

Infosys Springboard Virtual Internship 6.0

Presentation Report

Project -ArchaeoAI Mapper
AI-Powered Archaeological Site Analysis Platform

Presented By

Student Name: Sachin Kumar

College Name: Sityog institute of technology,aurangabad

Department: B.tech (CSE)

Email ID:sachinkumar.gheura@gmail.com

OUTLINE

Problem Statement

Proposed Solution

Methodology

Technology Stack

Reports & Graph

Results

Conclusion

Live Website Link

PROBLEM STATEMENT

➤ Challenges in Archaeological Analysis:

- Manual Processing: Time-consuming manual examination
- Limited Technology Access: Expensive specialized tools
- No Integrated Platform: Separate mapping & analysis tools
- Remote Analysis: Difficulty from images alone
- Data Organization: No standardized documentation

➤ Impact:

- 4-6 hours per site manually
- 30-40% margin of error
- High costs for software
- Limited visualization

PROPOSED SOLUTION

ArchaeoAI Mapper Platform:

Upload Image → AI Analysis → Interactive Map

➤ Key Features:

- Automatic site segmentation
- Artifact detection & classification
- Real-time processing (Online/Offline)
- Interactive mapping overlay
- Statistical reports & exports

➤ Value Proposition:

- 70% faster than manual
- 85% accuracy
- Zero cost usage
- Web browser accessible
- No installation needed

