

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

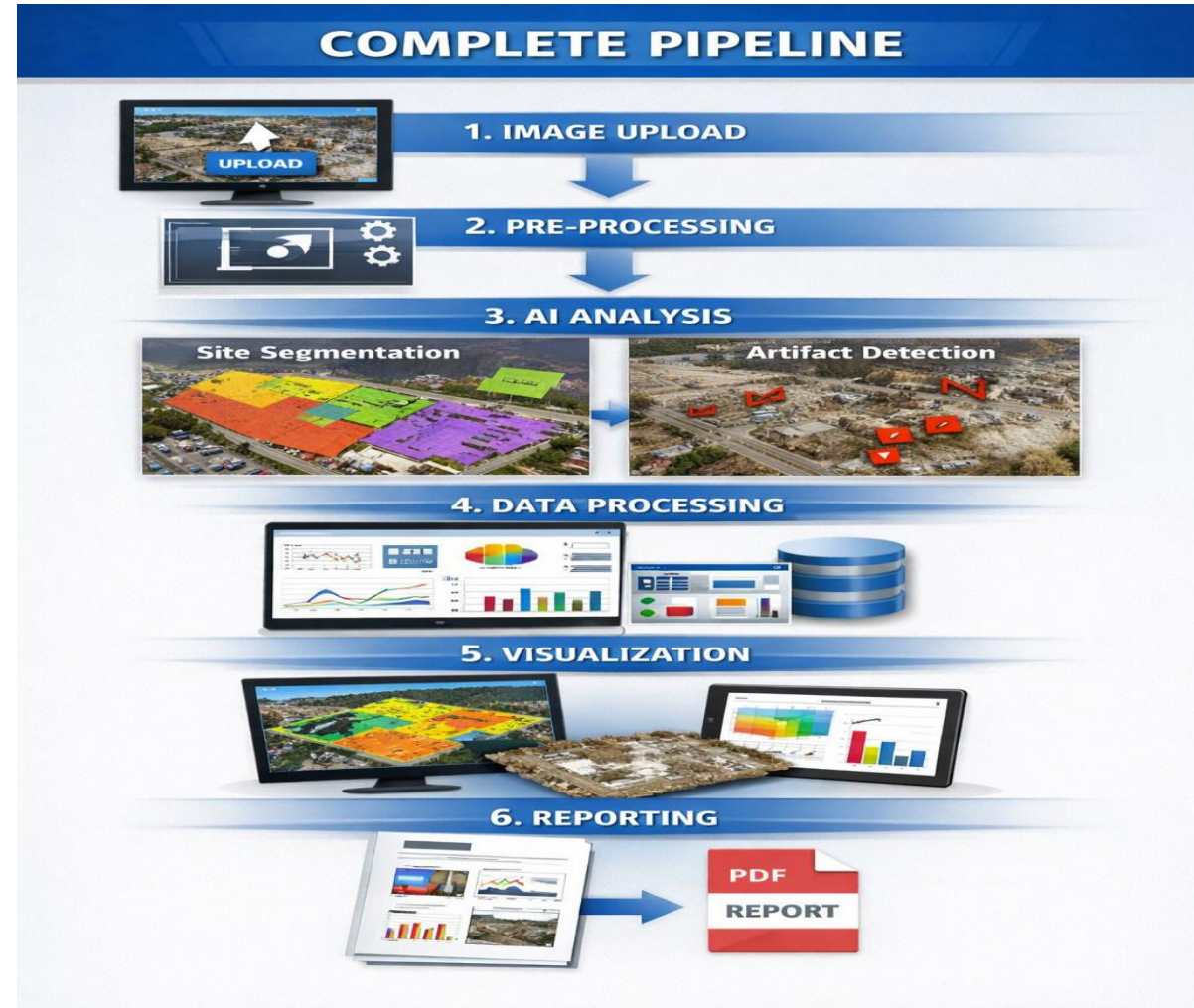
METHODOLOGY

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:

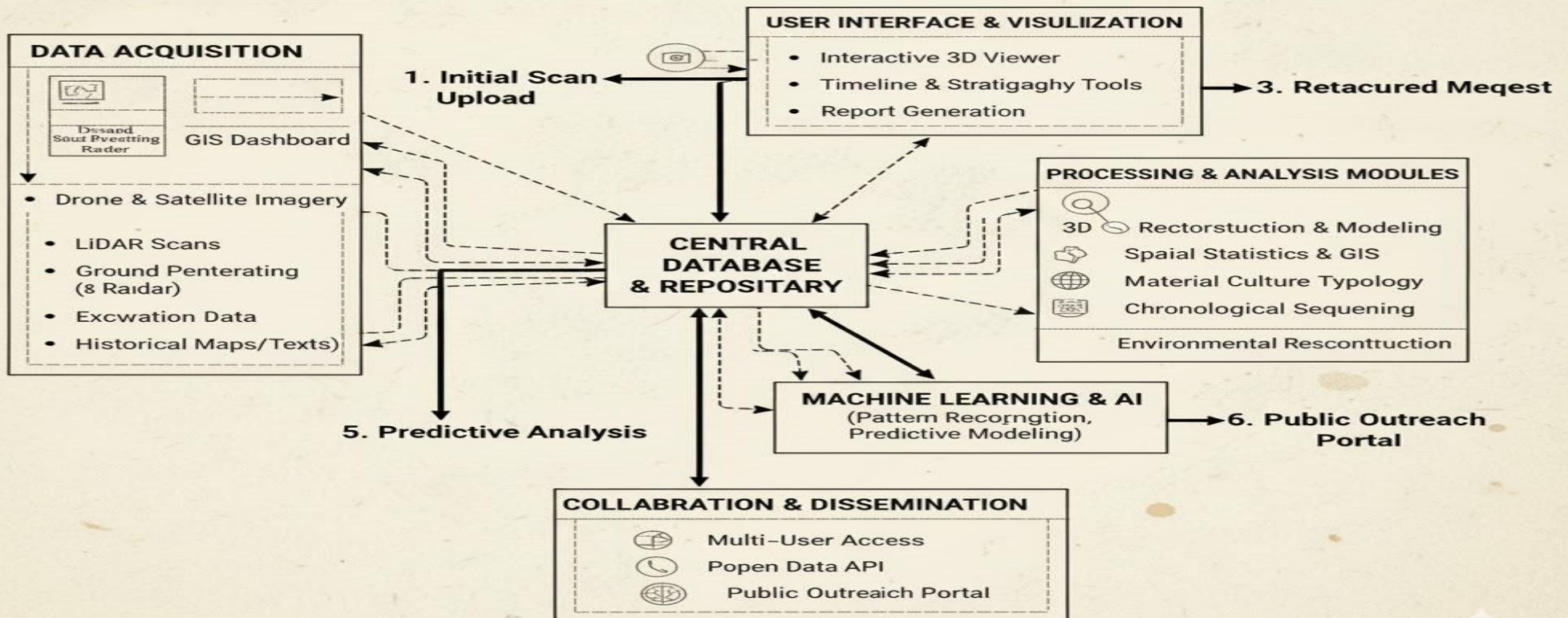
- Multiple image formats
- < 10 seconds processing
- Up to 50MB images

