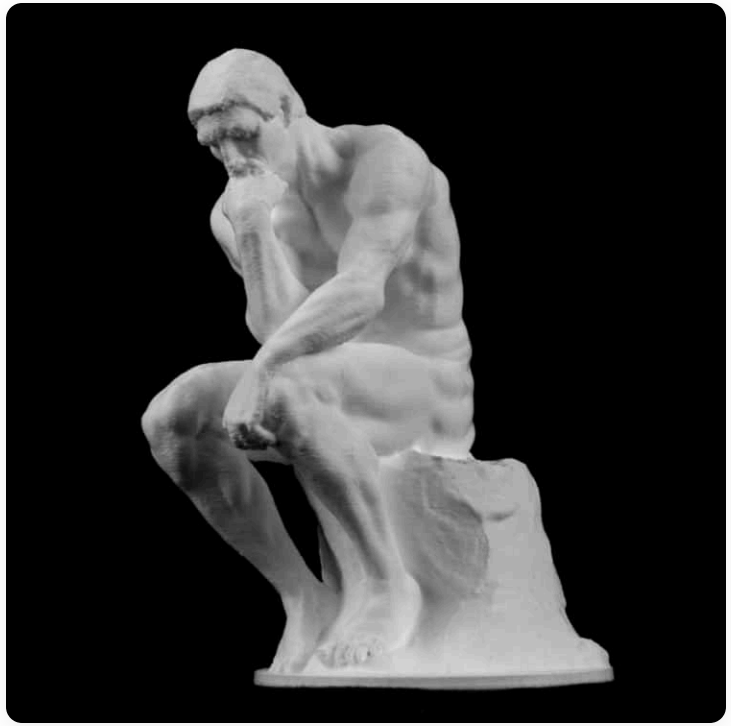
Photogrammetry for Unity

Goals

- Develop process to automate photogrammetry (concepts available)
- Create a 3D model of a person using photogrammetry
- Import the model into Unity in the highest possible quality (with textures)



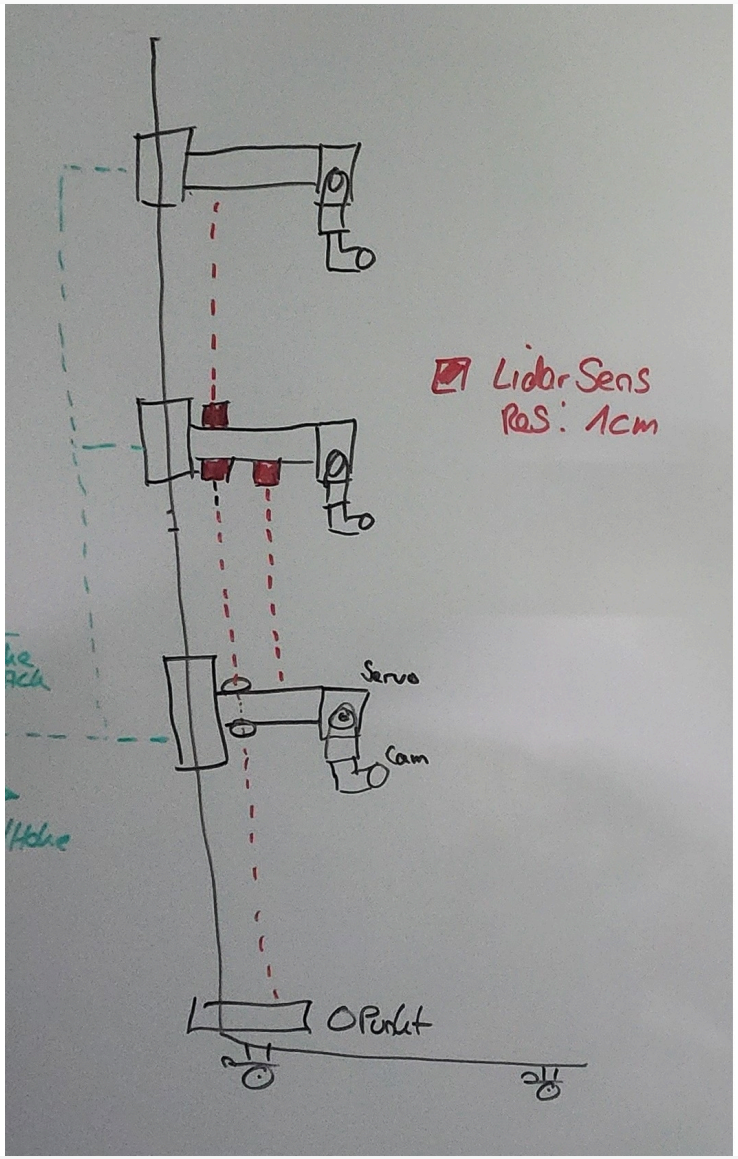
competitor: [Shapify.me]