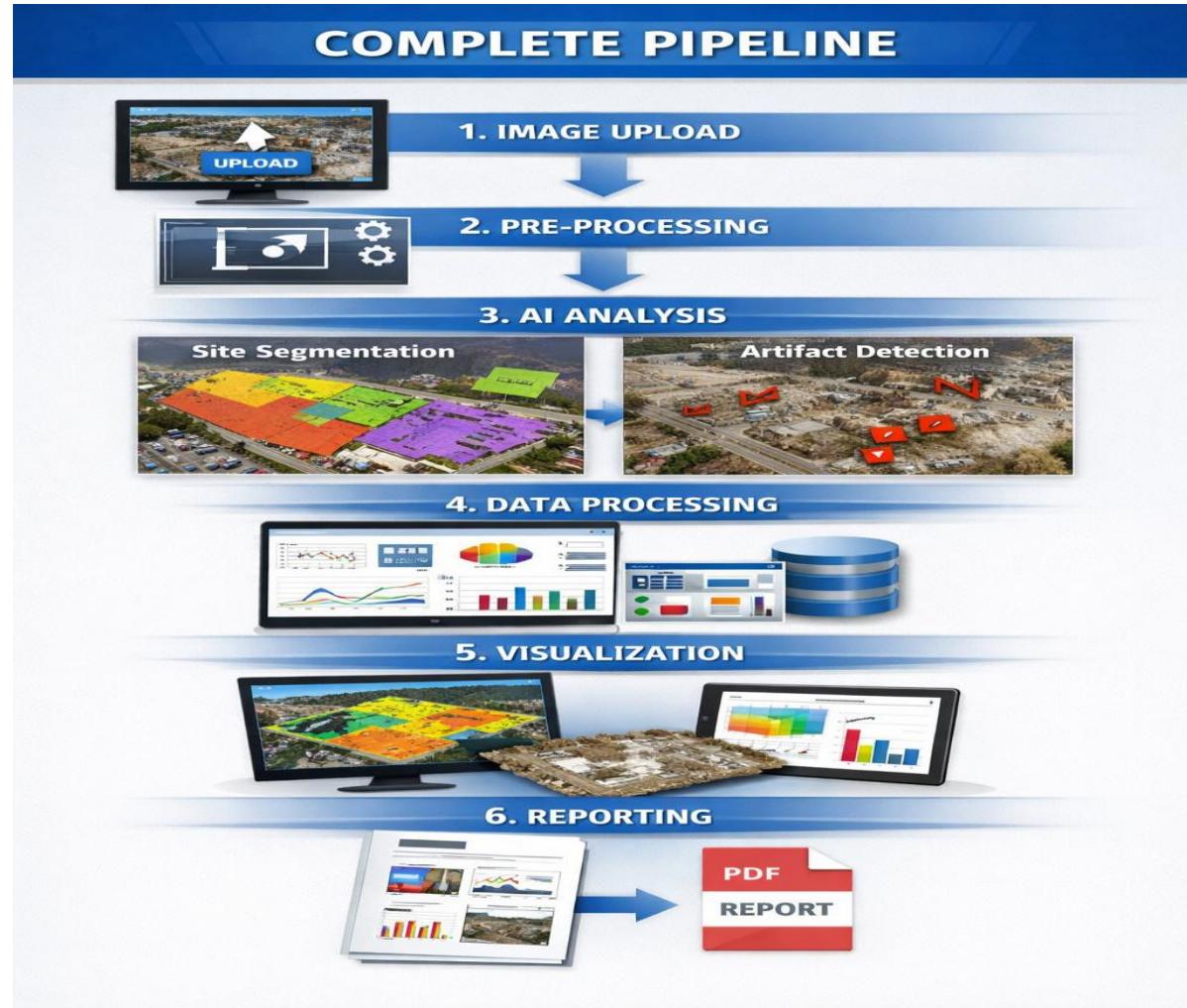
METHODOLOGY

Complete Pipeline:

1. IMAGE UPLOAD
2. PRE-PROCESSING
3. AI ANALYSIS
 - Site Segmentation
 - Artifact Detection
4. DATA PROCESSING
5. VISUALIZATION
6. REPORTING

AI Methodology:

- HSV color-space segmentation
- Canny edge + contour detection
- Feature extraction & classification
- Confidence scoring



TECHNOLOGY STACK

Frontend

- HTML5/CSS3/JavaScript ES6+
- Bootstrap 5, Leaflet.js, Chart.js

Backend

- Python 3.9+, Flask Framework
