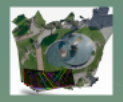
Dust3r

What is our problem?



Colmap

- Software tool designed for Structure-from-Motion (SfM) and Multi-View Stereo (MVS) tasks.
- Works with sequential images and unordered collections of images.
- Performs better with sequential images.
- Older than Dust3r

Colmap Result

Diffrent type of graph

Complete:
- create an edge between each pair of images.
- too much computation.

Swin Transformer:
- Generates pairs of images based on a sliding window approach inspired by the Swin Transformer architecture.
- Divides the input image into non-overlapping patches.
- Then applies sliding window.
- Efficient for large datasets.

Dnerf:
- Considers only one node as the main node.
- Only keeps edges connected to the specified node.
- Less computational compared to the other two methods.

Strategy 2

Strategy 1: fusion pointmaps

Future work

swin output

dnerf output

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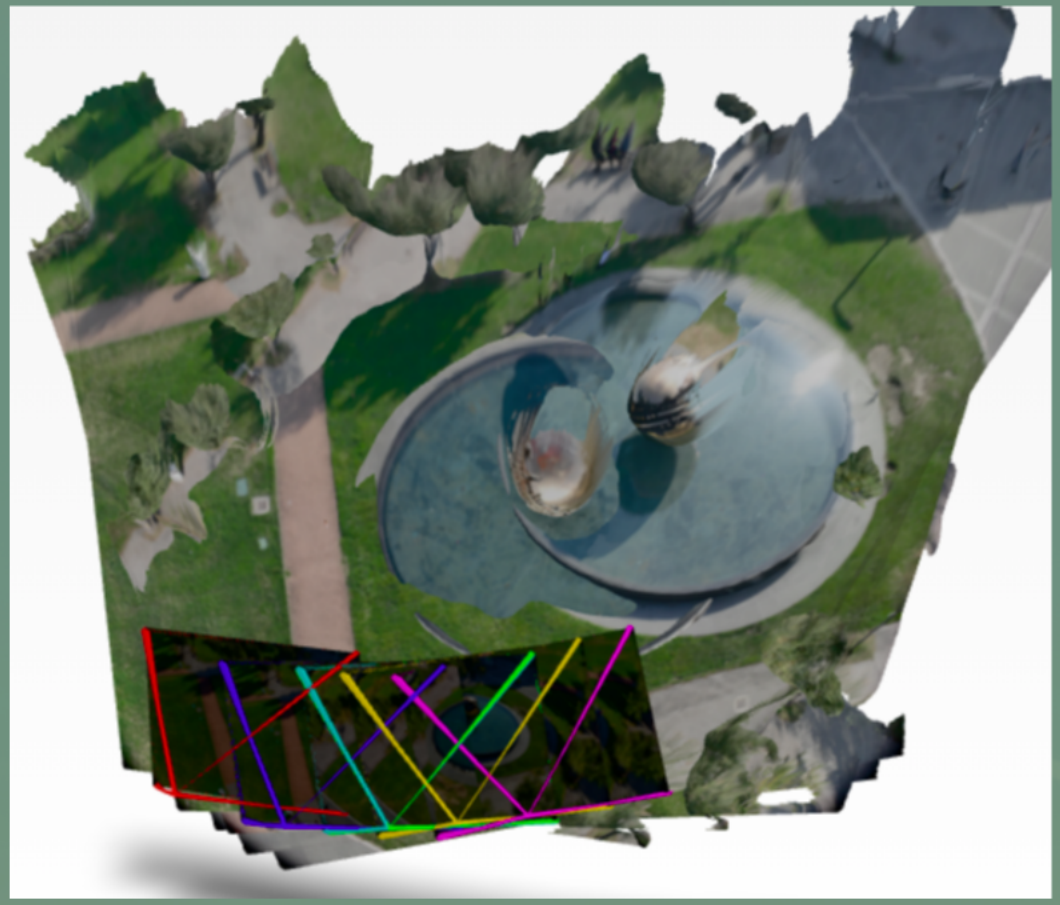

