

CULTURE3D: A Large-Scale and Diverse Dataset of Cultural Landmarks and Terrains for Gaussian-Based Scene Rendering

Supplementary File

Buckingham Palace Dataset The Buckingham Palace dataset captures detailed architectural elements of the palace, such as the entrance gate and sculptural decorations, and intricate facade designs. This dataset collected using UAV-based photogrammetry, ensures high-fidelity 3D modeling suitable for digital preservation, restoration planning and virtual tourism.



Figure 1. Buckingham Palace Dataset

Cambridge Campus The Cambridge dataset offers a detailed reconstruction of several famous sections among the campus, including its major buildings, pathways and open spaces. This dataset is ideal for creating VR campus tours, academic simulations due to its high-resolution source images.

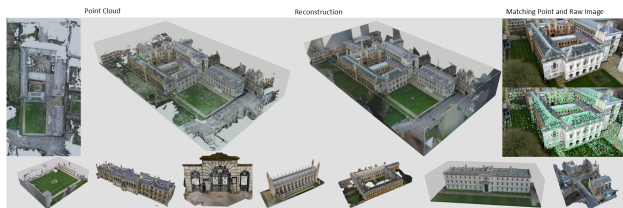


Figure 2. Cambridge Campus

Egyptian Pyramids and Sphinx Dataset The Egyptian Pyramids and Sphinx dataset provides a highly detailed re-

construction of these ancient structures. The combination of aerial and ground-level imagery makes it suitable for virtual reality applications and archaeological research.

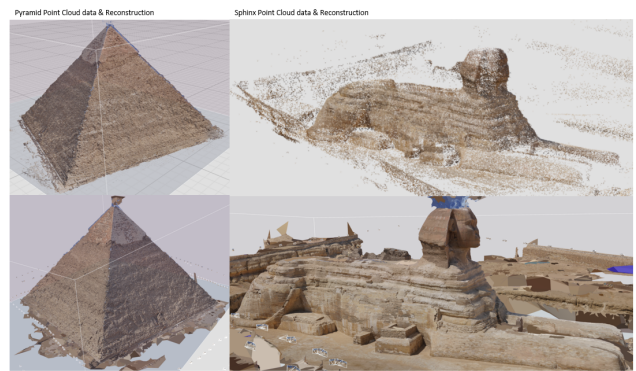


Figure 3. Egyptian Pyramids and Sphinx Dataset

Louvre Museum Dataset The Louvre Museum dataset focuses on both exterior and interior of the museum, including staircases, ornate carvings, arches, and stone masonry. Reconstructed by high-resolution images makes it particularly valuable for research in architectural modeling, heritage conservation, and the creation of immersive virtual reality experiences.

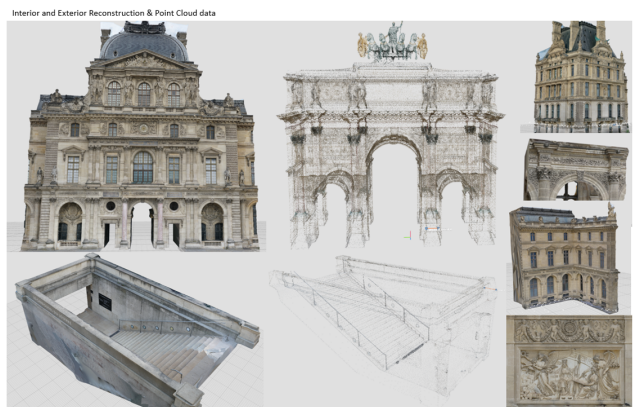


Figure 4. Louvre Museum Dataset

Leaning Tower of Pisa Dataset The Leaning Tower of Pisa dataset offers a detailed reconstruction of the whole Italy most famous architectures, including Leaning Tower of Pisa, main Cathedral and the surrounding buildings. The dataset serves multiple applications, including structural analysis for assessing stability, realistic VR simulations for educational purposes.

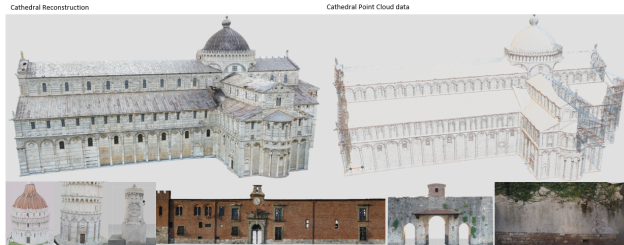


Figure 5. Leaning Tower of Pisa Dataset

Stonehenge Dataset The Stonehenge dataset captures the unique spatial arrangement of the monument's stones, emphasizing their unique spatial arrangement and intricate shapes. The 3D model preserves the structure's geometry, making it a ready-to-use resource for archaeological research, virtual reality applications, and

