



# **Immagini e 3D: problematiche e idee**

Lezione 14: 7 Maggio 2015

# The importance of color information

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## Precision vs. Perception



**3D scanned geometry**

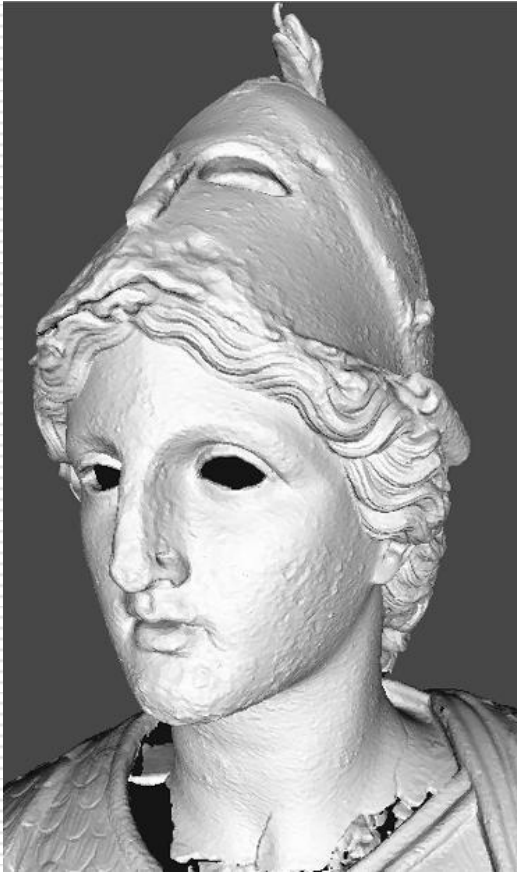


**Photo**

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# Color and appearance

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Pure geometry



“Pure” color



Rendering of  
material properties

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# Can an image be “in 3D”?

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So images can be useful to describe a 3D scene, but they could not be “transferred” to the geometry. Why?

- Images describe a precise moment (i.e. peculiar illumination)
- Images do not describe reality (i.e. old photographs, drawings)
- Geometry is poor or non existent (i.e. noisy point clouds)

*Can the images co-exist with 3D models?*

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# Can an image be “in 3D”?

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## Photo Tourism

Exploring photo collections in 3D

**Microsoft**



(a)



(b)



(c)

## Photo Tourism

- *Having a set of (even etherogeneous) images, you can navigate the photo collection in a “spatially coherent” way. It evolved into PhotoSynth.*
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# Raster layers in MeshLab

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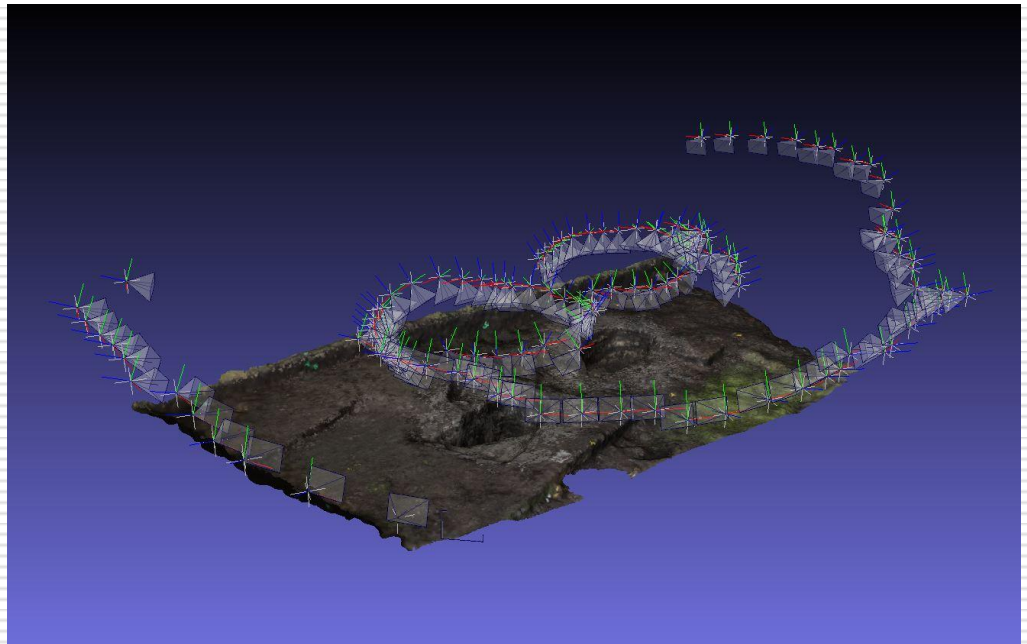


- The last couple of release introduced a new kind of layer, the Raster layer

A shot

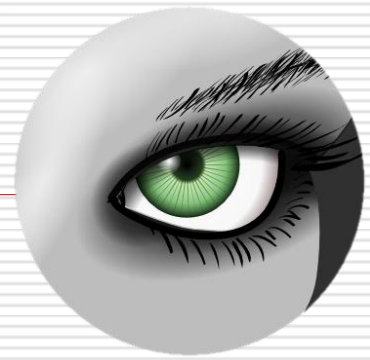
+ « Planes »

- Rasters are saved in the mlp file as well



# Raster layers in MeshLab

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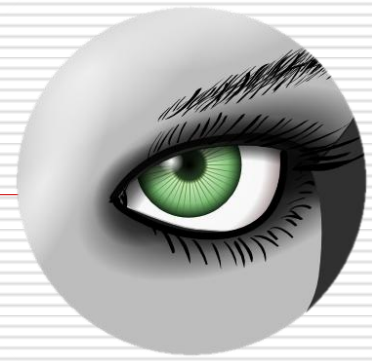


What can you do with a raster?