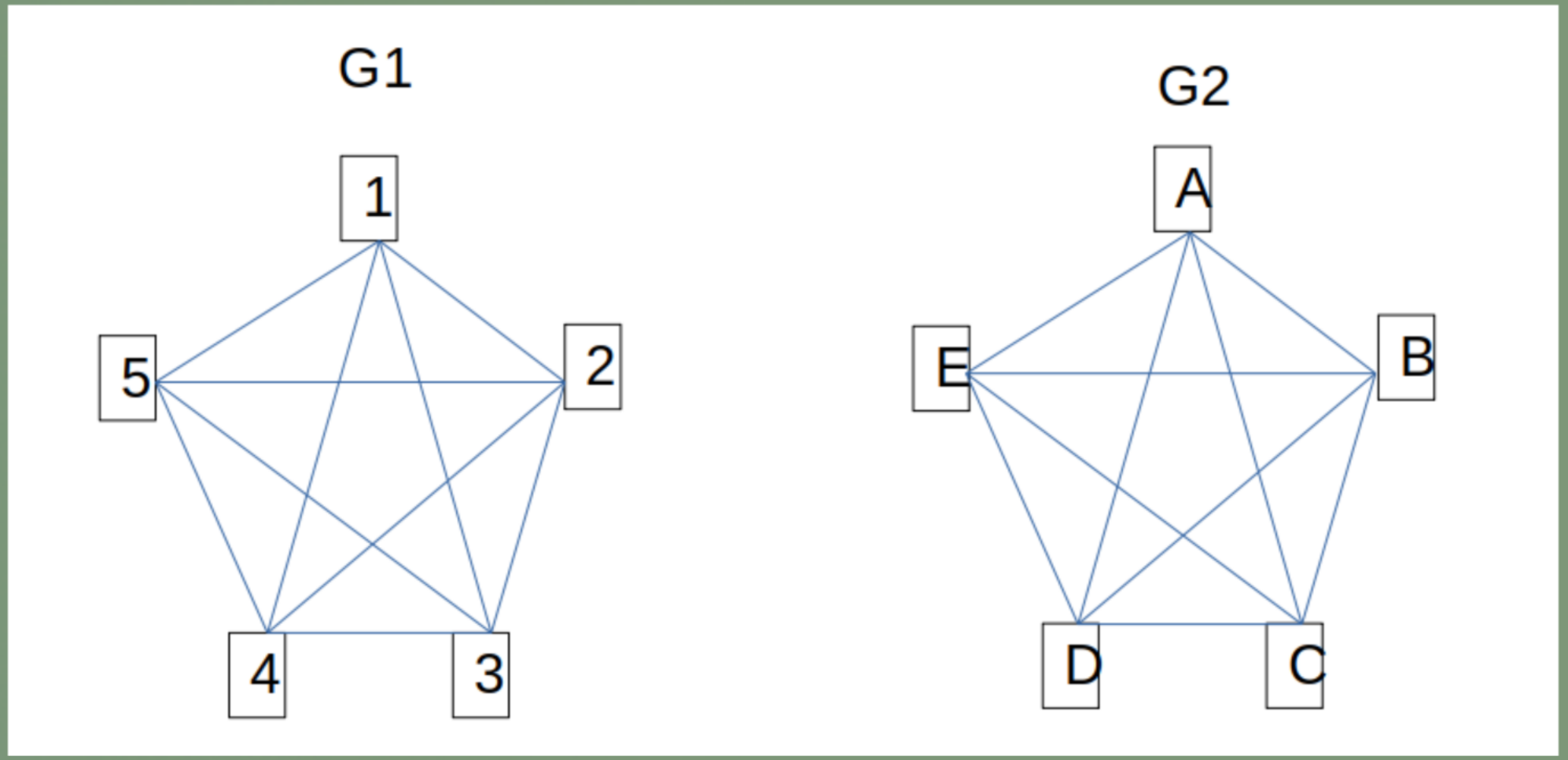
G1
1
2
3
4
5
G2
A
B
C
D
E

Remember

This algorithm contains two phases:

- Passing pairs of images to the 'inference' function to generate a point map.
- Pass pointmaps to create a 3D scene.

```
images = load_images(image_filenames, size=512)
pairs = make_pairs(images, scene_graph='complete', prefilter=None, symmetrize=True)
output = inference(pairs, model, device, batch_size=batch_size)
scene = global_aligner(output, device=device, mode=GlobalAlignerMode.PointCloudOptimizer)
```

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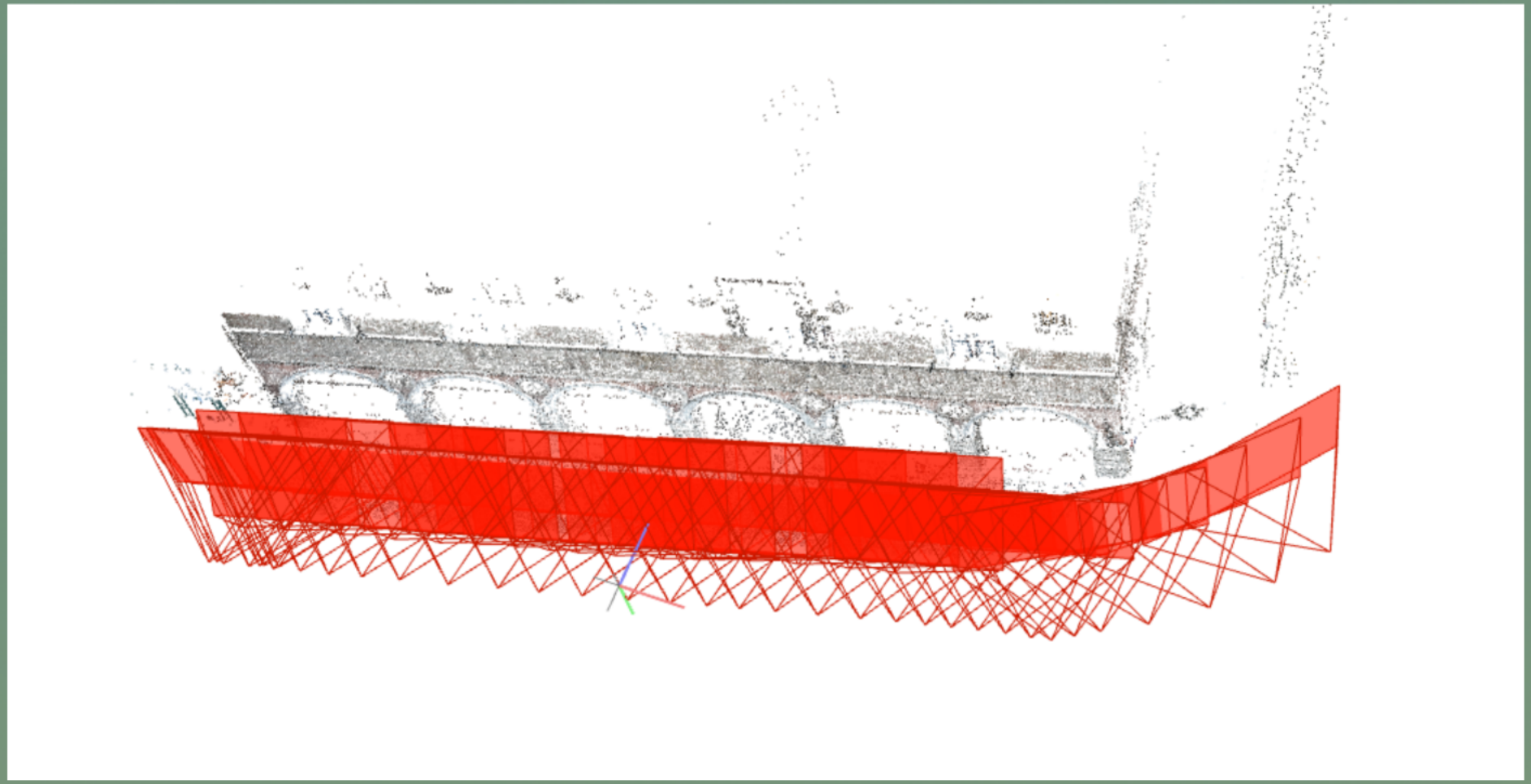