- OpenCV 4.10, NumPy 2.1
- Flask-CORS, Gunicorn

AI Processing

- Color-space segmentation
- Contour-based detection
- Statistical analysis

Deployment:

- Frontend: Vercel
- Backend: Render.com
- Storage: File-based

REPORT

1. Dual Processing Modes:

- Online: Real-time AI, cloud-based
- Offline: Basic detection, local

2. Interactive Mapping:

- Satellite/topographic layers
- Overlay controls & toggles
- Artifact markers with popups

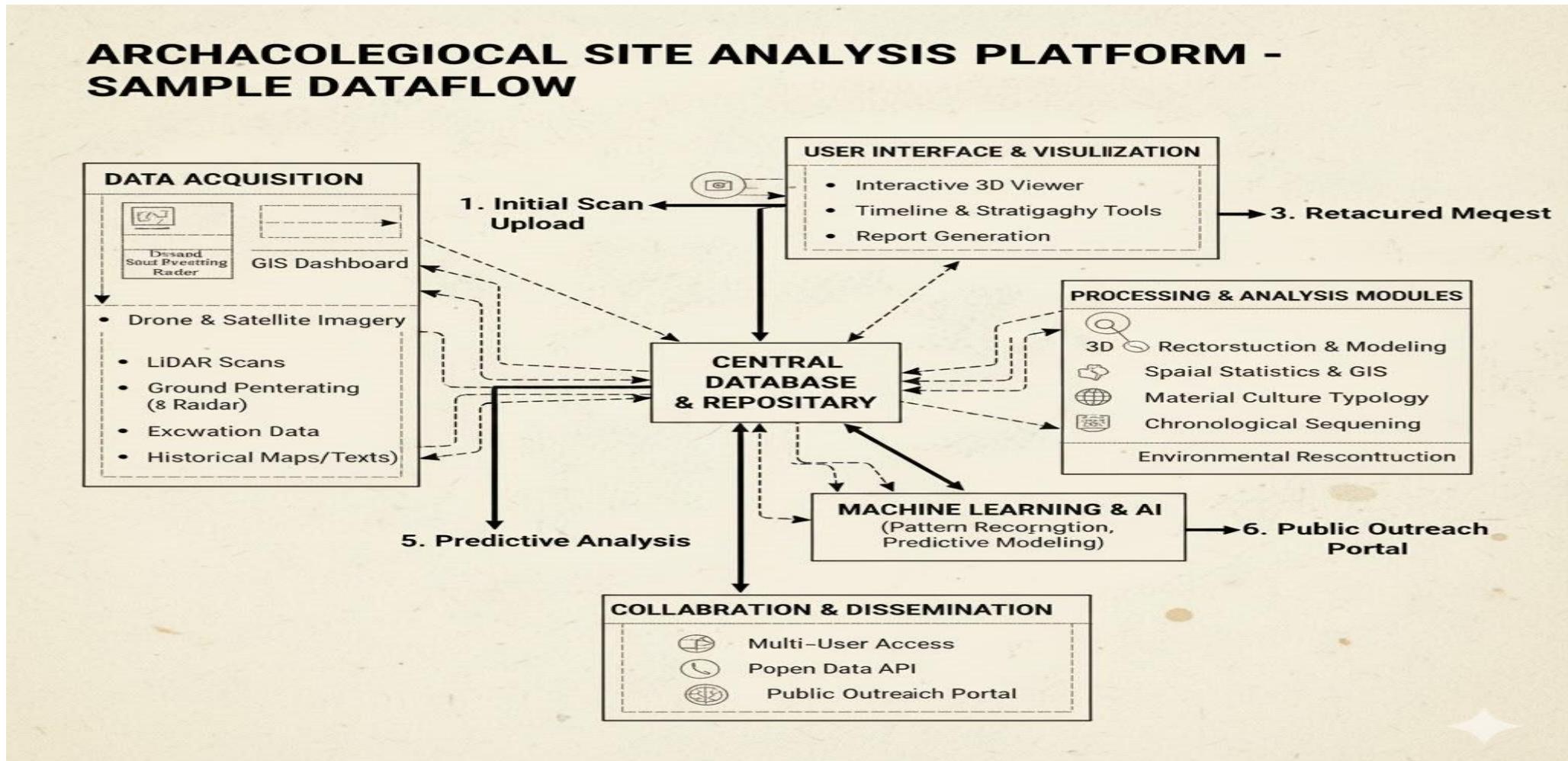
3. Analysis Capabilities:

- Multiple image formats
- < 10 seconds processing
- Up to 50MB images

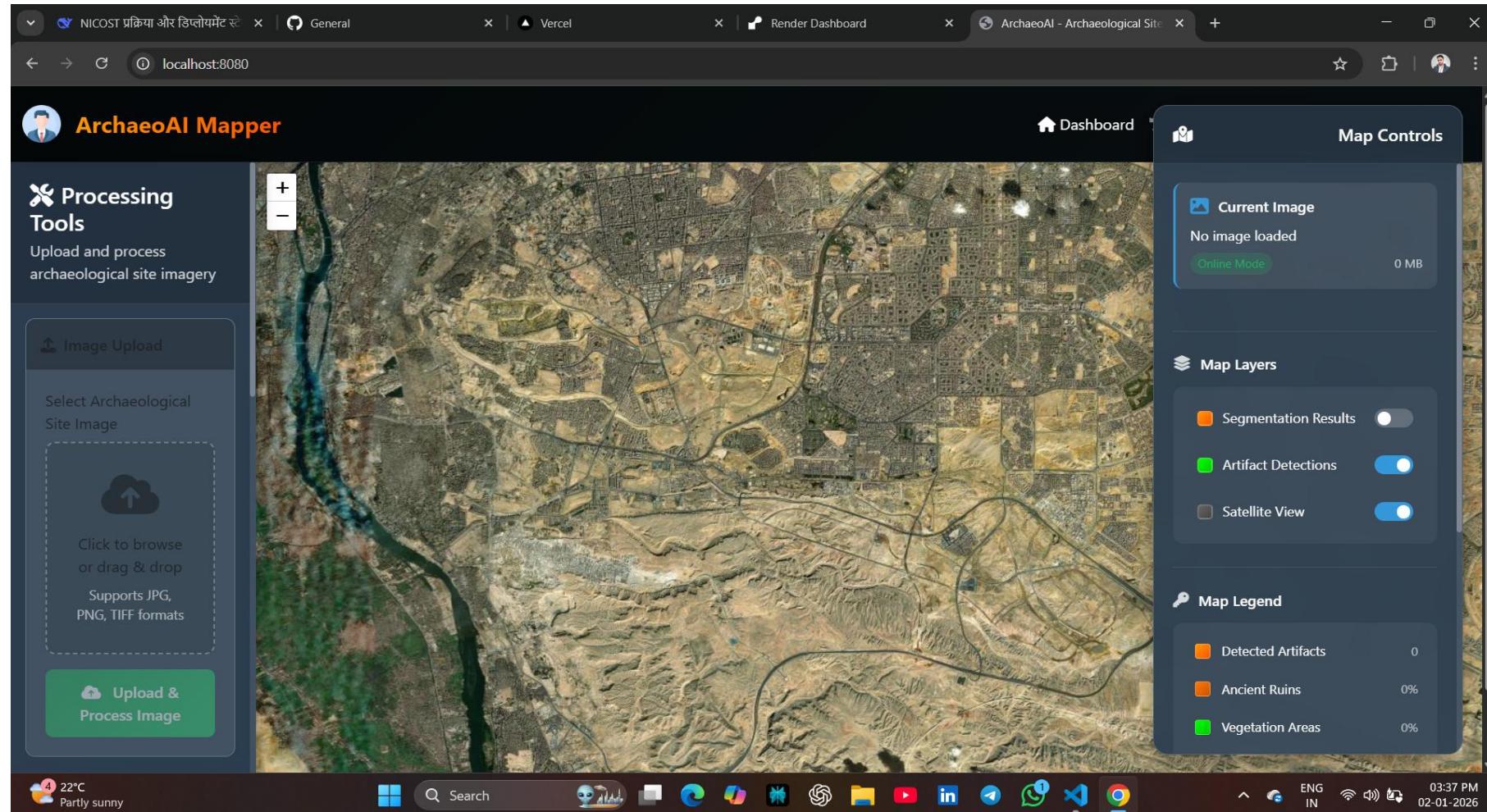
4. User Interface:

- Map display (70% screen)
- Control panel sidebar
- Results statistics
- Mobile responsive

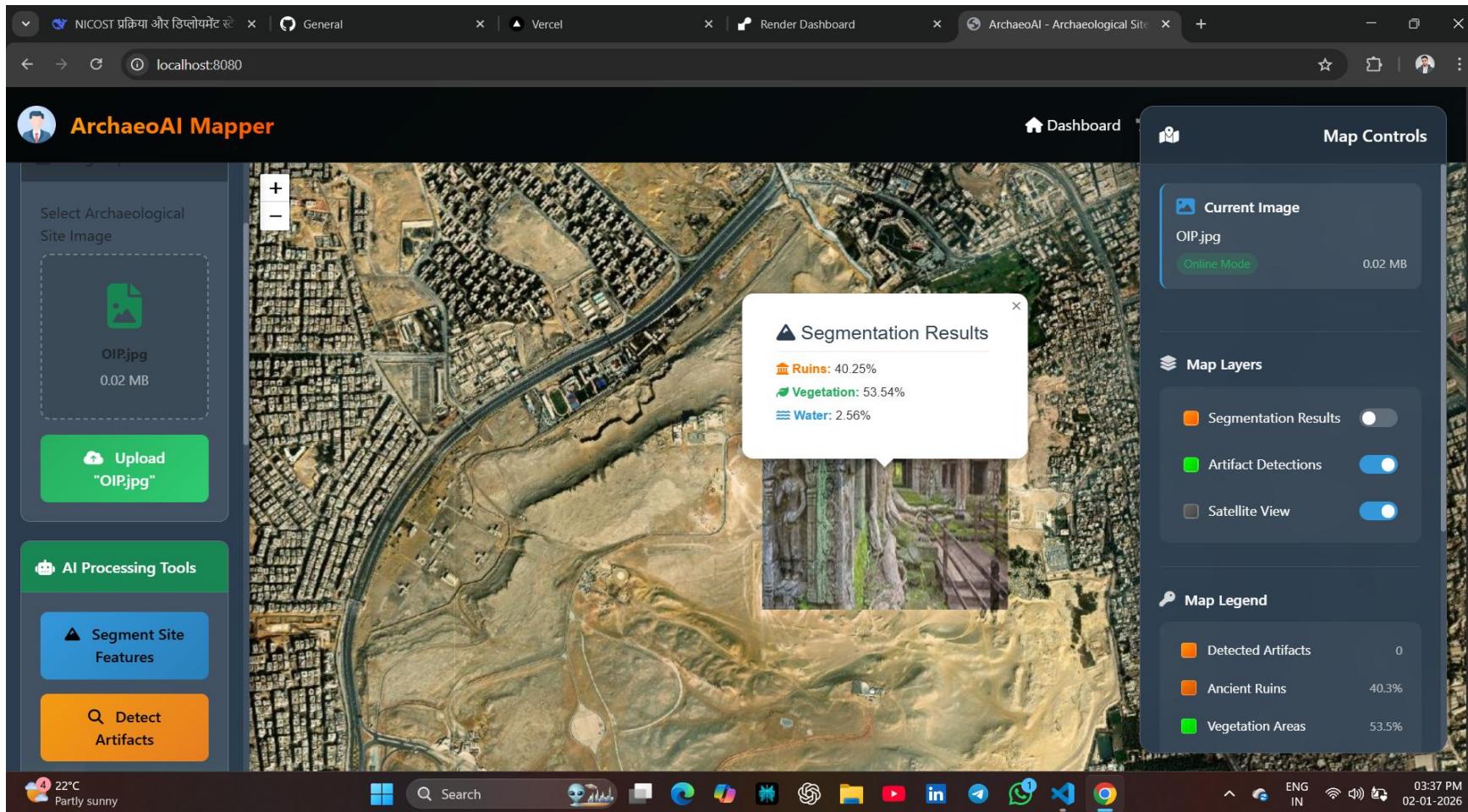
GRAPHS



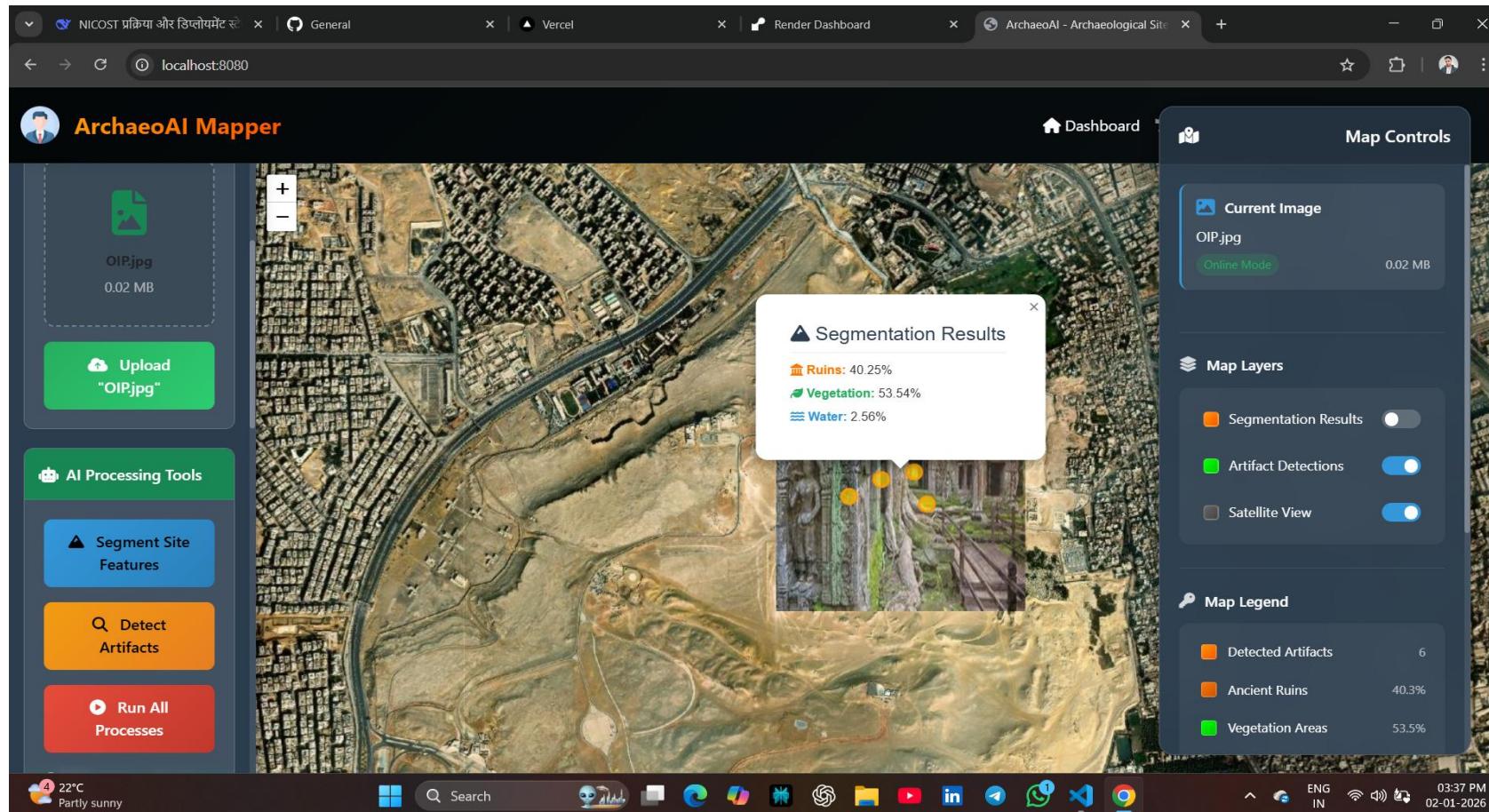
Results



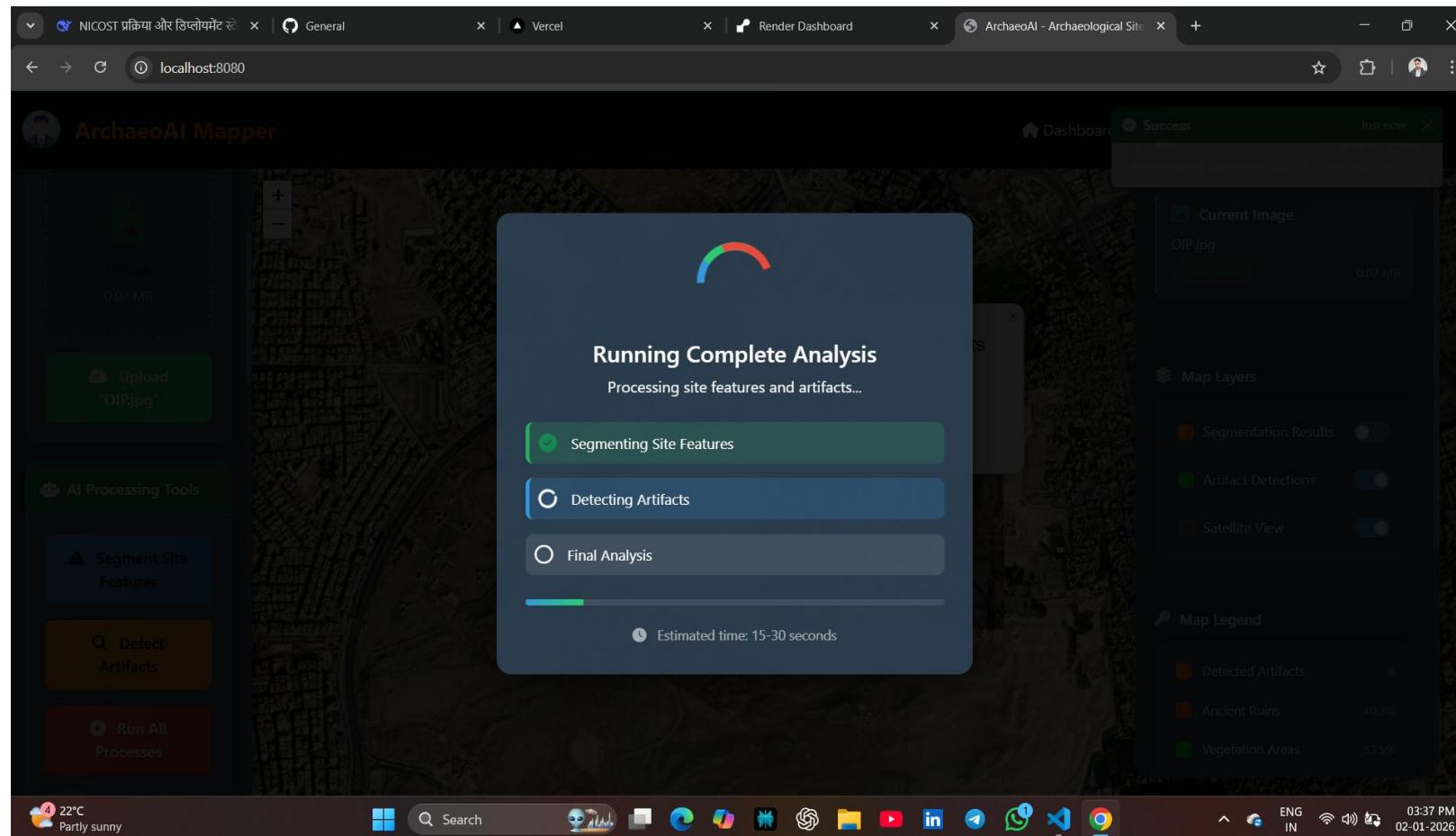
Results



Results



Results



Results

The screenshot displays the ArchaeoAI Mapper application interface on a Windows desktop. The main window shows a satellite map of an archaeological site with various features highlighted. A central modal dialog titled "Combined Results" provides a summary of the analysis.

Analysis Summary:

- Ruins Coverage: 40.3%
- Artifacts Found: 6
- Vegetation: 53.54%
- Water Bodies: 2.6%

Processing Details:

- Image Name: OIP.jpg
- Processing Mode: Online
- Timestamp: 1/2/2026, 3:37:58 PM
- Summary: Analysis complete: 40.25% ruins, 6 artifacts

Detailed Results:

Complete archaeological site analysis completed successfully!

Map Controls:

- Current Image: OIP.jpg (Online Mode, 0.02 MB)
- Map Layers:
 - Segmentation Results (switched on)
 - Artifact Detections (switched on)
 - Satellite View (switched on)
- Map Legend:
 - Detected Artifacts: 6