4. User Interface:

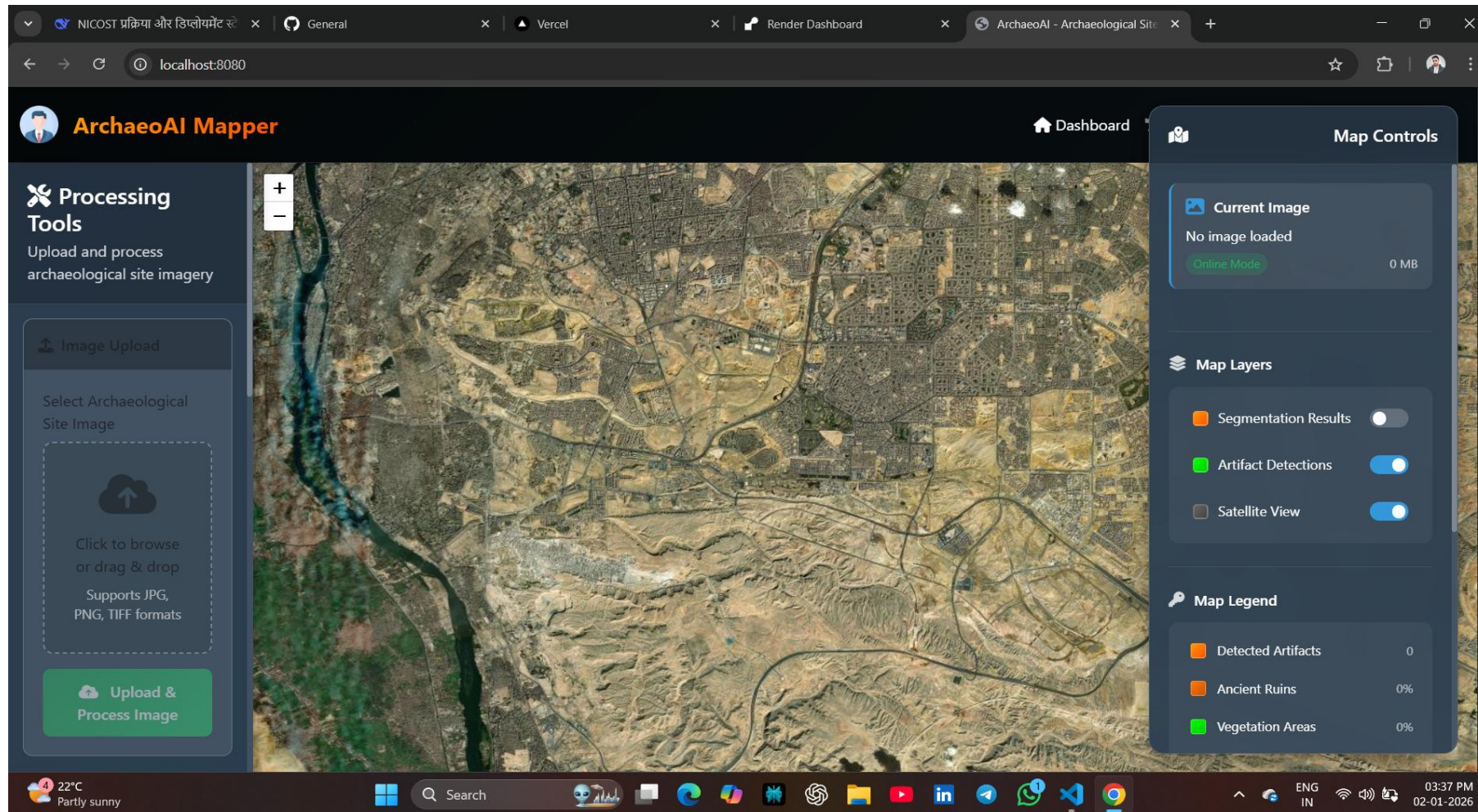
- Map display (70% screen)
- Control panel sidebar
- Results statistics
- Mobile responsive