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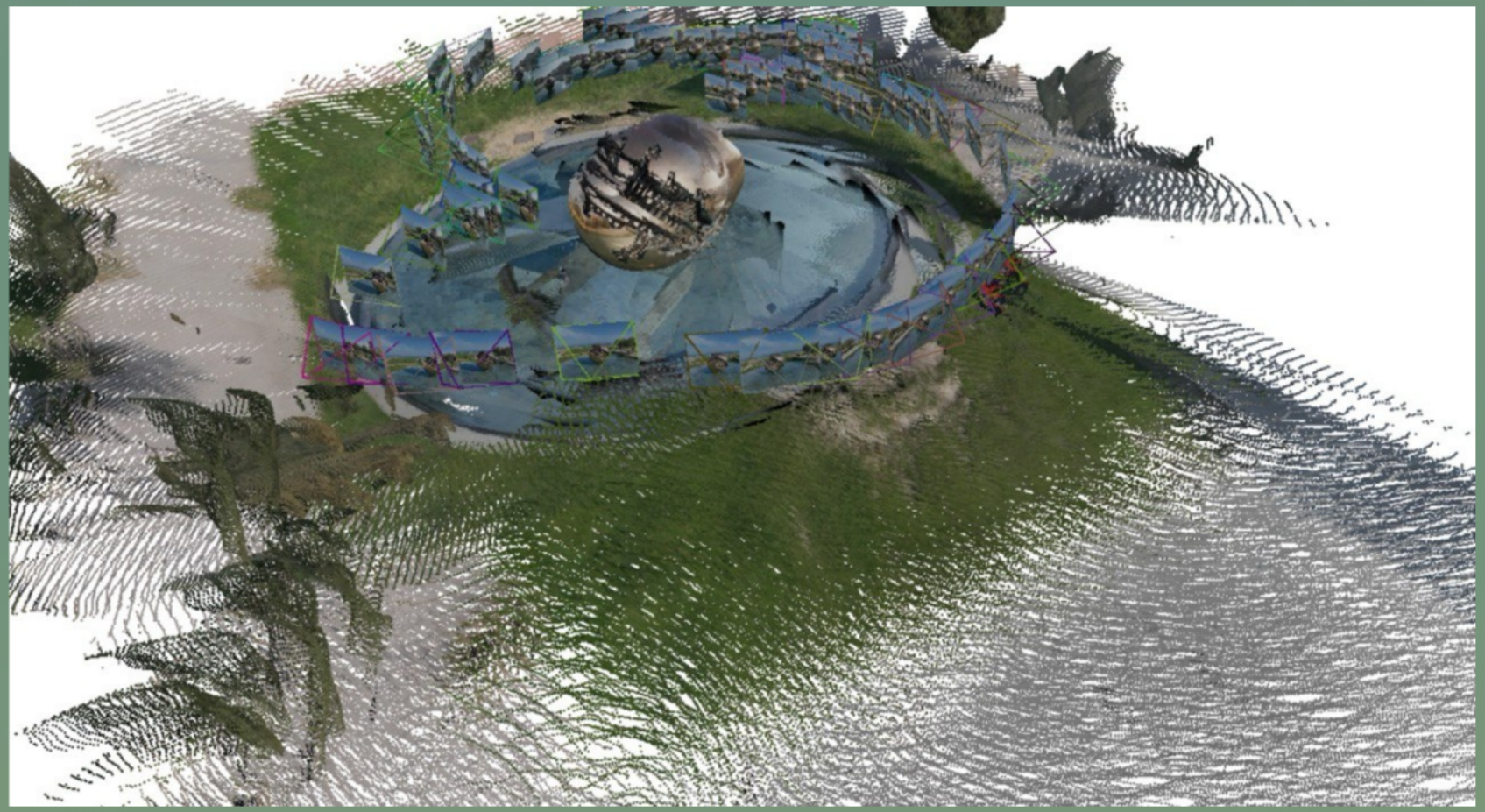
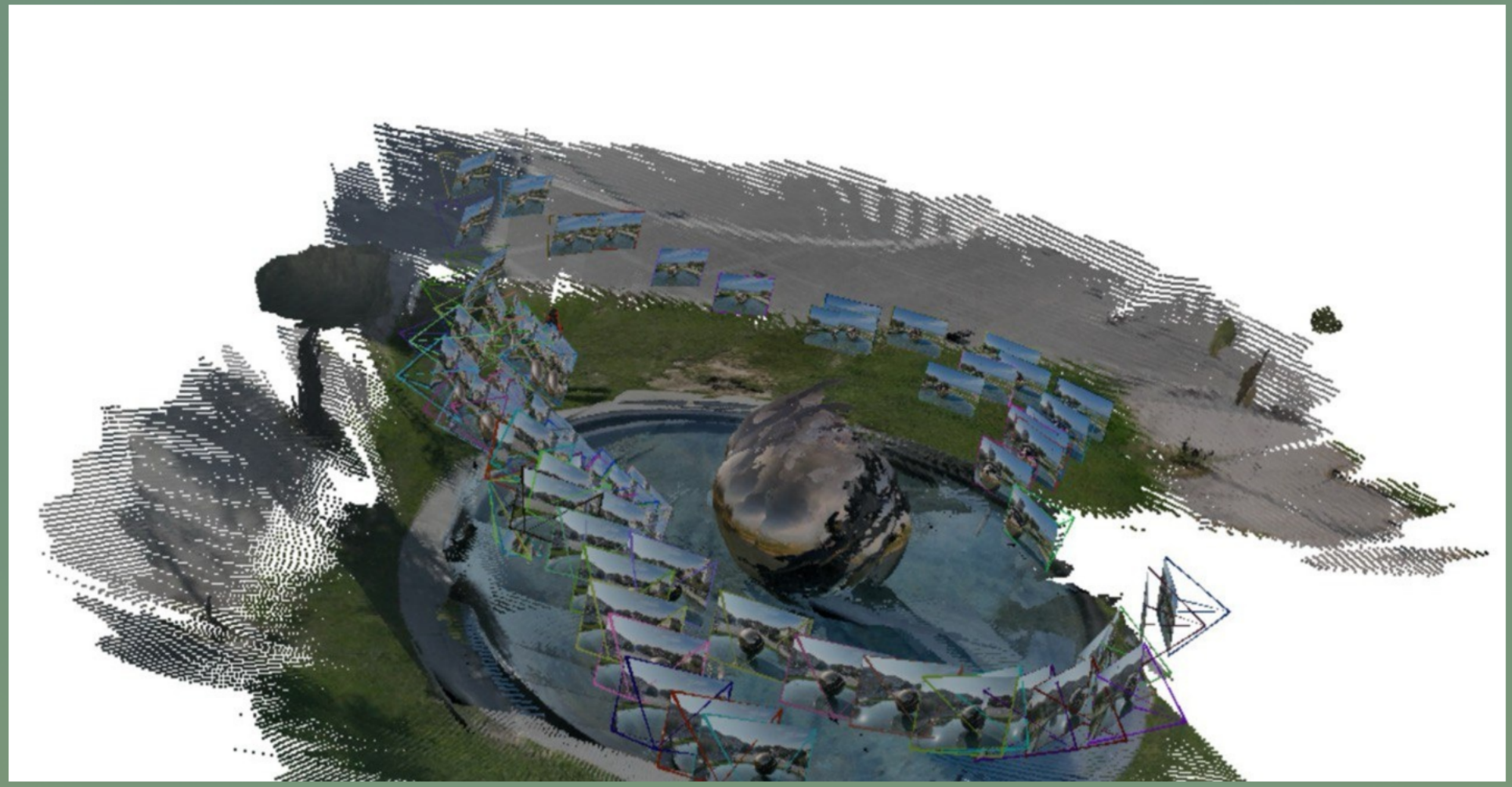
