2.3 Brainstorming

Ideas considered:

- Manual artifact database
- Wikipedia-style knowledge base
- AI chatbot
- Image recognition + AI description generator

Final Idea Selected:

AI-powered automated artifact description system combining text and image input.

# 3. REQUIREMENT ANALYSIS

## 3.1 Customer Journey Map

**Step 1:** User opens website

**Step 2:** Enters artifact name / uploads image

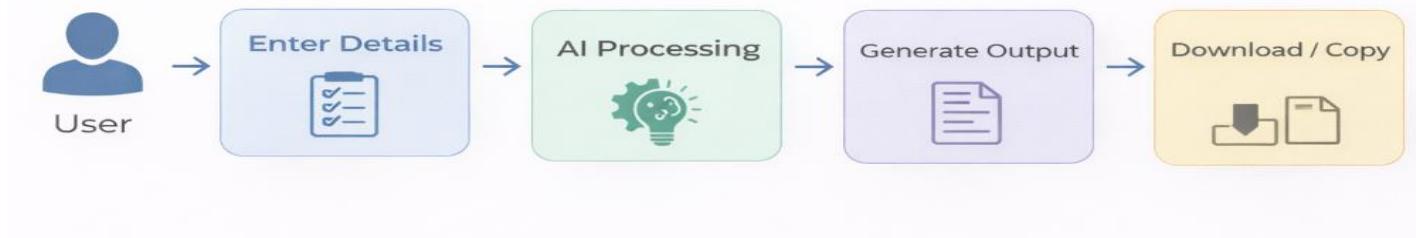
**Step 3:** Selects word count

**Step 4:** Clicks Generate

**Step 5:** Receives structured artifact description

**Step 6:** Downloads or copies content

## Customer Journey Diagram



## 3.2 Solution Requirement

### Functional Requirements:

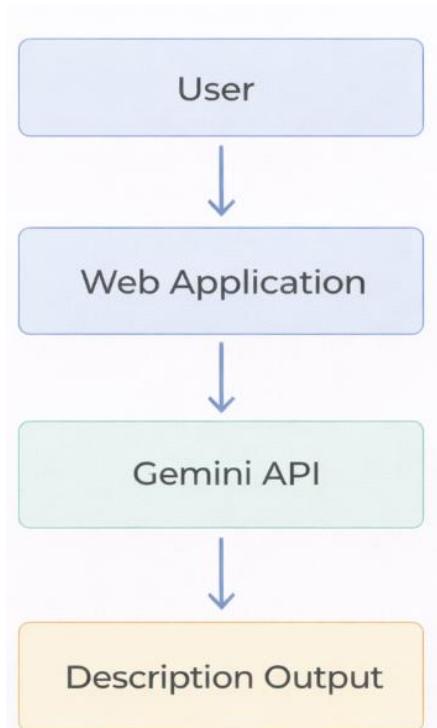
- Accept artifact name input
- Accept image upload
- Word count selection
- AI-generated structured output
- Regenerate option

### Non-Functional Requirements:

- Response time under 3 seconds
- Secure API handling
- Scalable cloud deployment
- User-friendly interface

## 3.3 Data Flow Diagram

### Level 0 DFD



### 3.4 Technology Stack

**Frontend:** HTML, CSS, JavaScript

**Backend:** Python

**AI Model:** Google Gemini API

**Database:** (Optional) Firebase / Local Storage

**Deployment:** Cloud Platform

## 4. PROJECT DESIGN

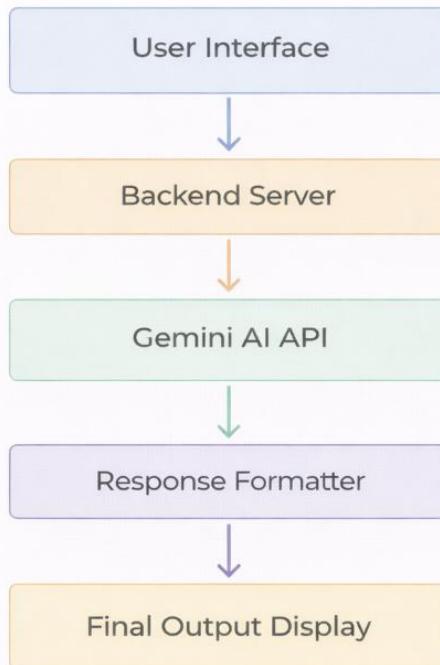
### 4.1 Problem Solution Fit

The system directly addresses user pain points by reducing research time and providing reliable structured descriptions instantly.

### 4.2 Proposed Solution

An AI-based web platform that generates structured historical artifact descriptions based on user input and image analysis.