Roadmap

1. Automate photoshoot process (external project)
2. Preprocess images (lighting, cropping, etc.) + mashine settings
3. Process images in Meshroom (photogrammetry software)
4. Post-process 3D model (Blender, retopology, texturing)
5. Export model for Unity (FBX, glTF, etc.)
6. Integrate into Unity

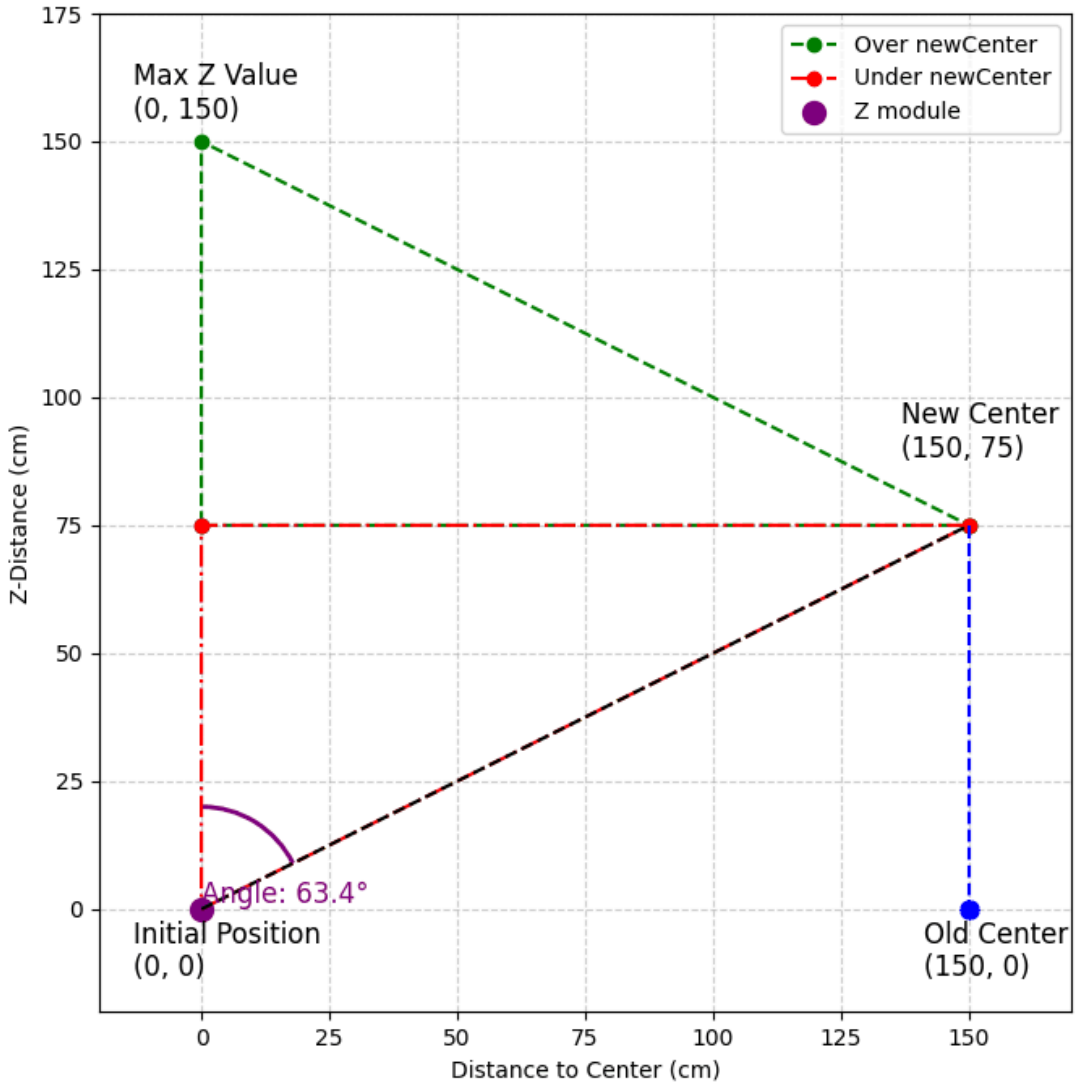
Scanner concept

- Moveable Camera setup vertical
- Diverse Hardware should be useable
- Moldular system | scalable/changeable