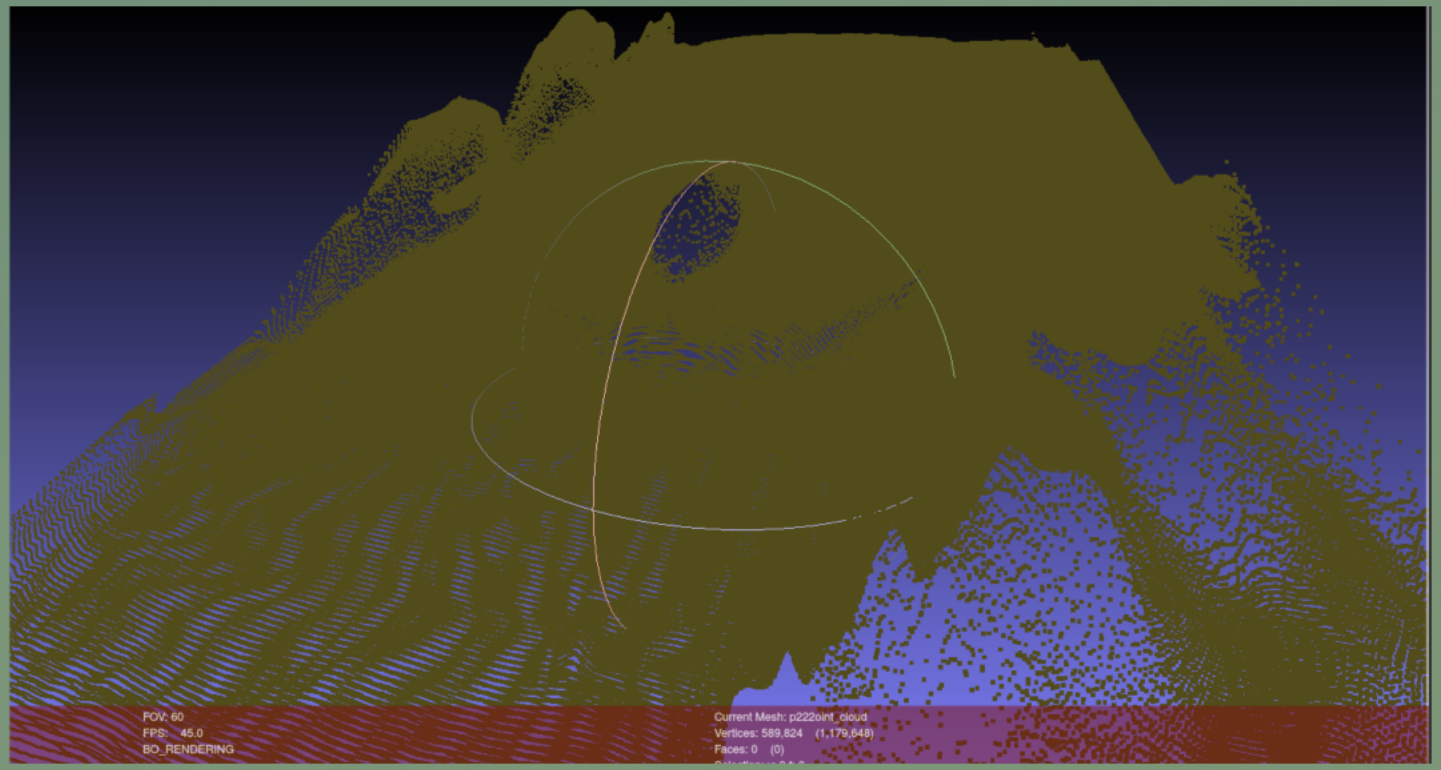


