DESCRIPTION

This practice addresses generating an accurate 3D model from a set of 2D images using photogrammetry methods. It solves the problem of unreliable or distorted digital representations by prioritizing data capture. Following this practice maximizes the maintainability of the digital asset and ensures the resulting model is a reliable resource for expert interpretation within ENIGMA.

IDEAL SCENARIO

An image collection input requires a high overlap (60-80%) with sharp detail. Photogrammetry software (e.g., Agisoft or Meshlab) aligns all images with minimal error. The resulting dense point cloud clearly defines the object's geometry. The 3D model is accurately scaled using reference targets. Check the 3D model before accepting the final, clean mesh. Archive the 3D model in common 3D file types (.glb; .obj; .stl; .ply).

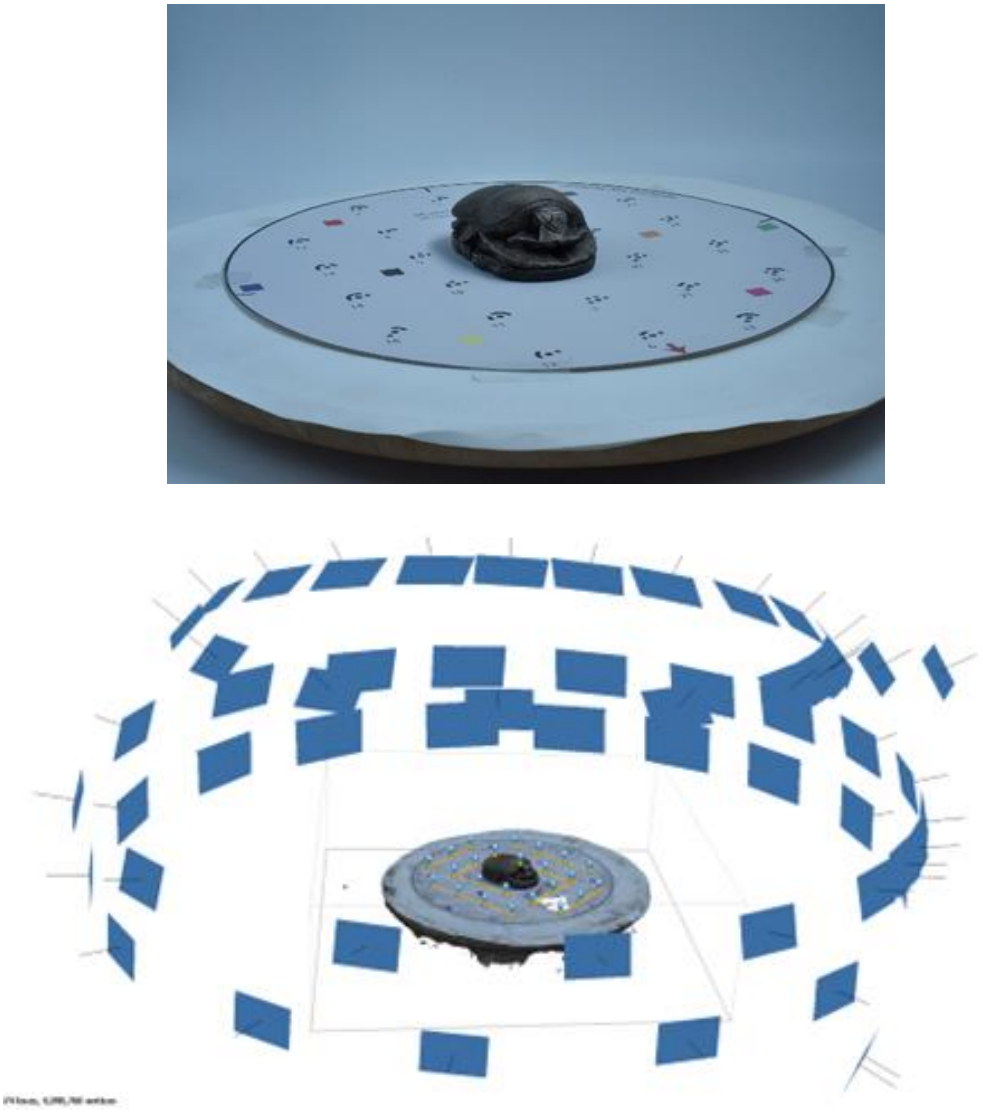

***Figure**: Image acquisition for creation of 3D models*

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TIPS

Do

- Orbit around the object to check complete coverage of the 3D model.
- Include scale references or coded targets in the scene.
- Remove background noise and floating geometry before export.

Don't

- Don't expect reflective, transparent, or textureless surfaces to model well.
- Don't proceed with processing if the image alignment is poor.

FURTHER RESOURCES

- Ioannides, M., P. Patias (eds), 2023, 3D Research Challenges in Cultural Heritage III: Complexity and Quality in Digitisation, Springer LNCS 13125, Lecture Notes In Computer Science, ISSN 0302-9743, https://doi.org/10.1007/978-3-031-35593-6

- Patias, P. (2013), 13.5 Overview of applications of close-range Photogrammetry and Vision techniques in Architecture and Archaeology, C. McGlone (ed), Manual of Photogrammetry, 6th edition, ISBN 1-57083-099-1, American Society of Photogrammetry Publ., Maryland, USA, pp 1093-1107. (pdf) [www.asprs.org]

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