

Welcome to the
**ADVANCED COMPUTER
VISION**
Laboratory

CA' FOSCARI UNIVERSITY

Lab Sessions

- Practical work (computer needed)
- Interaction (not only frontal lecture)
- Group work (changing groups)

About me

- Researcher at DAIS for Computer Vision and 3D Reconstruction
- Reach out via mail or come to the Zeta building
- Passionate about open source software

Open Source Software (OSS)

Using open source guarantee freedom of choice
and possible customization and empowers
community efforts.

Talk from R. Stallman

Tools for the course

Software	Task	Link
GIMP	Generic Image Processing	install
Fiji	Scientific Image Processing	install
Photopea	Image Processing and Editing	web-based
Meshroom	3D Reconstruction	install
Meshlab	3D Processing	install
Blender	3D Modelling and Rendering	install
Postgres	Advanced Database	install
QGIS	Geographic Information System	install
QField	Mobile tool for QGIS	install
Teachable Machine	AI-based framework for experiments	web-based

Compression

what does it mean?

Quick check

1. is compression lossless?
2. what is the resolution of an image?

The practical side

1. can you make an example when compression is useful? and useless?
2. how can you compress an image?

An example

size: 17.0 MB

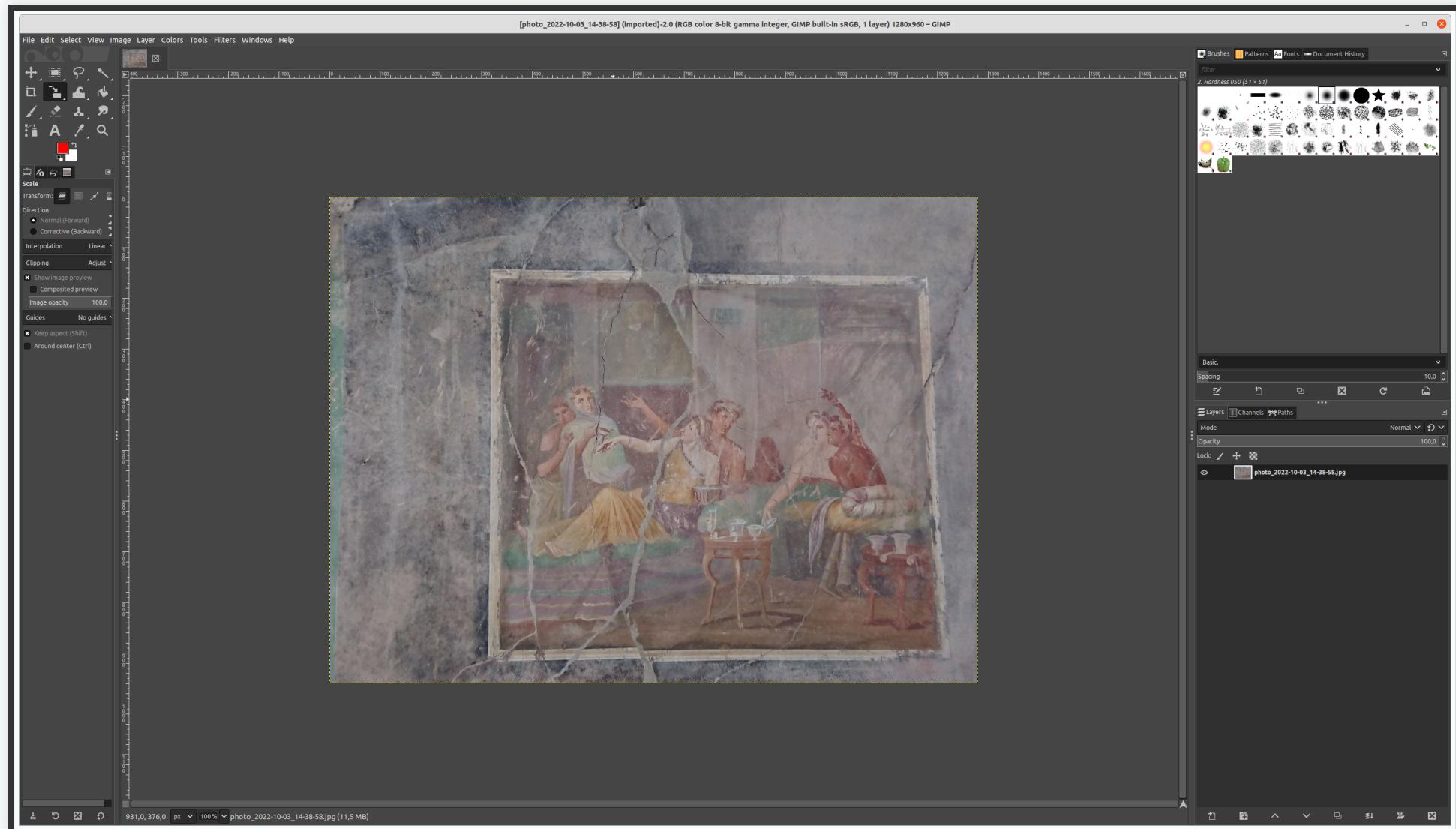
size: 1.7 MB

Another example

size: 1.0 MB

size: 13.0 MB

Compression with GIMP



Exercise

1. We divide in 3/4 groups, download software (GIMP) and images
2. Each group compress the images at their best
3. Images are shown with the original one for a test
4. The group whose images are smaller (in size) wins

Image Alignment



How does alignment work?

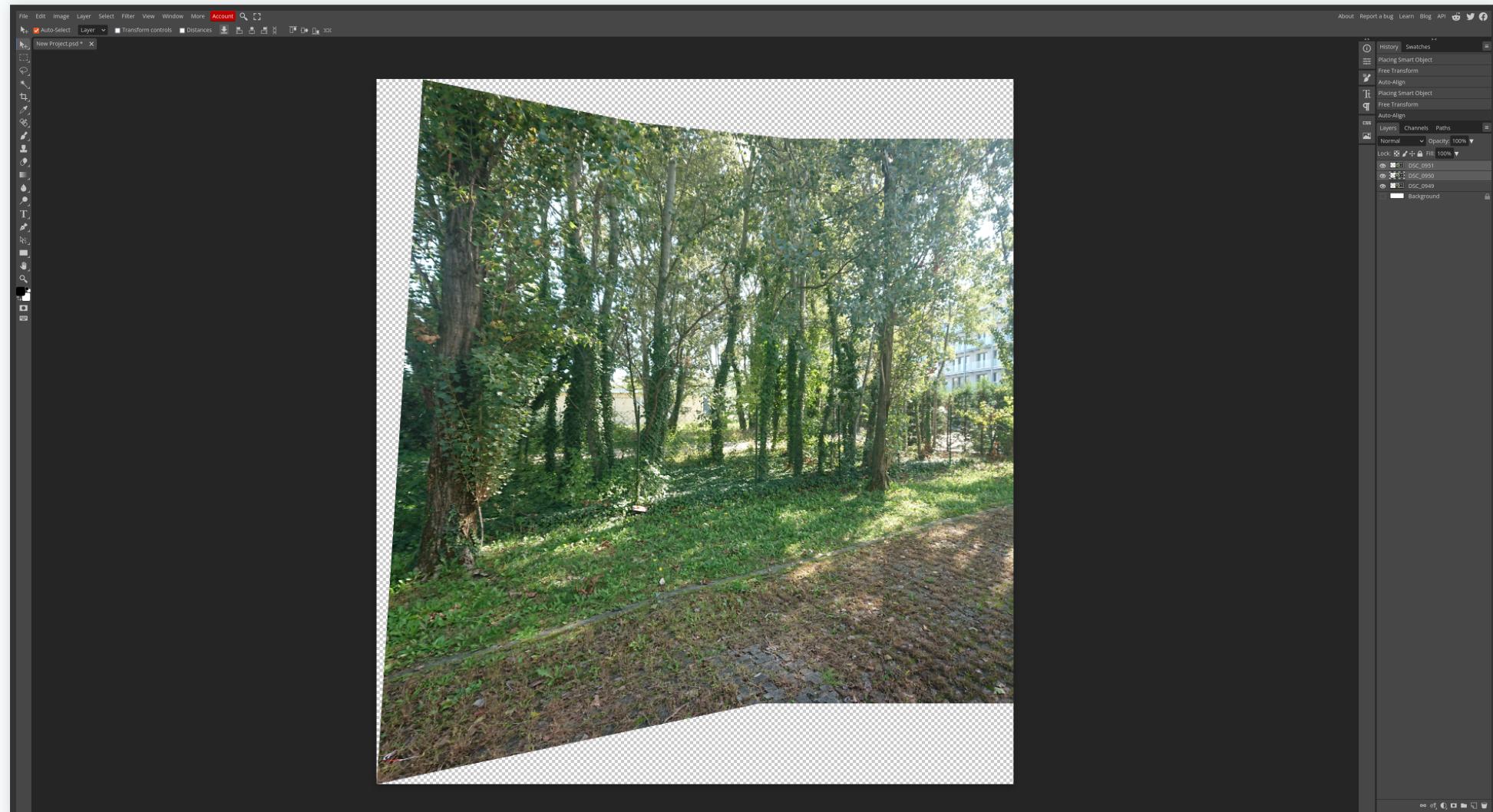
**Do we have different types of
alignment?**