- Use images
  - Integrate dense stereo matching stuff
  - Define and save points of view
  - Use your imagination!
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# Using the Rasters not only for color

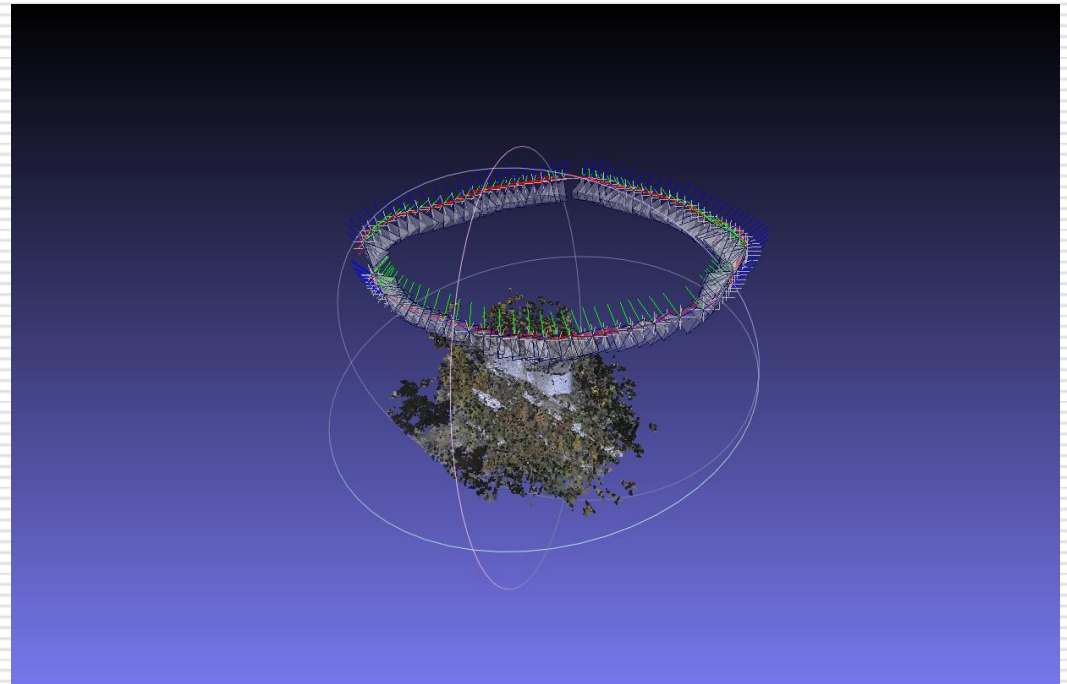
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You can use the reconstruction provided by VisualSfM, which is a .nvm format

How?

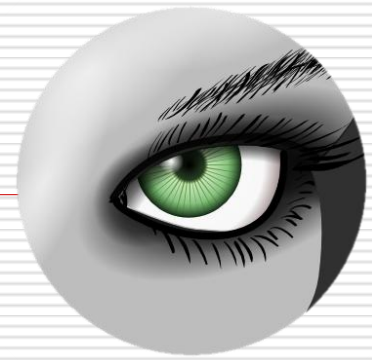
.nvm stuff can be opened as a project in MeshLab





# Using the Rasters not only for color

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You can add other images, even not photos (i.e. drawings, compositions etc etc)

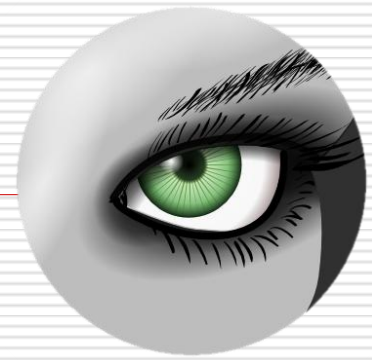
How?

Aligning the image by hand



# Using the Rasters not only for color

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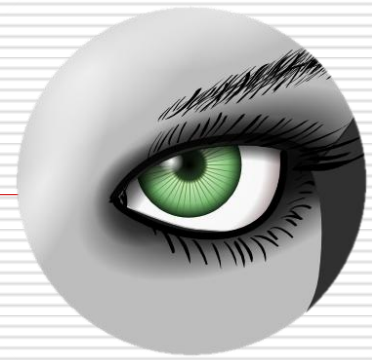
Step 1: Import the raster

The raster is imported with a arbitrary camera associated  
If exif is present, it's used



# Using the Rasters not only for color

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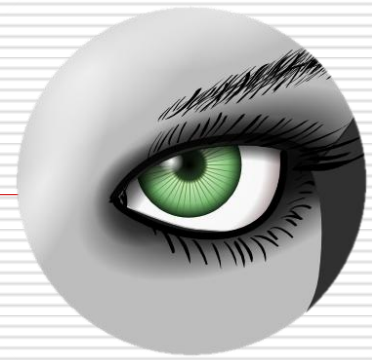
Step 2: Align by hand

You don't need to be extremely accurate, if the goal is to use Photocloud



# Using the Rasters not only for color

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Step 3: Assign the camera

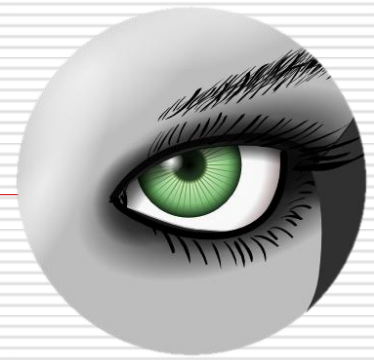
- Filters->Camera->Set raster camera
- Get Shot from trackball
- Apply

When you save the project, the camera will be assigned to the image.



Using the Rasters not only for color

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**YOUR IDEA!**

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# Next in line...

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Next lesson:

- Web visualization of 3D

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