

Report Summer School ATRIUM 3D training school - Brno, Czech Republic –

15–19 September 2025

Day 1 – September 15

The first lecture of the day has been focussed on an overview on 3D documentation in Archaeology with different methods and techniques of 3D acquisition, such as: photogrammetry, 3D scanning, computer tomography and 3D print.

We learned how to build a 3D model, starting from the point cloud until the final mesh.

The lecture dealt with topics as the 3D scanners and their way to operate in the field and the basics of triangulation.

The afternoon was dedicated to an overview of photography, starting from how to choose a good camera, to delve into its component and how to set the parameters to shoot in archaeology (differently from photography in studio).

The keynote lecture of the day was given by zoom by Dr L. Starková, focussing on Photogrammetry and LIDAR applied to a specific case of study in the field, a very interesting project in Mosul.

Day 2 - September 16

In the morning all the team went to Brno's cathedral (Petrov) to apply in the practice what we learn during the first day. We divided in small groups, and each group chose a part of the monument with the aim to apply the photographic settings and shoot a sequence of images for photogrammetry.

In the afternoon, we went back to the University, and we learned step by step how to process the data with Reality Scan, or alternatively with Agisoft Metashape.

We started from the positioning of the targets for the measures until the elaboration of the mesh and the texture. Finally, we were able to open our model in a 3D viewer.

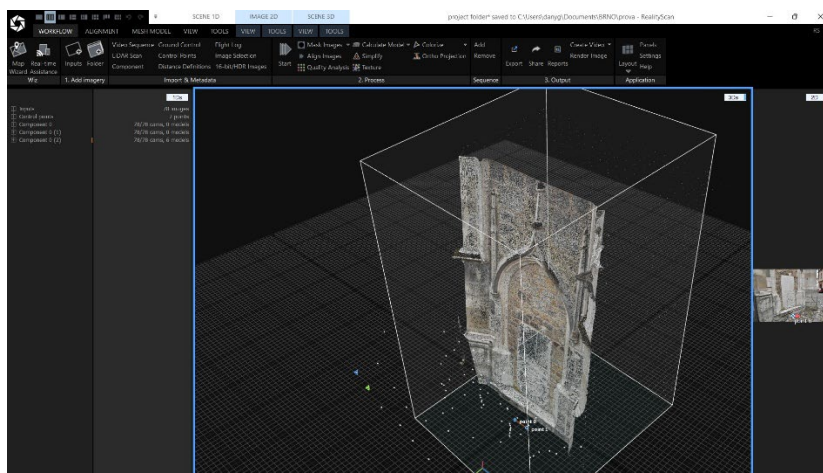


Fig. 1 - Data Processing in Reality Scan – Detail from Petrov

I have previously worked with Metashape and I found this software easier and more intuitive than Reality Scan along the different stages in processing the data.

Day 3 - September 17

During this day, we went deeper into the topics of photogrammetry and in particular analysing small archaeological artifacts. We discussed about issues such as the reflective surfaces of the objects and the application of a special spray to carry out photogrammetry without problems during data processing.

We discussed the combination of 3D scans and photogrammetry to capture smaller details in big surfaces, as well as about terrestrial scanners and LIDAR, what are the main differences and issues in their application.

The lecture delved into topics such the SLAM and the handy scan 3D, until the CT imaging.

The class introduced also another imaging technique, RTI, with its main characteristics and principles. After the analysis of the data processing, we studied the RTI relight software to visualize the final result.

The evening of day 3 was also the time for a very nice dinner and social evening with all the instructors and the participants of the Summer School.

Day 4 - September 18

The morning of day 4 was dedicated to an Introduction to the Virtual archaeology with Dr Kostal. From its beginnings until a more developed technology, we analysed how virtual archaeology helped a lot in the 3D reconstruction of monuments, analysing specific cases of study.

We learned how to get from base model to photoreal and we had a survey on the different software for the 3D modelling and for the scenes' reconstruction.

During this day we were able to understand the different stages from the 3D scans to the virtual reconstruction.

Two lectures completed the program of the day, the first one by Dr Shaw, focussing on the work carried out by a cultural heritage company based in Ireland, and the second one by Dr Radchenko focussed on preserving the archaeological heritage in Ukraine, where a lot of effort has been done to save the heritage from the ongoing war.

Day 5 – September 19

The last day was dedicated to a recap of the topics and practice of the previous days and to ask questions to the instructors.

We divided again in small groups and different workstations have been set up with the aim to practice photogrammetry on small artefacts and revise the camera settings and the post-processing of the data.

Another group was focussed on RTI images capture and the following post-processing.

We had also the opportunity to try the manual scanner, a very interesting machine able to capture also the human figure.

The end of the session was finally dedicated to an overview of the software Blender for 3D modelling and its basic principles and settings.