collage vs spherical

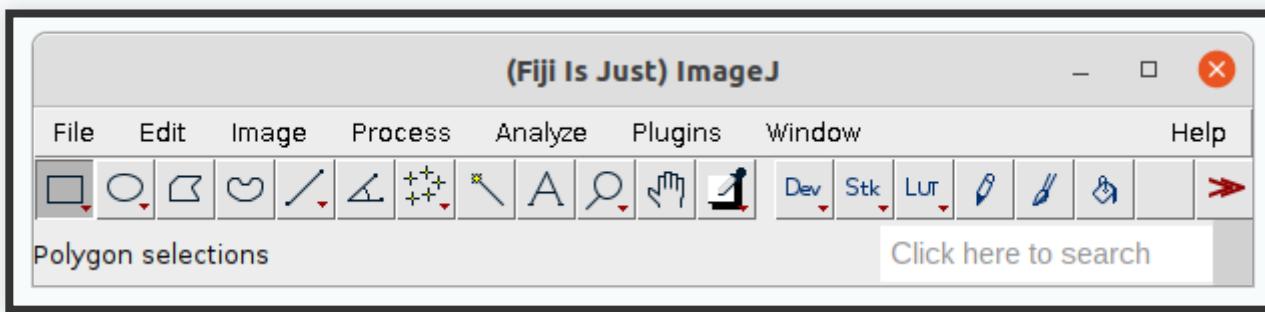
Alignment in practice

- Enough overlapping and feature
- Same condition on capturing

Alignment with Photopea



Alignment with ImageJ (Fiji)



Exercise

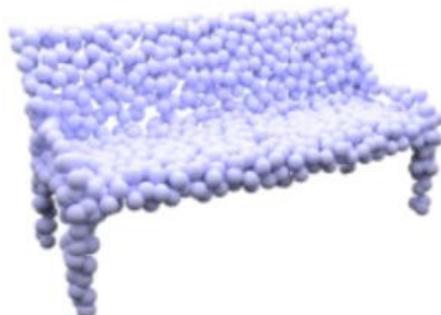
1. We divide in 3/4 groups, download the images
2. Each group tries to align the images at their best
3. Challenge 1: what is the minimum number of images to obtain full picture?
4. Challenge 2: what is the best number of images?

3D Reconstruction

How can 3D data be stored?



(a) Voxel



(b) Point



(c) Mesh

Compression for 3D data?

For Friday

We will work on 3D Reconstruction

Please install Meshroom