



FIG WORKING WEEK 2012
May 6–10 2012
Rome, Italy



DOCUMENTATION OF AFYONKARAHISAR MEVLEVI LODGE BY DIGITAL CLOSE RANGE PHOTOGRAMMETRY



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Presented by Tamer BAYBURA

FIG Working Week 2012 Knowing to manage the territory, protect the environment, evaluate the cultural heritage

ROME 2012

Introduction

- Conservation of cultural heritage and transferring them to future generations is one of important tasks of mankind. Most of historical buildings destroyed or damaged by natural phenomena and human activities. Documentation of cultural heritage must be fulfilled against these threats.



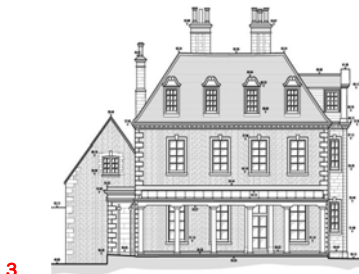
- Photogrammetry, as in many fields is very important in architecture documentation and conservation of historical monuments. Architectural Photogrammetry is one of the oldest branches in photogrammetry and used in the production 3D models of building with high geometric accuracy.

Digital Close Range Photogrammetry



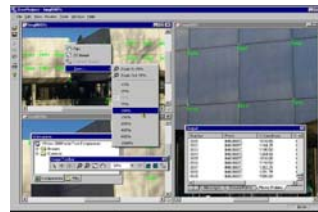
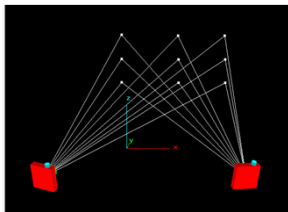
- Several techniques are used in the documentation of cultural heritage. Such techniques are important tools for conservation of cultural heritage.

- The term "close range photogrammetry" is used to describe the photogrammetry technique when the extent of the object to be measured is less than about 100 meters and cameras are positioned close to it.



Digital Close Range Photogrammetry

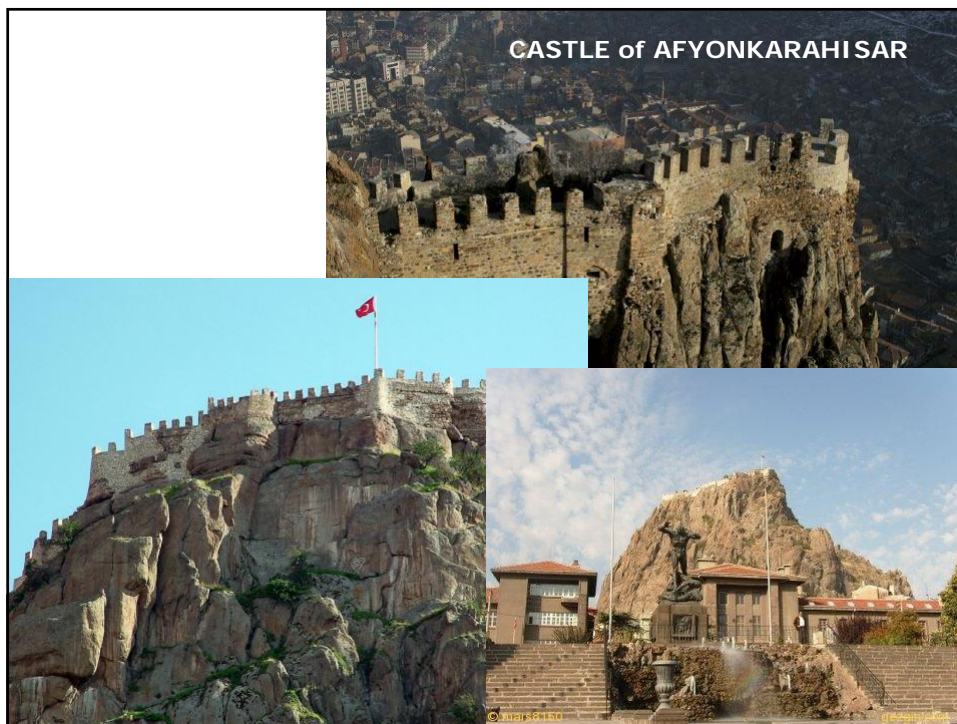
- The measurements of historical monument environment and control points coordinates are essential work. Especially, measurements of control points coordinates have vital importance for stereo model restitution. In general, signalized points and natural points are used as control point in close range photogrammetry.