Oneref output



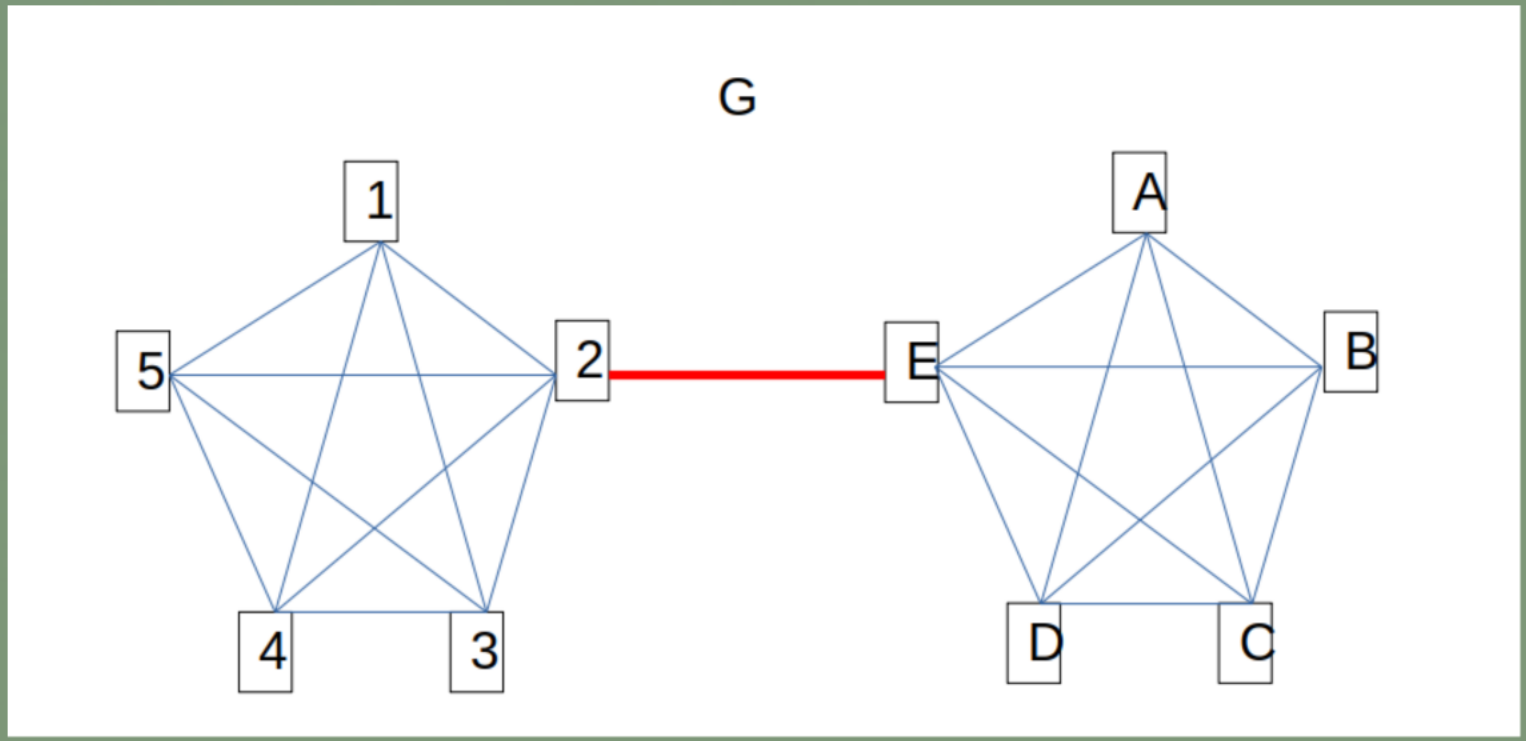
Strategy 1: fusion pointmaps

- Save pointmaps for each set of images
- Try to fusion



Strategy 2

- Find the rigid transformation (R+T) that aligns graphs in the same coordinate system
- use relative transformation of the red egde



Future work

Try to fusion pointmaps after GA ?

Dust3r

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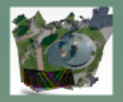

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