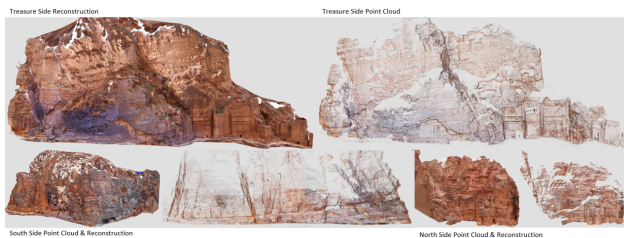


Figure 6. Petra Dataset

Petra Dataset The Petra dataset offers a detailed reconstruction of both the natural stone formations and the surrounding environment, capturing the complexity of the iconic stones along with the natural landscape.

Trafalgar Square The Trafalgar Square dataset features detailed models of iconic statues and the surrounding structures within the square. The high-resolution models captured are particularly useful for cultural preservation, virtual exploration, and landmark preservation.

National Art Gallery Dataset The National Art Gallery dataset captures the entirety of the gallery's interior, including detailed representations of paintings, sculptures, and architectural features such as roof patterns. This dataset sup-

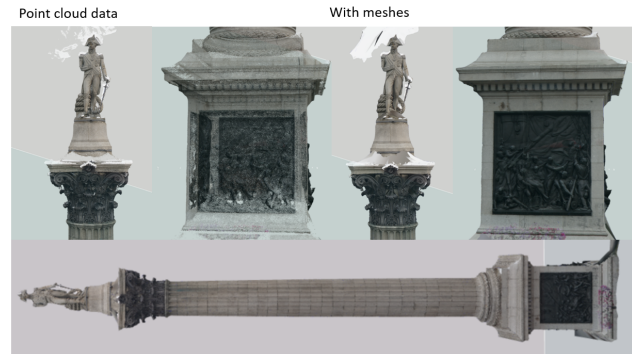


Figure 7. Trafalgar Square

ports artistic preservation, VR experiences, providing valuable data for promoting virtual cultural experiences of this renowned gallery.

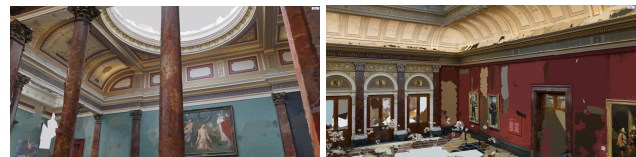


Figure 8. National Art Gallery Dataset

Forbidden City The Forbidden City dataset captures key architectural details, including intricate roof patterns, murals, and ornate carvings, which is essential for architectural heritage study, providing researchers with valuable data for analyzing and conserving these historically significant elements.

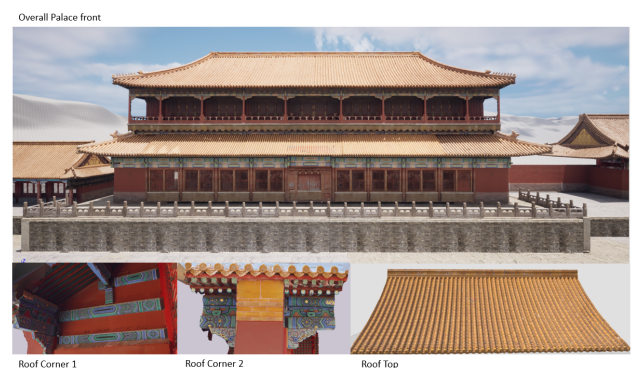


Figure 9. Forbidden City

Longmen Grottoes The Longmen Grottoes dataset features detailed intricate carvings and the impact of natural and cultural elements on their structure, which is suitable

for both cultural preservation and environmental analysis, capturing the effects of natural weathering over time.



Figure 10. Longmen Grottoes

GPU	Dataset	Gaussian Primitives	GPU Memory
0	Graduation Square	9,423,830	48,841MiB
1	Pyramid	14,574,327	47,838MiB
2	Trinity St	3,798,176	38,196MiB
3	Petra	2,455,325	33,522MiB
4	Gallery	894,017	27,836MiB

Table 1. Quantitative metrics for different datasets and GPUs.











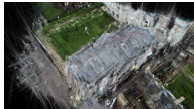


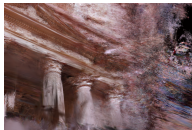
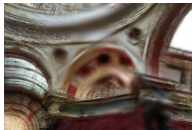










Method/Scene	Cambridge Graduation Square	Cambridge Trinity St East	Pyramid and Sphinx	Petra Treasury Face	National Gallery Hall 36
Ground Truth					
Reality Capture					
3DGS					
SuGaR	OOM				
Wild Gaussian	OOM		OOM		FAIL
GOF			FAIL		

Table 2. Comparison of 3D scene representations across different methods.