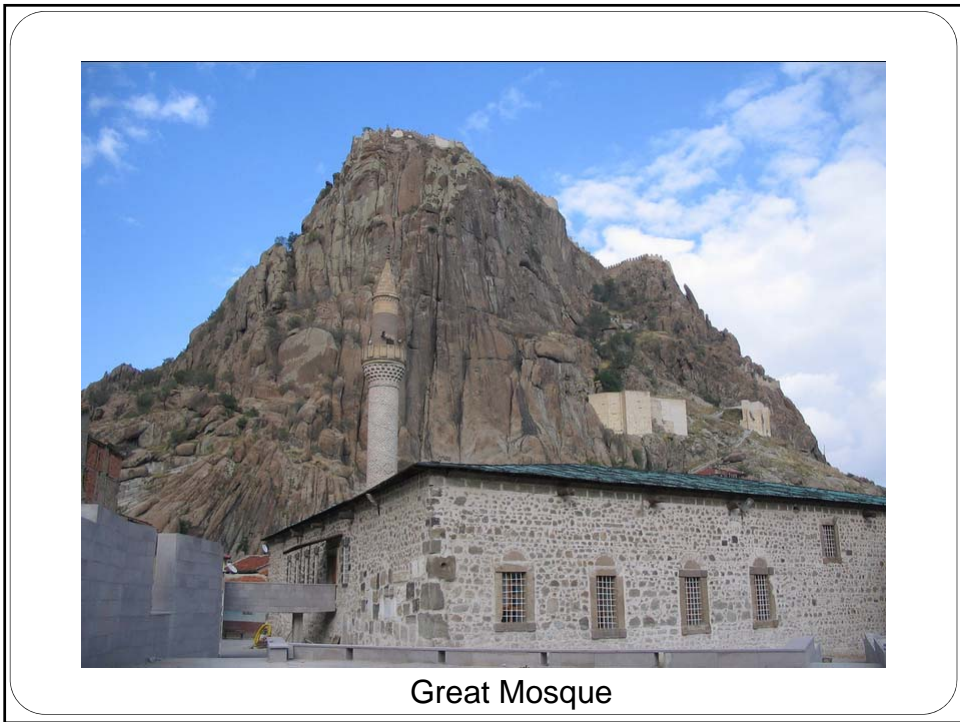
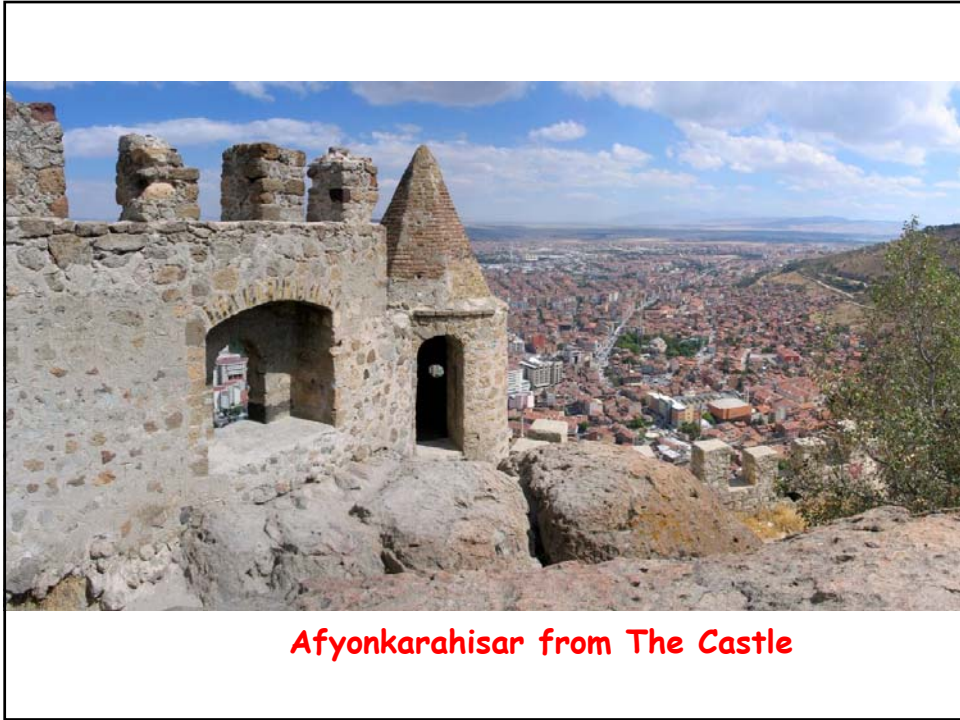


