

# COLOR RECONSTRUCTION OF DOMUS DE JANAS MONUMENTS BY PHOTOMETRIC STEREO TECHNIQUES

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Artifacts documentation is an important aspect of archaeological studies, not only to preserve these objects but also to learn from them the culture of ancient populations. Hence, the necessity to digitally document and archive these artifacts. This work is complicated for rock art carvings, that can not be moved from their original location. The photometric stereo technique allows to obtain the three-dimensional digital reconstruction of an object starting from a set of pictures taken with different lighting conditions. When the method is applied to some experimental datasets, computational problems may occur. We deal with these issues by introducing numerical indicators of ideality that allow to figure out if a given dataset is reliable and which images should be selected to better reproduce the object. A color reconstruction it is necessary to the aim, in order to obtain an accurate documentation. In addition, color images contain more information of the surface, providing data which allows to improve the reconstruction. I will present a study,[1], on the 3D colour reconstruction of engravings found in two Domus de Janas (ancient tombs) in Sardinia, Italy.

## References

- [1] E. Crabu, F. Pes, G. Rodriguez, and G. Tanda *Color reconstruction by photometric stereo with unknown lighting of rock art carvings found in two Sardinian Domus de Janas* , Journal of Cultural Heritage, 71 (2025), pp. 1320–327.