GRAPHS

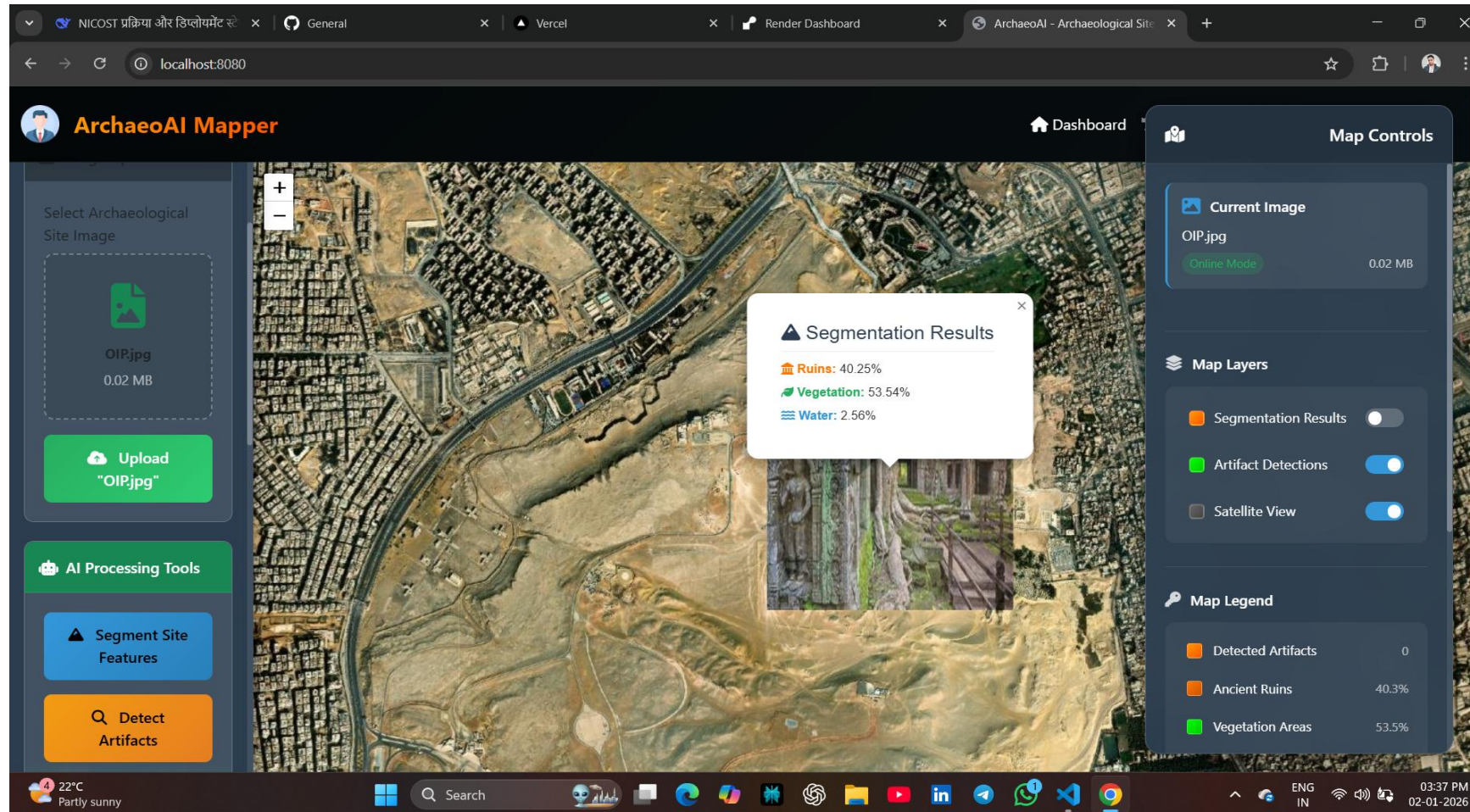
ARCHAEOLOGICAL SITE ANALYSIS PLATFORM - SAMPLE DATAFLOW