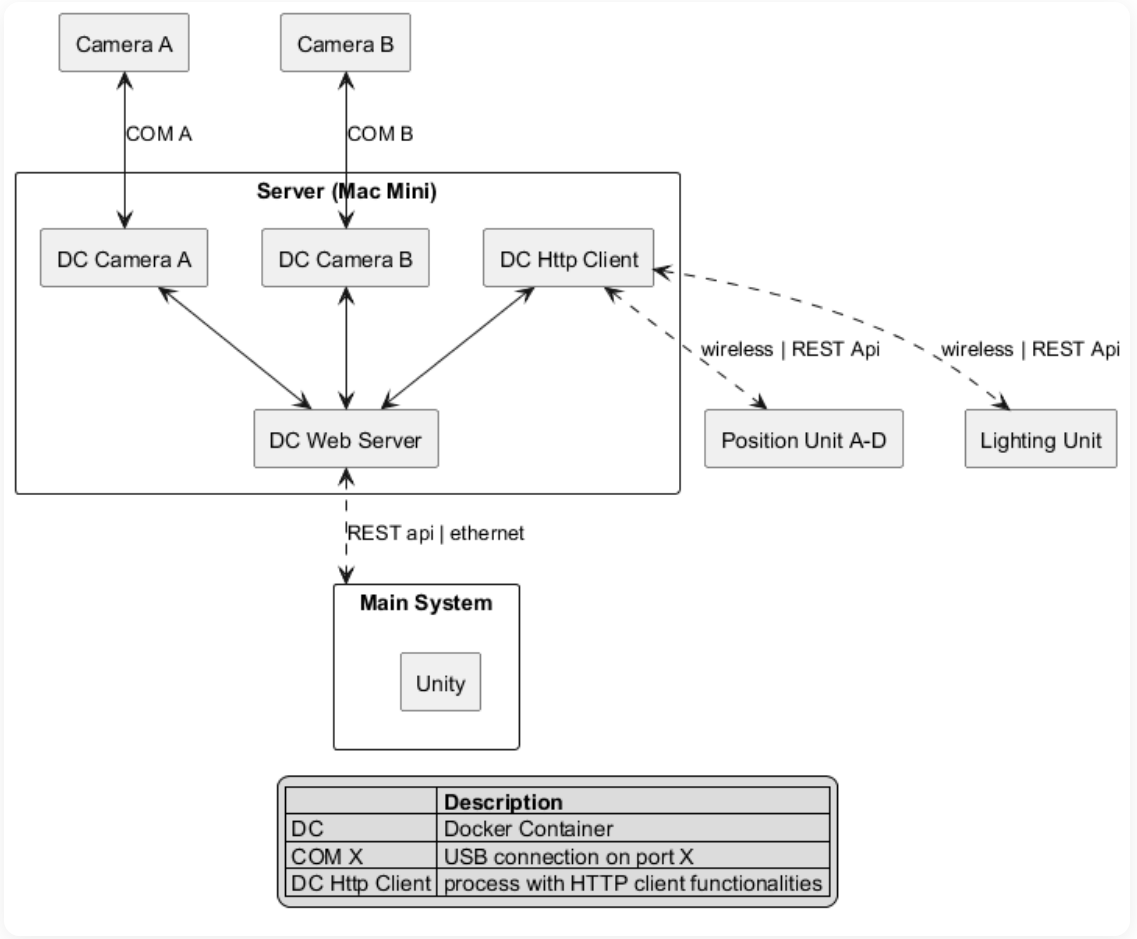


Z Module

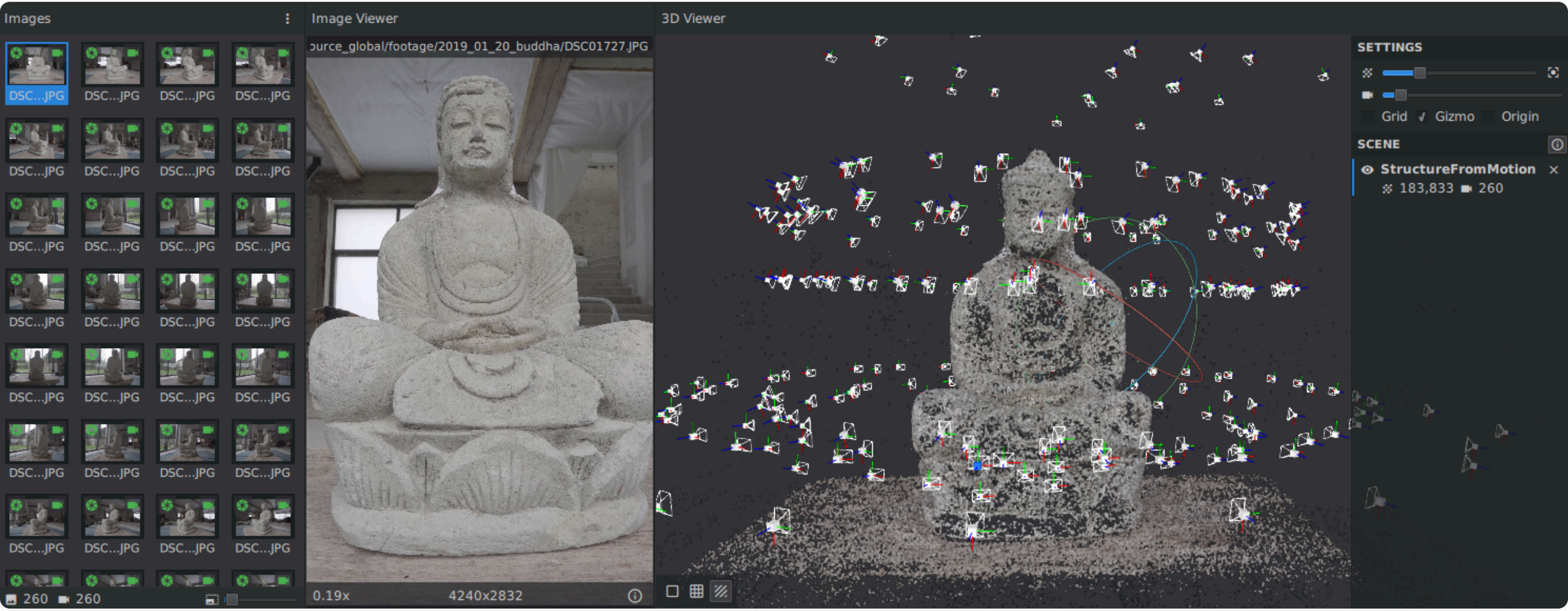
- The Z module aligns itself to the new center (previous center = center of the scanner on the ground)
- Targeted focusing on specific areas enables more precise detail measurement



System Architecture



AliceVision Meshroom



Base tasks

- import images automatically into Meshroom
- create a point cloud from images & camera positions
- export the model in a format that Unity can use (FBX, glTF, etc.)
- import the model into Unity
- create a simple Unity scene to display the model
- add textures to the model in Unity

Advanced tasks

- lighting conditions combined with the camera settings/processing
- multiple scans overlapp (for better results)
- selective focus (special parts for better details)
- transparent or reflective surfaces. (lightcolor change has impact?)

Output:

A **cost-effective 3D scanner** for large objects (e.g., people). The base can be equipped with any cameras, allowing for flexible hardware testing.
The system is not limited to traditional cameras, other sensors such as **LiDAR can also be used**.

Future: Combining data from multiple sensors for better results.

Livedemo Prototyp I

Possible following projects

Movable Scanner: Scanner Module can rotate around the object to capture all angles (bottom marks).
Multi-sensor integration: Data from multiple sensors (e.g., cameras, LiDAR, spectral) improved results & usecases
User-friendly interface: "Casual" friendly interface for controlling the scanning process and visualizing results.
Cloud-based processing: solution for processing and storing 3D models.
Machine learning for model improvement: Machine learning techniques to improve the quality in preprocessing.

Questions?

GitHub