



Preliminary Young Researcher Workshop 19 - 21 May 2017

Geomatics and Restoration
Conservation of Cultural Heritage in the Digital Era

GEO2017
RES

AUTEC (the Academic Association of Topography and Cartography), **SIRA** (the Academic Association of Architectural Restoration) and **IGMI** (the Italian Geographic Military Institute) have organized on the occasion of the 1st International Conference on "Geomatics and Restoration: Conservation of Cultural Heritage in the Digital Era", a workshop especially addressed to PhD students, postdoctoral fellows and young researchers.

The challenge of the workshop is to create a contact point, and perhaps also a cross-pollination, between the practice of architectural surveying and that of restoration. These two disciplines have never been completely independent as they are consecutive steps in the process of safeguarding and the enhancement of Cultural Heritage. Currently this relative dependence finds new reasons in the notable development of technologies applied

to historical buildings. Laser scanning, digital photogrammetry, UAV, as well as GIS and BIM, join with the work on historical heritage from surveying to data management and the projection of future interventions.

The workshop will address four cases very frequently present in the practice of restoration, thus seeking to provide the elaborations (raster and vector) and the analyses necessary for the design phase.

- i. The first case regards the geometric survey necessary to study the structural aspects of the building. Through sections, thickness of walls, analysis of verticality, measurements of wall inclination, extracted from pointclouds, it will be possible to acquire detailed understanding of these attributes.
- ii. A second case concerns the material restoration. The most useful instrument is the orthophoto which can be obtained by means of photogrammetry. The orthophoto al-

lows for correct metrical information, together with the descriptive quality of the photos, which is very useful for the understanding of material pathologies.

- iii. The third case deals with functional restoration and reuse of the building, for which a fully detailed plan is very useful. This plan, extracted from pointclouds, can be used for the reuse design and, further, for the analysis of accessibility and the architectural barrier-free design.
- iv. The last case is common to each practice; it concerns the communication and dissemination of the restoration intervention and, in more general terms, the evaluation of Cultural Heritage. The publication on the internet of high quality documents and, especially 3d models will serve to attract the public by describing the historical importance of the building's architecture.

19/05 Friday

- 9.00 - 9.30 Introduction to the workshop [IGM via Cesare Battisti, 10]
9.30 -10.30 Invited professor presentations: Margaret D'Ambrosio, Alessandro Gambuti, Giuseppe Cruciani, Mario SantanaQuintero, IGM
10.30 -12.15 Theoretical lessons: introduction to topography, laserscanner, photogrammetry and CH communication
12.15 - 13.45 Lunch break
13.45 -18.30 Practice of data acquisition at Palazzina della Livia [Via degli Arazzieri, 2]

20/05 Saturday

- 9.00 -11.00 Practical lessons: photogrammetric data processing [IGM via Cesare Battisti, 10]
11.00 -11.15 Coffee break
11.15 -13.00 Practical lesson: laser scanner pipeline and data processing
13.00 -14.00 Lunch break
14.00 -16.00 Individual work on case study
16:00 -16.15 Coffee break
16.15 - 18.30 Individual work on case study

21/05 Sunday

- 9.00 -11.00 Individual work on case study IGM via Cesare Battisti, 10]
11.00 - 11.15 Coffee break
11.15 - 13.00 Individual work on case study
13.00 -14.00 Lunch break
14.00 -15.45 Digital application for Cultural Heritage valorization
16.00 - 16.15 Coffee break
16.15 - 18.30 Redaction of presentation for the special session of the day of conference

WHAT TO BRING

For the workshop in general:

- Portable computer with mouse;
- USB memory;
- External hard disk;
- Pencils, pens and something to write on.

Personal Laptop:

Free space: at least 50 Gigabyte.
Software to be installed, preferably before the workshop (even as trial version, from following websites):

- Autodesk 2016 + Recap
<https://www.autodesk.com/education/free-software/all>
- Agisoft Photoscan
<http://www.agisoft.com/downloads/installer/>
- Cloudcompare
<http://www.danielgm.net/cc/>
- Unity
<https://store.unity.com/download?ref=personal>
- PTgui
<https://www.ptgui.com/download.html>
- Pano2VR
<http://ggnome.com/pano2vr#downloads>

Other software that can be useful:

- Image processing (i.e. Photoshop)
- Presentation (i.e. Power point)

LOGISTICS

The registration fee for the workshop also includes coffee breaks and lunches for all three days of the workshop.

WHERE WE ARE

Location of workshop:

-  IGMI, Via Cesare Battisti, 10
Florence

Guest house:

-  IGMI, Via della Scala, 68
Florence

Conference:

-  Caserma Redi, IGMI,
Via Cherubini, 5, Florence



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