

Newcastle University, School of History, Classics and Archaeology - 3D Scanning and Structure from Motion (SfM) of Buildings and Objects at Parco Archeologico di Pompei and Parco Archeologico di Ercolano 2017-2018

JOB

Job title:

Roman Objects from Herculaneum

Client:

Expanded Interiors

Reason for scanning:

To make an accurate record of a number of objects from the museum store in Herculaneum for visualization and display. To create 3D prints of the models for inclusion in the Expanded Interiors installation at The House of the Beautiful Courtyard, Herculaneum.

Deliverables:

Raw Data in .OBJ for printing and archiving.

Photographs taken for Structure from Motion (SfM)

Photographs of the scanning process.

Metadata for the scanning process

SITE

Brief description:

Roman Objects from Herculaneum, Parco Archeologico di Ercolano

Nature of surface:

Metal (copper alloy and silver), stone and ceramic.

Level of detail: (size of smallest feature to be recorded)

0.1mm

ENVIRONMENT

Location of scanning:(inside/outside, public access, tent etc.)

All scans were recorded inside with the assistance of museum staff.

Lighting (natural, fluorescent etc.):

Lighting provided by the scanner for Artec Spider objects.

Lighting for SfM objects was from LED lighting box

SCANNING PROCESS

Carried out by: Alex Turner (Artec Spider); Rosie Morris (SfM)

Date: 06/07/2017-07/07/2017

Time taken: 8 hours scanning and SfM photography

Scanner: Artec Space Spider

Tripod: Manfrotto standard tripod

Power source: Battery

Scanning distance (m): 0.17m-0.3m approx.

Scanning parameters: Resolution 0.1mm

POST-PROCESSING

Carried out by:

Alex Turner

Software (point cloud):

Artec Studio 12.0

Registration:

Maximum mean distance error 0.1mm-0.2mm

Software Model Manipulation for 3D printing

Autodesk Recap Photo

Agisoft Photoscan Pro

Autodesk Meshmixer

Meshlab 2016

Ultimaker Cura 3.1.0

Autodesk NetFabb Premium

Data “cleaning”:

Topological abnormalities were removed using Artec Studio and the objects exported as .OBJ files with .PNG texture. Decimation and mesh ‘fixing’ for printing was done in a combination Meshlab 2016 and Autodesk Meshmixer

OUTPUT

Point Cloud

Printable textured 3D models in .OBJ format and non-textured models in .STL format