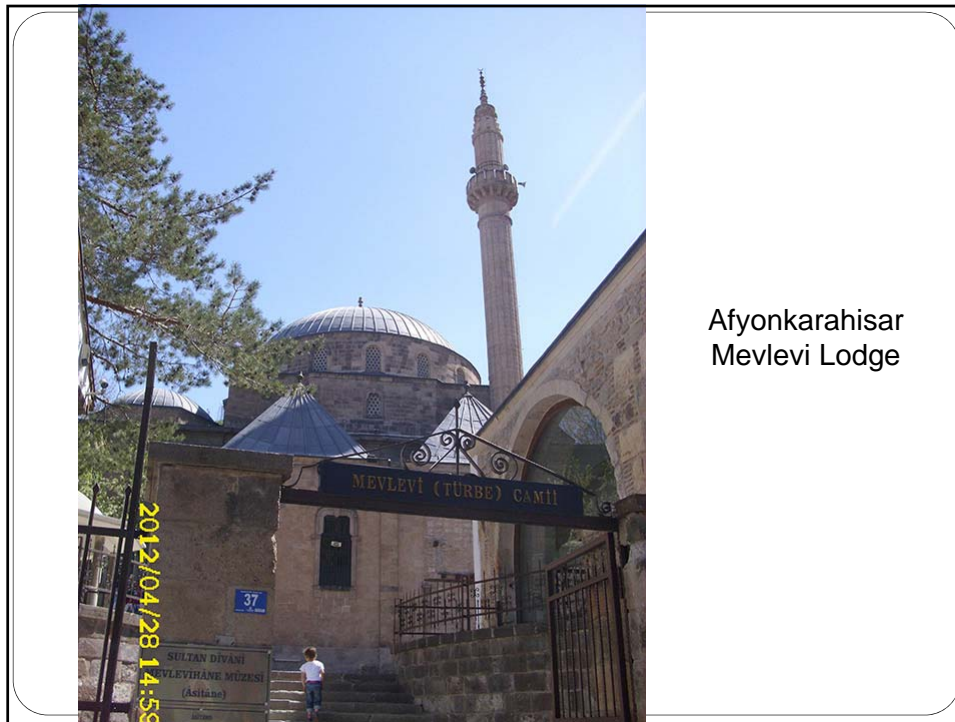
- This study documented Afyonkarahisar Mevlevi Lodge using the digital close range photogrammetry.
- Façade plans producing by the means of digital close range
4 photogrammetry.

The Study Area

- Afyonkarahisar is in west part of Anatolia and has important historical monuments and buildings.





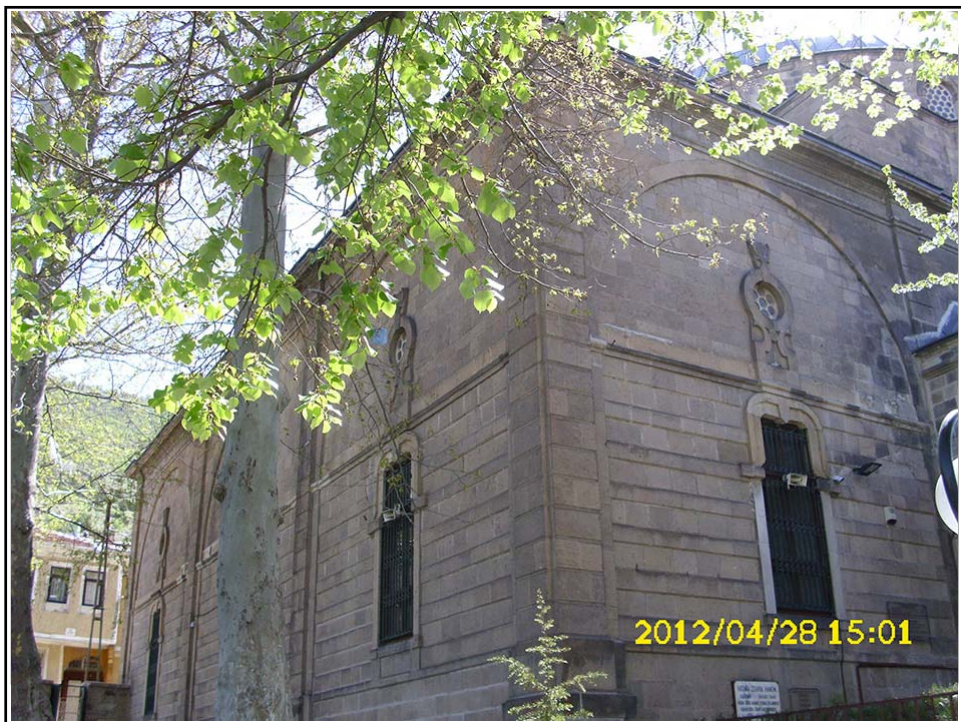


The Study Area

- Another important cultural heritage is the Afyonkarahisar Mevlevi Lodge.
- It served as the base of our study.
- It was a religious complex.
- Built in 1710, Afyonkarahisar Mevlevi Lodge is used today as a mosque and museum.



