

EDICULA

Educational Digital Innovative Cultural heritage related Learning Activities
Project Code: 2020-1-EL01-KA203-079108



NATIONAL TECHNICAL
UNIVERSITY OF ATHENS
[GREECE]



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HELLENIC RESEARCH INSTITUTE OF
THE ALEXANDRIAN CIVILIZATION
[GREECE]

3Dimensional geometric documentation in Alexandria: A challenge for EDICULA

and beyond ...

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EDICULA Project

Coordinator & Scientific Responsible Prof. em. A. Moropoulou

Optical methods for 3D data acquisition

➤ Passive

- Triangulation (classic surveying)
- Stereoscopic / Photogrammetric

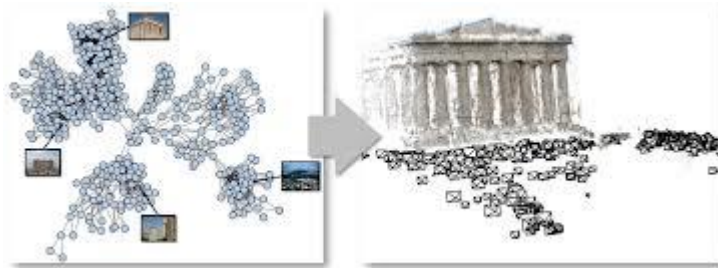
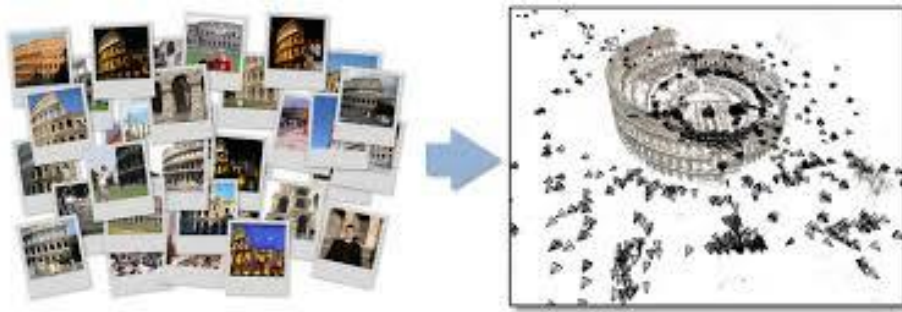
➤ Active

- Use of Laser :
 - Pulse (time-of-flight)
 - Phase Shift (time-of-flight)
 - Triangulation (with one or two cameras)
- Natural light: Structured Light Scanners

Photogrammetric methods

SfM Structure from Motion

Reconstructing the objects from multiple images



Terrestrial Laser Scanners - TLS

- Acquisition of huge number of 3D points
 - Thousands or millions of points per second
- Direct result: point clouds
 - (x, y, z, i) per point
 - 3D Coordinates
 - Intensity or colour (RGB)



HDS 3000



Faro 3D



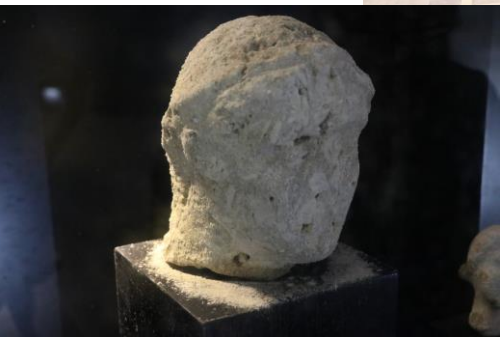
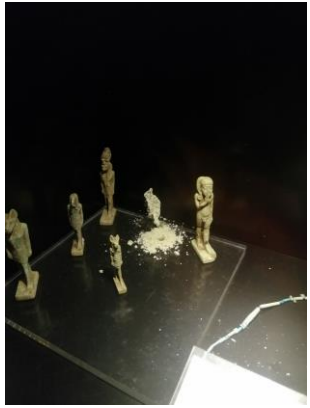
Z+F Imager



Riegl
LMS-Z420i

Visit in Alexandria (31/5 – 2/6)

- Shallalat Park – Excavation of the HRIAC
- Museum of the Greek Orthodox Patriarchate
- National Museum of Egypt



3D scanning in Alexandria

- Shallalat Park – Excavation of the HRIAC Director and Coordinator Dr K. Papakosta



