# Stereo Panorama Photography in Archaeology

## Bringing the Past into the Present through CAVEcams and Immersive Virtual Environments

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*Abstract—* **Stereo panorama photography is able to create a visual immersive experience in which the viewer is able to see in any direction from a single static point. Acquiring data through CAVEcams [1, 2], we are able to create points of immersion at cultural heritage sites. Through this technique, the user can virtually experience archaeological sites, which they might not otherwise be able to do. These immersive data communicate a sense of place better than an individual photograph is capable of doing. CAVEcam images can be combined with data collected by LiDAR and "Structure from Motion" techniques to create a stereo fusion of gigapixel photography and 3D point cloud data. For museums, this means bringing the context of the artifacts they display to their visitors. Rather than isolated artifacts, visitors can experience where they come from and gain a better understanding for the story behind them. For researchers this means being able to visit their project, even when it is thousands of miles away. Collaborative tools in virtualization systems such as CalVR [3, 4] make it possible for researchers in different parts of the world to work on projects together. For the classroom, it means bringing the environments to the students in ways not previously possible. Hieroglyphs can be read from the walls of tombs, while benchmark sites can be visited and explored in conjunction with classroom lectures and presentations. Ultimately, this tool has very real implications for the preservation and presentation of cultural heritage and archaeology.**

*Keywords—Stereo; panorama; gigapixel photography; immersive experience.*
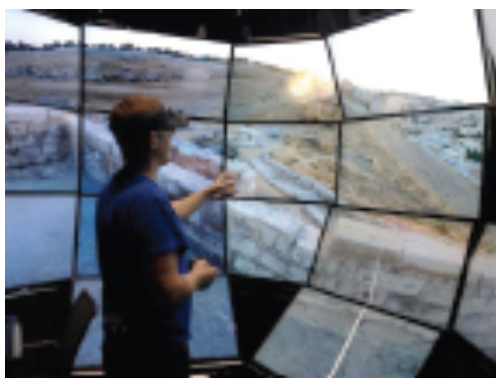
Fig. 2. Acquiring at CAVEcam at the archaeological site of Tall al-'Umayri, Jordan.



Fig. 3. A CAVEcam being viewed in the StarCAVE at the Qualcomm Insittute using the CalVR framework.



Fig. 1. A CAVEcam being viewed in the NexCAVE at the Qualcomm Institute using the CalVR Framwork

## REFERENCES

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