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Used Data and Methodology

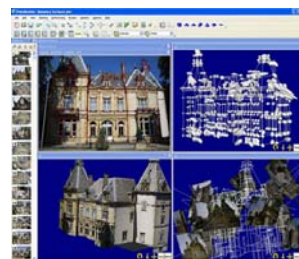
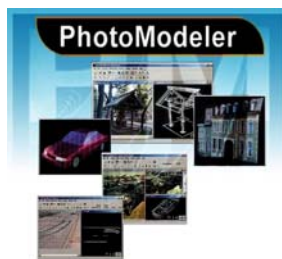


- A local network covering Afyonkarahisar Mevlevi lodge is created to measure the ground control points.
- 139 Ground control point selected on surface of Mevlevi lodge was measured.
- Ground control points were measured by using reflector less total station South NTS-352R.
- Measurement accuracy is $\pm(2 \text{ mm}+2 \text{ ppm})$
- The images are taken with Samsung S730 digital camera.
- Is a non-metric camera.
- Calibrated by using Photomodeler software.

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Used Data and Methodology

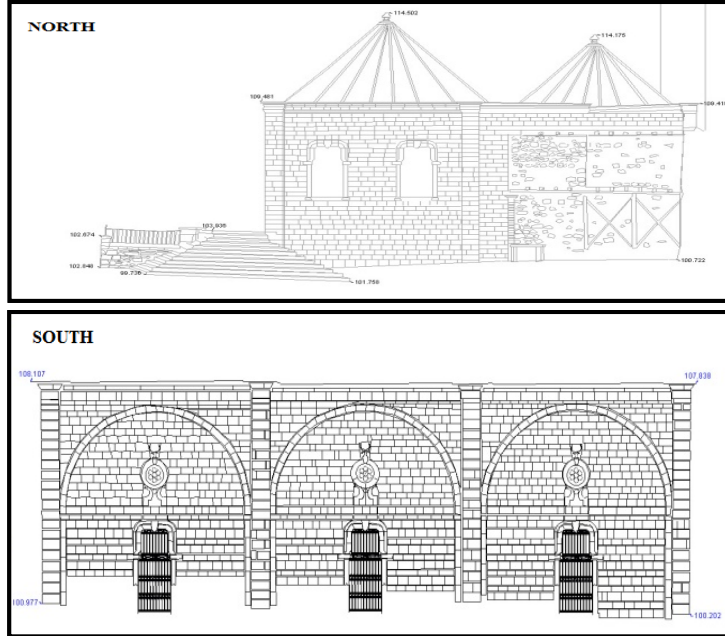
- Restitutions and drawings of images of objects are realized by Photomodeler Software.



- Façade plan of Afyonkarahisar Mevlevi lodge was carried out by the means of digital photogrammetric method.

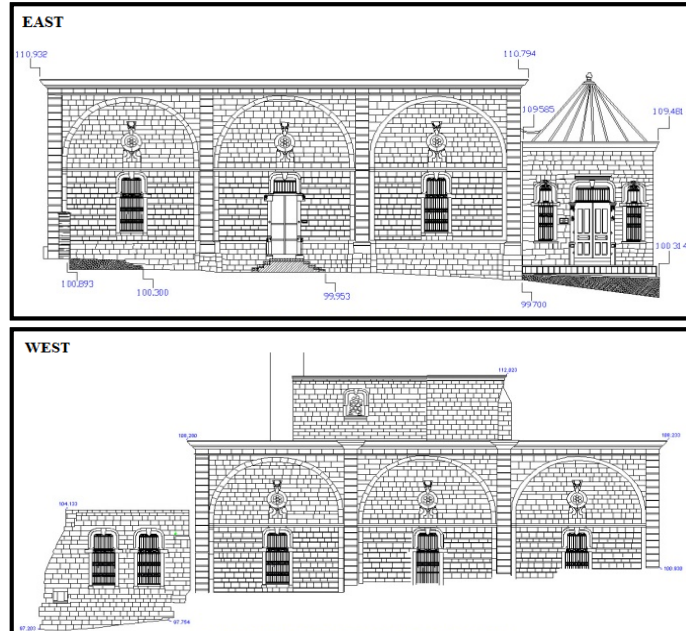
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Façade drawings of Afyonkarahisar Mevlevi Lodge



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Façade drawings of Afyonkarahisarmevlevi lodge



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Conclusions

- ✓ Most cultural heritages are lost or destroyed in time.
- ✓ Conservation of cultural heritage and transferring them to future generations is an important task.
- ✓ Close-range photogrammetry is very fast, powerful and reliable for documentation of cultural heritage.
- ✓ Digital close range photogrammetry is an important technique for documentation of cultural heritage.
- ✓ In this study, documentation of Afyonkarahisar Mevlevi Lodge is presented.
- ✓ Façade drawings were successfully obtained by means of digital photogrammetry.

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Thank you for your attention!

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