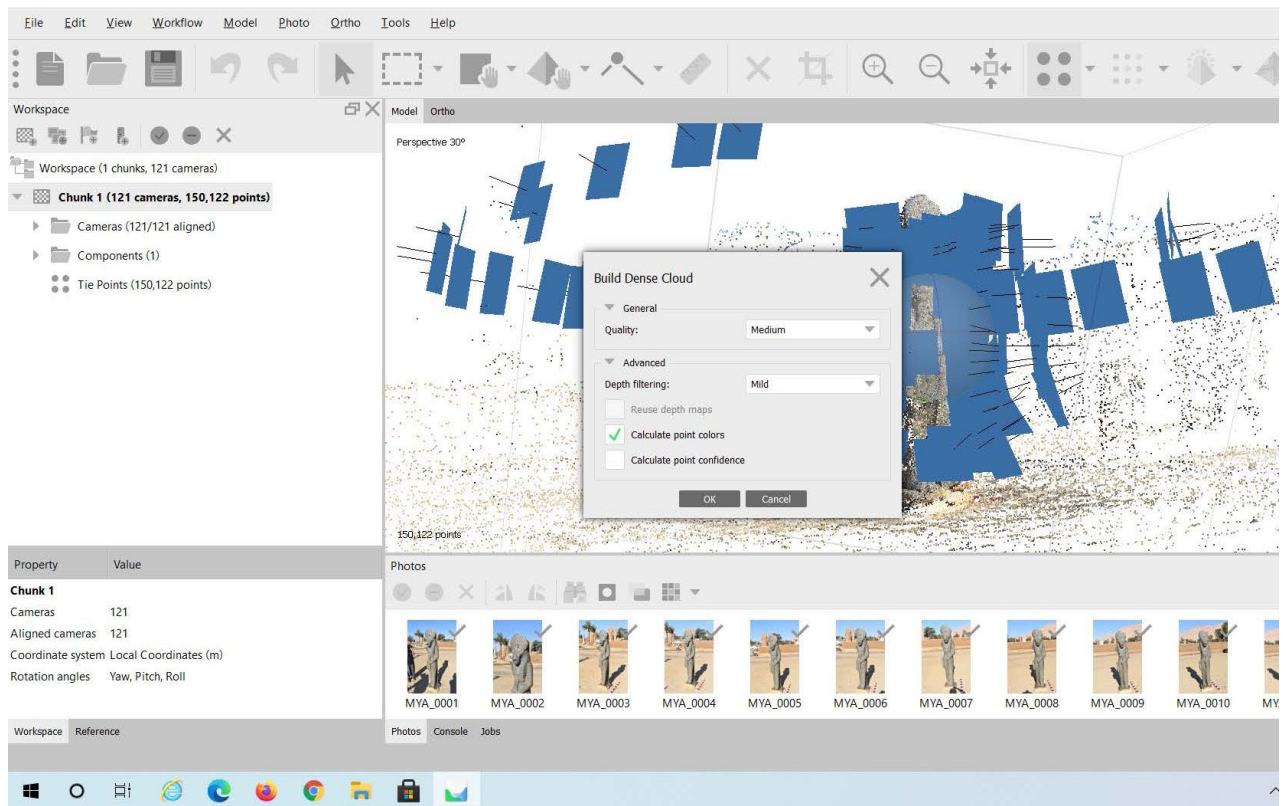


Fig. 2 - Data Processing in Agisoft Metashape – Statue of Sekhmet, Egypt

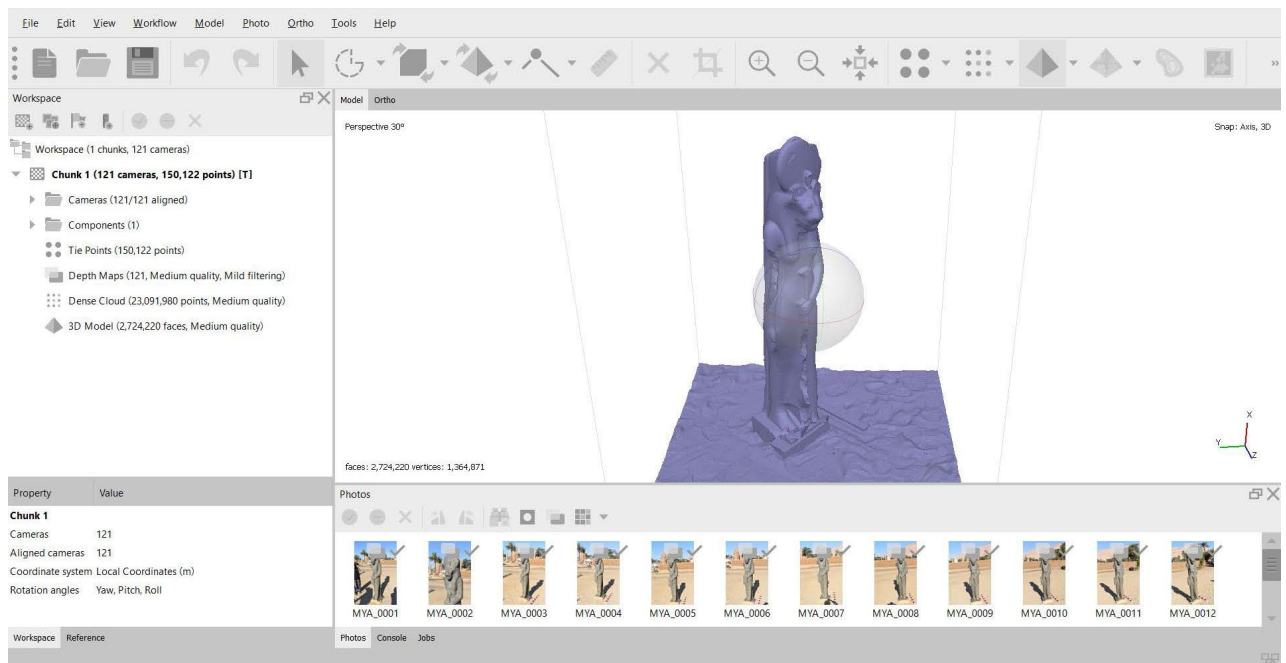


Fig. 3 – Model in Agisoft Metashape – Statue of Sekhmet, Egypt

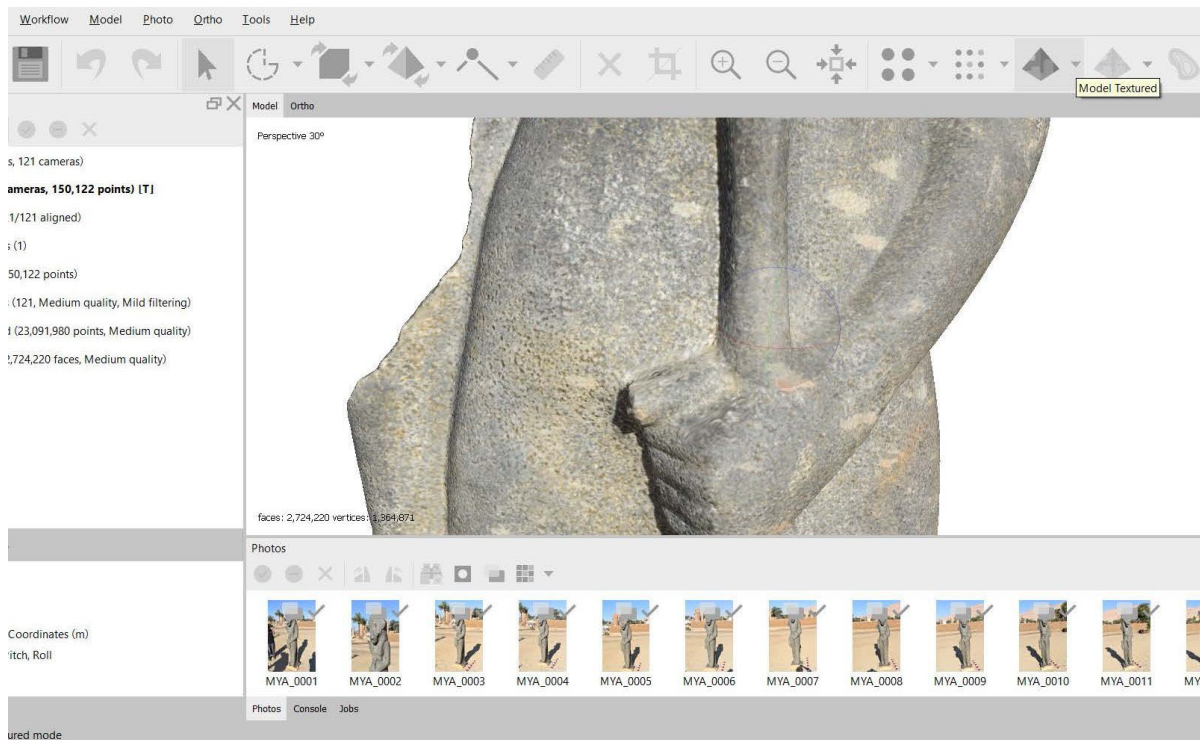


Fig. 4 – Texture in Agisoft Metashape – Statue of Sekhmet, Egypt

The Summer School has been a very exciting and enriching experience for me, where I could deepen my basic knowledge on photogrammetry and learn more about virtual archaeology and new softwares, such as Reality Scan and Blender. Moreover, it has been a very successful occasion to practise photogrammetry on monuments and small artefacts and to work together with the other participants.

I'd like to say that the whole team of participants and instructors was amazing! It was a great opportunity to meet people from different countries and different backgrounds, studying and working in the cultural heritage field, and to share experiences.

I hope that there will be a second edition of this successful Summer School the next year as occasion to work again together, maybe carrying out small projects.

Finally, a huge thanks to the instructors for their efforts and patience in working with us, and to all the team of the Archaeological Institute for their kindness in welcoming us in Brno!