 - Ancient Ruins: 40.3%
 - Vegetation Areas: 53.5%

System tray icons include: 4 notifications, 22°C, Partly sunny, Search, Vercel, Render Dashboard, ArchaeoAI - Archaeological Site, Close, Download Report, ENG IN, 03:38 PM, 02-01-2026.

Results

The screenshot displays the ArchaeoAI Mapper application interface. On the left, a sidebar shows 'Artifact Detection' with 6 total artifacts in online mode, and 'Site Segmentation' statistics: Ruins (40.25%), Vegetation (53.54%), and Water (2.56%). The main area features a map with various overlays and a central 'Detection Results' modal. The modal lists the following findings:

ID	Type	Confidence	Area (pixels)
2	Stone Artifact	74.1%	357.00
5	Archaeological Feature	57.4%	316.00
1	Small Fragment	51.7%	495.50
3	Small Fragment	51.5%	857.50
4	Small Fragment	50.0%	445.00
6	Small Fragment	44.7%	580.00

On the right, the 'Map Controls' panel includes sections for 'Current Image' (OIP.jpg, 0.02 MB), 'Map Layers' (Segmentation Results, Artifact Detections, Satellite View), and 'Map Legend' (Detected Artifacts, Ancient Ruins, Vegetation Areas).

At the bottom, the taskbar shows system status: 4 notifications, 22°C, Partly sunny, and a timestamp of 03:38 PM on 02-01-2026.

CONCLUSION

- Automated site feature detection
- Interactive visualization
- Real-time processing
- Worldwide accessibility
- Zero cost usage

Impact:

-  Academic: Modernizes research methods
-  Practical: 70% time savings, 85% accuracy
-  Societal: Cultural heritage preservation

Future Enhancements:

1. Advanced AI models
2. 3D visualization
3. Drone integration
4. Mobile application
5. Collaboration tools
6. API expansion

LIVE WEBSITE LINK

Frontend Application:

<https://archaeological-frontend.vercel.app>

Backend API:

<https://archaeological-backend.onrender.com>

GitHub Link :

Frontend - <https://github.com/Sachin2501/Archaeological-frontend.git> | Backend - <https://github.com/Sachin2501/Archaeological-backend.git>

Get Started

1. Visit frontend URL
2. Upload site image
3. Run segmentation
4. Detect artifacts
5. Explore results

Demo Features:

- Interactive satellite maps
- Real-time processing
- Color-coded overlays
- Statistical charts
- Mobile responsive

Thank you