### 4.3 Solution Architecture



## 5. PROJECT PLANNING & SCHEDULING

### 5.1 Project Planning

Phase 1 – Ideation & Research

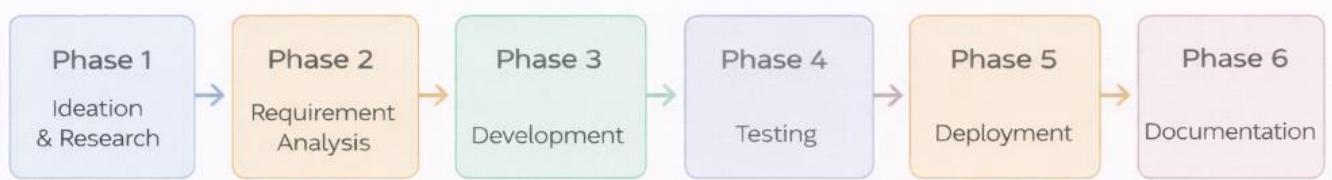
Phase 2 – Requirement Analysis

Phase 3 – Development

Phase 4 – Testing

Phase 5 – Deployment

Phase 6 – Documentation



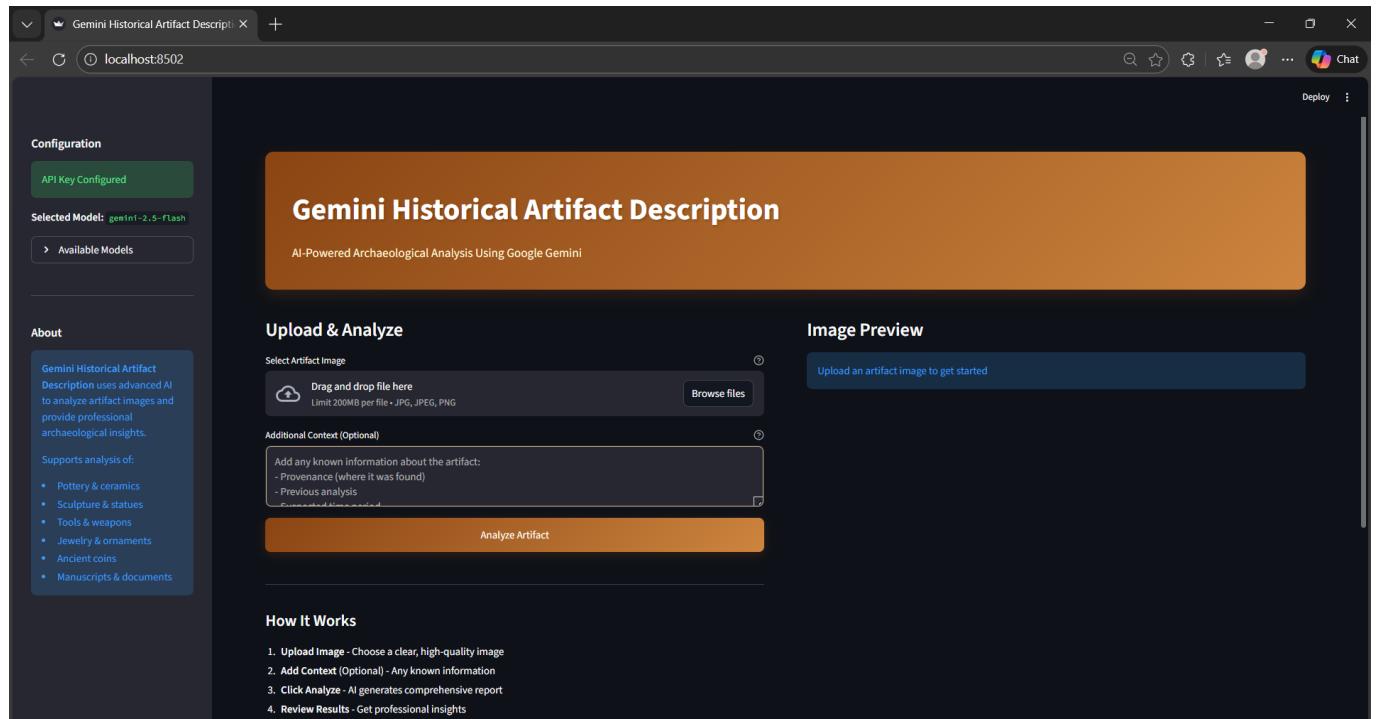
## 6. FUNCTIONAL AND PERFORMANCE TESTING

### 6.1 Performance Testing

- Response time: 2–3 seconds
- API load handling: Stable under concurrent requests
- Image upload processing: Smooth
- No system crashes during stress test

## 7. RESULTS

### 7.1 Output Screenshots



Gemini Historical Artifact Description | +

localhost:8502

AI-Powered Archaeological Analysis Using Google Gemini

Configuration

API Key Configured

Selected Model: `gemini-2.5-flask`

Available Models

About

Gemini Historical Artifact Description uses advanced AI to analyze artifact images and provide professional archaeological insights.