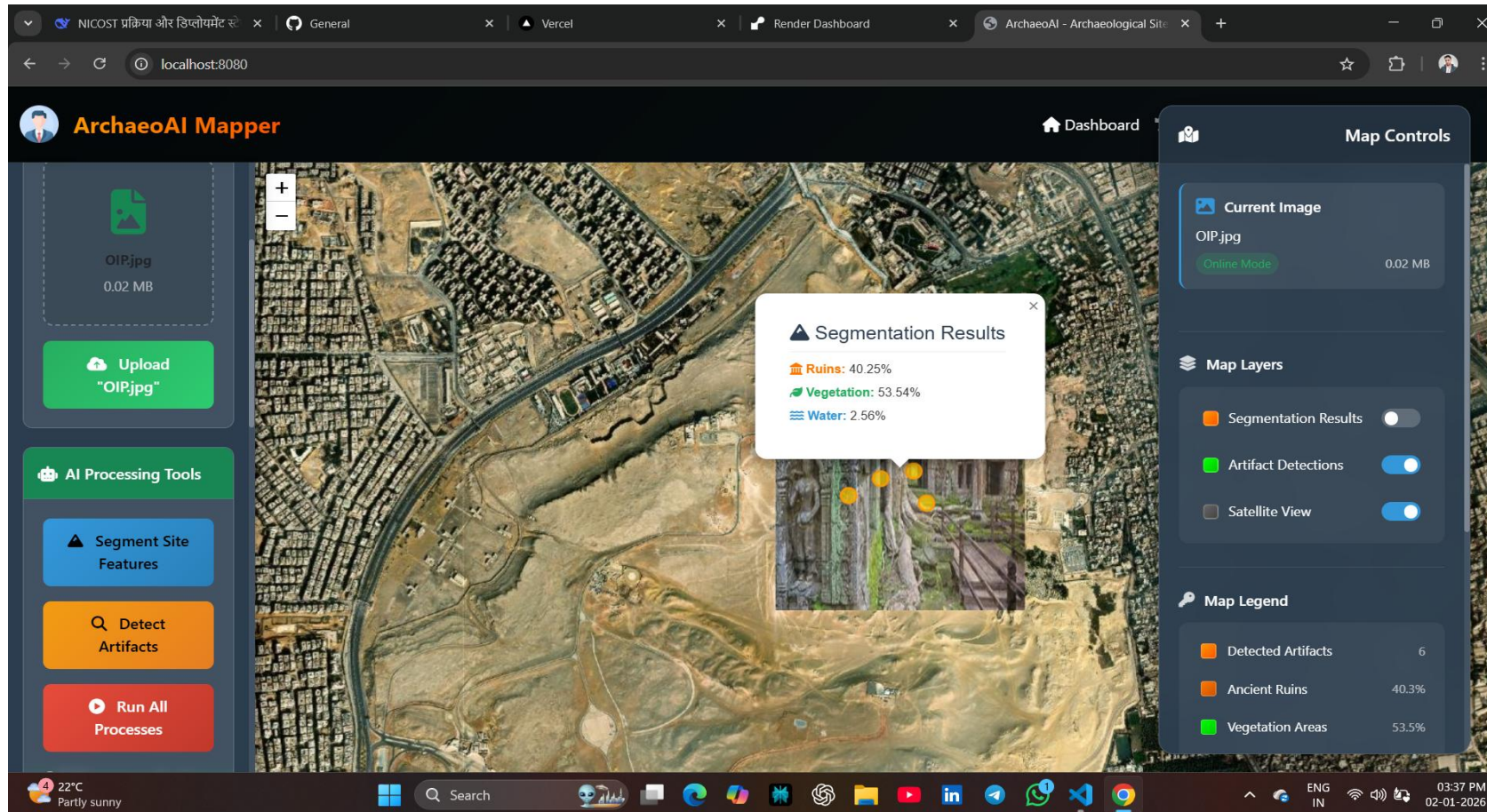
Results



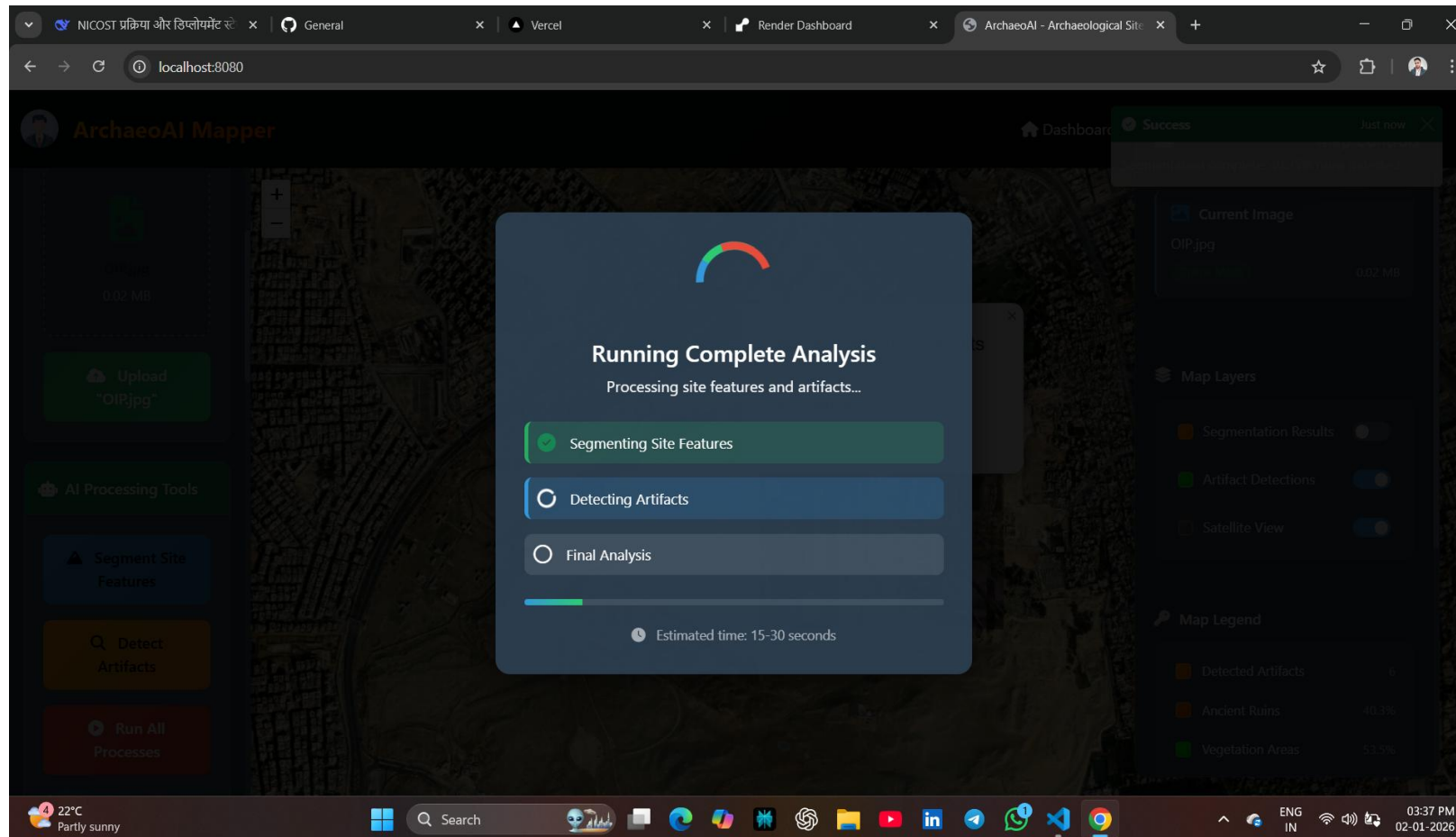
Results



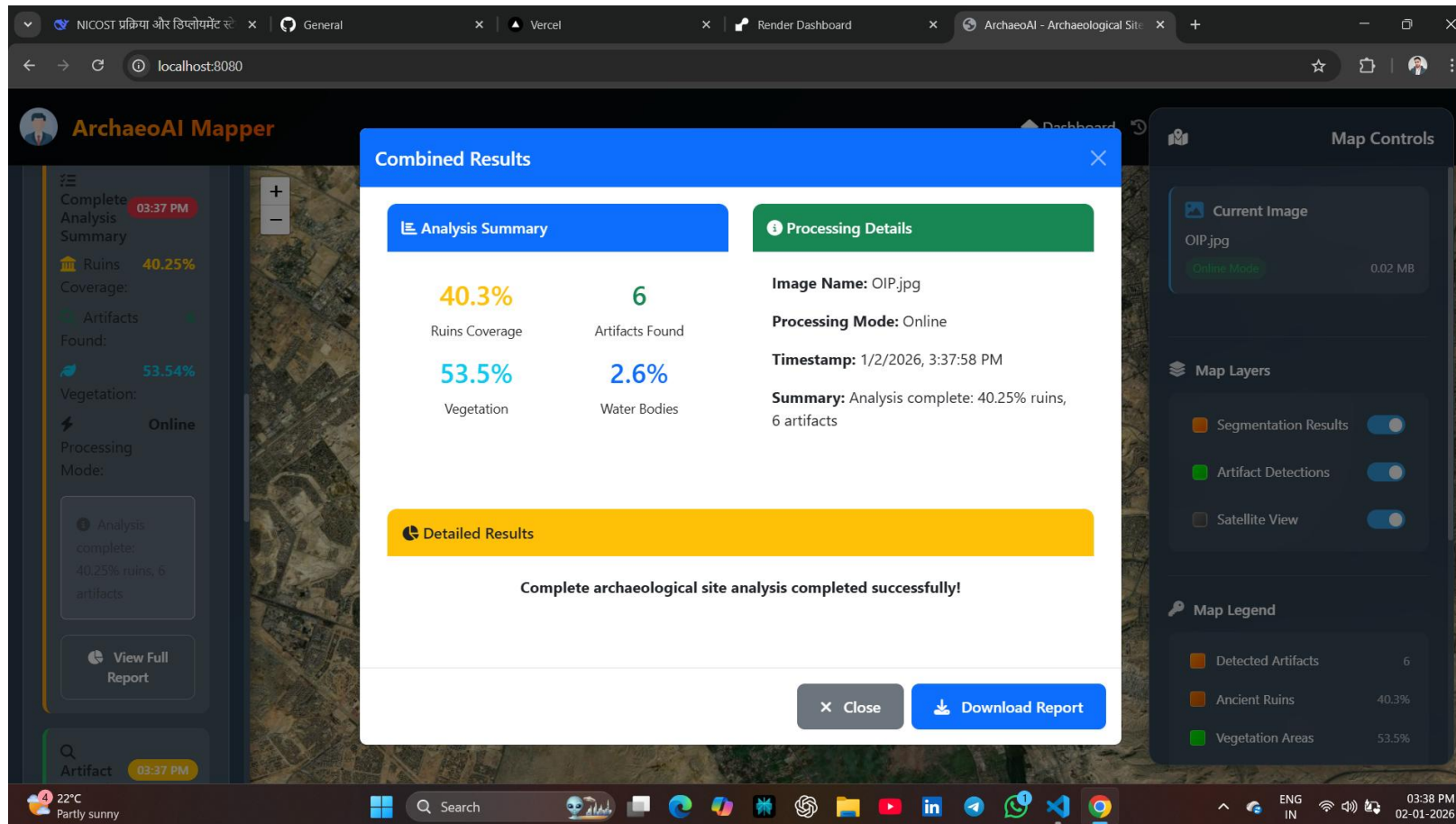
Results



Results



Results



Results

The screenshot displays the ArchaeoAI Mapper web application interface. A central modal window titled "Detection Results" is open, showing a table of detected artifacts. The table has four columns: ID, Type, Confidence, and Area (pixels). The data is as follows:

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

Below the table are buttons for "Close" and "Download Report".

The background interface includes a sidebar with "Artifact Detection" (6 total artifacts, online mode) and "Site Segmentation" (Ruins: 40.25%, Vegetation: 53.54%, Water: 2.56%, Pixels: 48,600). The main map area shows a satellite view with segmentation overlays. The right sidebar contains "Map Controls" (Current Image: OIP.jpg, 0.02 MB) and "Map Layers" (Segmentation Results, Artifact Detections, Satellite View). The bottom status bar shows the time as 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