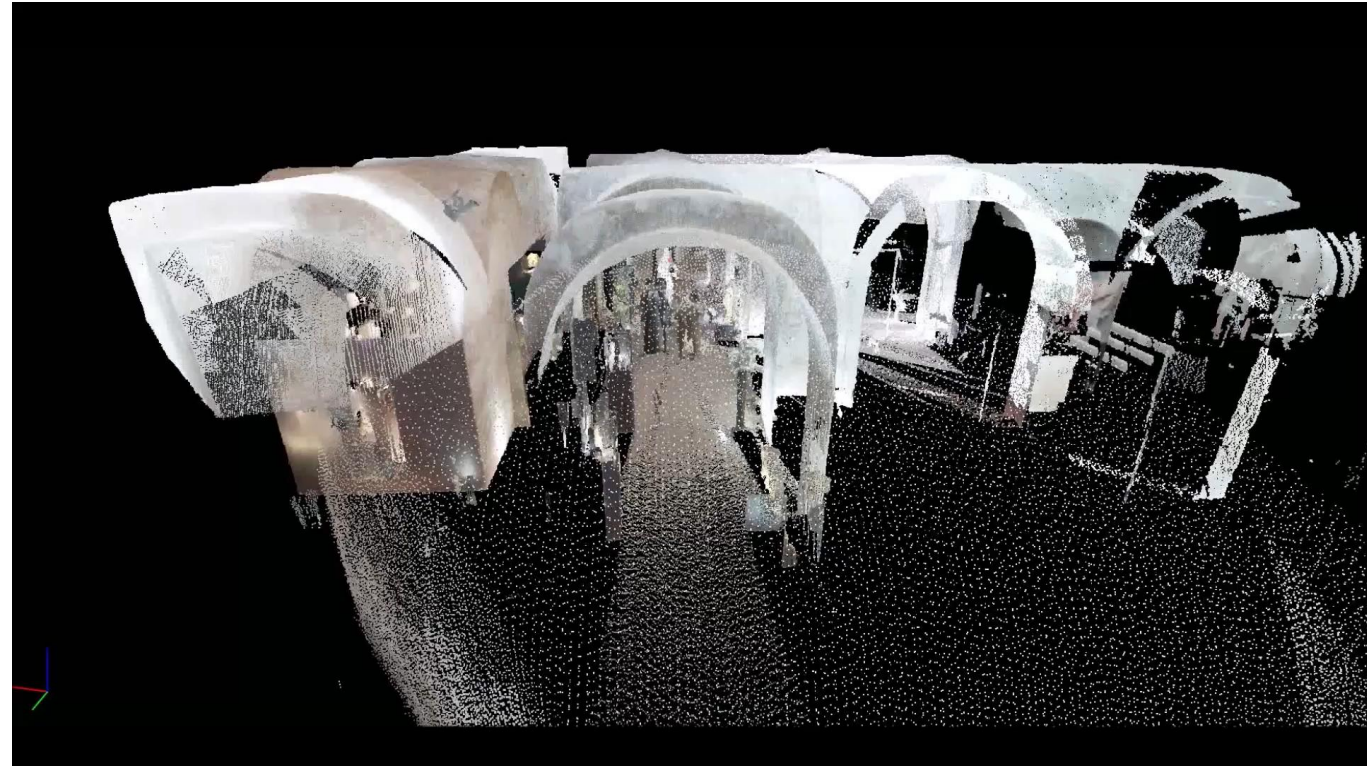
Terrestrial laser scanning



3D scanning in Alexandria



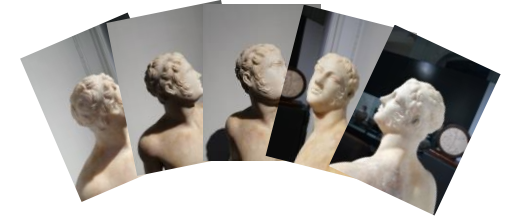
Terrestrial laser scanning



Museum of the Greek Orthodox Patriarchate of Alexandria and All Africa

Data acquired after invitation and with the kind permission of the Patriarch of Alexandria and All Africa

3D image-based modelling in Alexandria



Structure-from-Motion
Multi View Stereo



National Museum of Egypt

3D models



May 2015



National Technical University of Athens
Chief Scientific Supervisor:
Prof. Antonia Moropoulou

NTUA Interdisciplinary Team

Prof. E. Korres, Prof. A. Georgopoulos, Prof. A. Moropoulou, Prof. C. Spyarakos,
Assist. Prof. Ch. Mouzakis, *Deputy Construction Site Manager*



Interview
Michael Turner
Oral Archives of the
World Heritage Convention



Alternative outcomes possible

- Virtual ...
 - Restoration
 - Reconstruction
 - Visit
 - ...
- Study of 3D model
- Augmented reality applications
- Serious Games applications
- 3D printing
 - Souvenirs
 - For visually impaired persons
 - ...

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Speakers of the Hands-on Workshop organized by HRIAC in Alexandria
2/6/2022

Thank you