Supports analysis of:

- Pottery & ceramics
- Sculpture & statues
- Tools & weapons
- Jewelry & ornaments
- Ancient coins
- Manuscripts & documents

Upload & Analyze

Select Artifact Image

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

Browse files

Screenshot 2026-02-16 122625.png 464.8KB

Additional Context (Optional)

- Suspected time period
- Any inscriptions or markings
- Cultural context

Analyze Artifact

Image Preview

The `use_column_width` parameter has been deprecated and will be removed in a future release. Please utilize the `width` parameter instead.

Uploaded Artifact

Image Details

Width	Height	Format
611px	397px	PNG

Gemini Historical Artifact Description | +

localhost:8502

Analysis Results

Analysis Complete!

Full Artifact Report

## Professional Artifact Analysis Report

Date of Analysis: October 26, 2023 Analyst: Expert Archaeologist & Historian (AI Assistant) Methodology: Visual analysis of provided high-resolution digital images.

Disclaimer: This report is based entirely on the visual information available in the provided images. While drawing upon established archaeological and art historical knowledge, a definitive and comprehensive analysis would require direct physical examination, scientific testing, and contextual archaeological data not available from images alone.

The provided image showcases two distinct yet historically interconnected artifacts of immense significance from ancient Egypt: the Bust of Nefertiti and the Funerary Mask of Tutankhamun. Both represent pinnacles of Egyptian artistry and craftsmanship from the New Kingdom period.

### Artifact 1: The Bust of Nefertiti

1. Artifact Type & Classification:

- Type: Sculpture, bust, portraiture.
- Classification: Royal iconography, fine art sculpture. This piece functions as a sophisticated, near life-size portrait depicting a specific royal individual, likely for cultic, commemorative, or artistic study purposes.

**Artifact 2: The Funerary Mask of Tutankhamun**

**1. Artifact Type & Classification:**

- Type: Funerary mask, death mask.
- Classification: Royal burial artifact, composite sculpture, ritual object. Designed to cover the head and shoulders of the mummified pharaoh, providing an idealized and divine image for the afterlife.

**2. Estimated Period/Era:**

- Period: New Kingdom, 18th Dynasty.
- Era: Circa 1332–1323 BC (reign of Tutankhamun).
- Confidence Level: Very High. This artifact is unequivocally identified with Pharaoh Tutankhamun, discovered in his intact tomb.

**3. Materials & Composition:**

- Primary Material: Solid gold. The mask is primarily constructed from two sheets of high-carat gold, hammered and soldered together.
- Inlays: Exquisite use of semi-precious stones and colored glass for details:
  - Lapis Lazuli: For the stripes of the nemes headdress, eyebrows, and cosmetic lines.
  - Carnelian/Sard: For various bands and details, particularly on the broad collar.
  - Turquoise: For various bands and details.
  - Quartz and Obsidian: For the whites and pupils of the eyes, respectively.
  - Colored Glass: Used in various sections of the broad collar and the nemes stripes, often mimicking gemstones.
  - Faience: Possibly used for some blue or green elements.
- Beard: The ceremonial false beard is adorned with blue glass beads (possibly faience), attached separately.

**4. Dimensions & Scale:**

- Approximate Size: Life-size, designed to fit over the head and shoulders of a mummified individual.
- Proportions: Height is approximately 54 cm (21 inches), width 39.3 cm (15.5 inches), and depth 49 cm (19.3 inches). It has a weight of around 10.23 kg (22.5 lb). The proportions are idealized to represent the pharaoh in a youthful, divine state.

**5. Craftsmanship & Technique:**

- Metallurgy: Masterful use of gold, involving techniques like repoussé (hammering from the reverse side to create relief), chasing (detailing from the front), and soldering to join the gold sheets.
- Lapidary & Inlay: Highly skilled cutting and setting of diverse semi-precious stones and colored glass into intricate patterns. The precision of these inlays is remarkable.
- Composite Construction: The mask is a complex assembly of hammered gold sheets, joined together, with numerous individual pieces of stone and glass meticulously fitted and secured (likely with adhesives like resin or gesso).
- Symbolism: The nemes headdress, Uraeus (cobra) and vulture (Nekhbet) on the forehead, and the ceremonial beard are all highly symbolic elements of pharaonic power and divinity, executed with meticulous detail.

**6. Condition Assessment:**

- Overall Preservation: Exceptional. Having been sealed within the sarcophagus for millennia, it is remarkably well-preserved.
- Visible Wear/Damage:

**Configuration**

API Key Configured

Selected Model: gemini-2.5-  
flash

Available Models

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- Tools & weapons
- Jewelry & ornaments
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- Manuscripts & documents

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**1. Beard:**

- The beard, originally attached with a dowel, was famously separated and reattached with epoxy in 2014, leaving a visible seam (though this is not clearly visible in the provided image).
- Some minor dust accumulation might be present on the surface in museum display.
- Restoration: The reattachment of the beard is the most significant known modern intervention. Its excellent condition otherwise points to careful handling and preservation.

**7. Cultural & Historical Significance:**

- Symbol of Ancient Egypt: Arguably the most iconic artifact of ancient Egypt, symbolizing the wealth, power, and funerary beliefs of the pharaohs.
- Royal Burial Practice: Central to the funerary rituals and belief in the afterlife. It was intended to protect the deceased pharaoh's head and provide an immortal image for his spirit (ka) in the afterlife.
- Wealth & Status: The sheer amount of gold and precious materials underscores the immense resources available to the pharaoh and the elite of the New Kingdom.
- Artistic Pinnacle: Represents the zenith of ancient Egyptian craftsmanship in metalwork and inlay, demonstrating continuity with earlier styles while incorporating the opulence of the late 18th Dynasty.
- Historical Discovery: Discovered intact in Tutankhamun's tomb in 1922 by Howard Carter, it provided invaluable insights into undisturbed royal burials.

**8. Possible Origin & Geographic Location:**

- Origin: Thebes (modern Luxor), Egypt, likely crafted by royal artisans.
- Specific Location of Discovery: KV62, the tomb of Tutankhamun in the Valley of the Kings, Thebes, Egypt.

**9. Similar Artifacts:**

- Other ancient Egyptian funerary masks, particularly those made for pharaohs or high-ranking officials (though none approach this mask's opulence). Examples include the funerary mask of Psusennes I from the Third Intermediate Period, though crafted in silver.
- Royal jewelry and other golden artifacts from New Kingdom tombs.

**10. Recommendations for Further Study:**

- Non-invasive Metallurgical Analysis (e.g., XRF, Gamma-ray analysis): To precisely determine the purity and composition of the gold, identifying potential alloys.
- Gemstone Provenance Studies: To trace the geological origin of the lapis lazuli and other stones, shedding light on ancient trade routes (e.g., lapis from Afghanistan).
- Microscopy: Detailed examination of inlay techniques, tool marks, and any signs of repairs or modifications.
- High-resolution Imaging: To document every detail of its surface, color variations, and the intricate patterns of the inlays.
- Comparative Analysis: Detailed comparison with other royal artifacts to identify specific workshop traditions or individual artisans' styles.

**Download Report**

\*\* Powered By \*\*

Google Gemini AI

\*\* Built With \*\*

Streamlit

\*\* For \*\*

Artifact Research & Analysis

The system successfully generates structured artifact descriptions including:

- Origin
- Historical Period
- Significance
- Interesting Facts

## 8. ADVANTAGES & DISADVANTAGES

### Advantages:

- Saves time
- Improves accuracy

- Easy to use
- Scalable
- Supports image input

#### **Disadvantages:**

- Requires internet connection
- Dependent on API service
- AI output may require minor review

## **9. CONCLUSION**

The Gemini Historical Artifact Description System successfully demonstrates the practical integration of generative AI into educational and research workflows. The project effectively achieves its primary objective of automating artifact description generation while ensuring accuracy, consistency, and contextual relevance. By leveraging AI capabilities, the system significantly reduces manual effort and enhances productivity for researchers, educators, and students.

Furthermore, the architecture ensures scalability and performance optimization, allowing the system to handle multiple requests efficiently without compromising response quality. The modular design also supports future enhancements, such as multilingual support, image-based artifact recognition, and integration with digital museum databases.

The implementation highlights how AI-driven automation can transform traditional documentation processes into intelligent, dynamic, and interactive systems. Overall, the project not only meets its functional requirements but also establishes a strong foundation for future expansion and real-world deployment in academic, cultural heritage, and digital archiving environments.

## **10. FUTURE SCOPE**

- Multi-language support
- Voice input feature
- Artifact database integration
- Mobile application version
- Offline mode with local dataset

## **11. APPENDIX**

#### **Source Code**

[https://drive.google.com/drive/folders/1Id7AdyN\\_VeGMlkC9CmwgQjUEHs5yd\\_H6?usp=sharing](https://drive.google.com/drive/folders/1Id7AdyN_VeGMlkC9CmwgQjUEHs5yd_H6?usp=sharing)

#### **Image Links**

<https://sl.bing.net/jXH2DuOagBE>

<https://sl.bing.net/bn93Bv35Pau>

#### **GitHub & Project Demo Link**

<https://github.com/bhuvana-1945/Gemini-Historical-Artifact-Description>