Report on Attending the ATRIUM 3D Summer School in Brno

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I had the amazing opportunity of participating in the ATRIUM 3D Models Training School organized by the Czech Academy of Sciences, Institute of Archaeology in Brno, held between the 15th and 19th of September.

Even before the event began, the organizers maintained excellent communication, providing clear and detailed information about the upcoming programme. It was immediately apparent that we were about to attend a thoroughly planned and professionally managed training.

Those expectations were more than met. Throughout the week, we were immersed in both the theoretical and practical aspects of 3D documentation in archaeology, all within a relaxed and supportive atmosphere. The instructors demonstrated deep expertise and a genuine passion for their fields, generously sharing not only standard workflows but also numerous small yet invaluable tips that can only be learned through years of experience.

The structure of the week was logical and well thought out, with each day's material building upon the previous one. Guest speakers from different institutions further enriched the programme, offering insights into how 3D modelling can enhance archaeological research and heritage documentation.

Beyond the academic content, the organisers' patience and helpfulness created a genuinely inclusive learning environment. They were always ready to explain workflows again and assist participants who needed extra guidance. Social events and evening activities encouraged us to connect beyond the classroom, fostering friendships and professional links.

The city of Brno itself added to the overall experience. Wandering through its historic centre, surrounded by Gothic facades and vibrant modernist architecture, offered a welcome balance between learning and leisure. Group city walks and informal gatherings further deepened the positive atmosphere that characterized the entire week.

The wonderful city of Brno

To complement this personal reflection, here's a short overview of the week's schedule:

Day 1 (15 Sept): Introduction to 3D documentation, hands-on photography workshop, keynote lecture on advanced scanning methods.

On the first day, after a short introduction, Vojtěch Nosek's lecture "*Understanding 3D: From Space to Artefacts*". It was a clear, structured overview of how 3D technologies are reshaping archaeological documentation and heritage care.

Later, we took part in a lively workshop led by Tomáš Chlup, called "*Focus, Dial and (Try to) Stay Sane*". It was all about understanding light, focus, and manual settings, the kind of skills that make the difference between a random photo and a truly usable dataset.

The day ended with a keynote by Dr. L. Starková, "*Scanning the Past*" where we saw how photogrammetry and LiDAR come together in real projects, based on a case study from Iraqi Kurdistan.

Day 2 (16 Sept): Outdoor photogrammetry session at Petrov Cathedral, followed by digital processing in RealityCapture.

The second day took us outdoors to the magnificent Petrov Cathedral. There's something special about standing beneath those soaring Gothic towers, camera in hand, learning how to capture every detail accurately. We practiced setting up the site for photogrammetry: arranging control points, planning the photo grid, and carefully framing each shot to ensure our images could later be transformed into precise 3D models. We could use the skills acquired from Tomáš Chlup's lecture and workshop from the day before.

In the afternoon, we returned to the institute to dive into RealityCapture 2.0.1. Under the guidance of our tutor, we processed the morning's photos, going step by step: importing images, aligning them, generating dense point clouds, creating detailed 3D meshes, and finally adding textures. Watching a digital model emerge from a stack of photos is endlessly satisfying, it's a moment where theory and practice truly meet.

Site preparation for photogrammetry at the Cathedral of St. Peter and Paul

Day 3 (17 Sept): Artefact documentation through theory and practice; creating detailed 3D models from photographs.

Wednesday was all about the small things, literally. We moved indoors to photograph archaeological artefacts. Vojtěch Nosek started the day with a short theory session on 3D scanning and photogrammetry, followed by hands-on practice. We experimented with different lighting setups, camera positions, and reflective surfaces, and quickly learned that documenting a small ceramic shard can be far trickier than photographing a cathedral. Still, by the end of the day, we each had a detailed 3D model of an artefact to show for it.

Hands-on with the Artec Leo 3D scanner

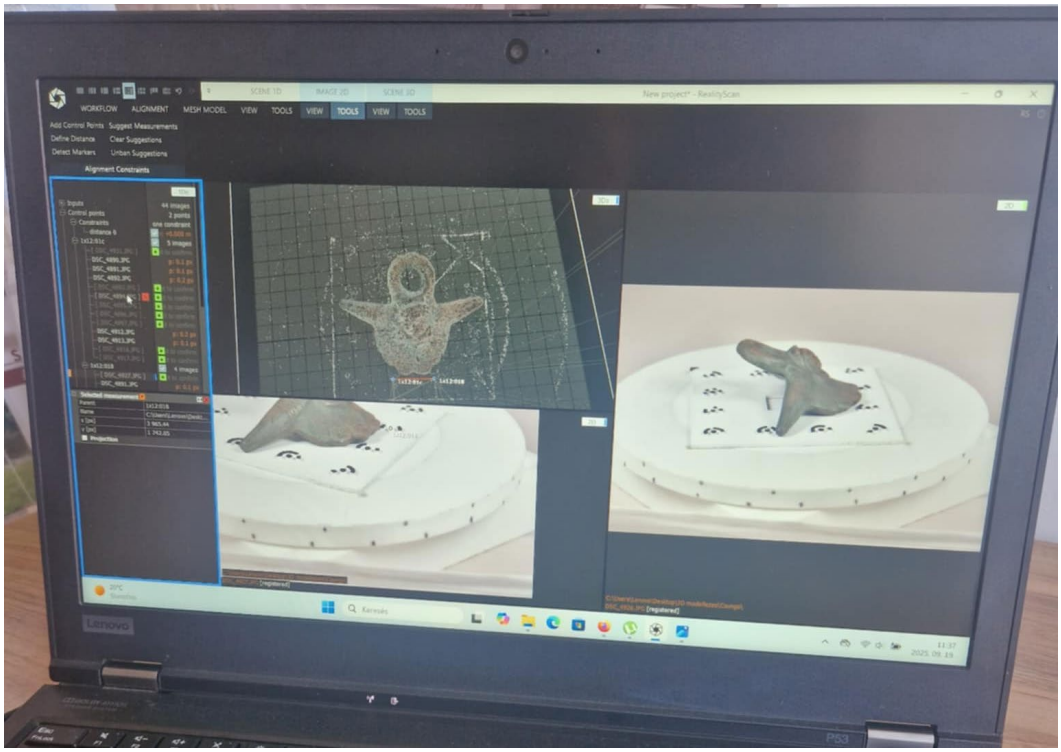
Day 4 (18 Sept): Virtual archaeology day: lectures on reconstruction theory, Blender, and online talks from Scotland and Ukraine.

The fourth day took a more theoretical turn, focusing on the fascinating world of virtual archaeology. In the morning, Jiří Unger delivered a series of insightful and thought-provoking lectures on the potential of 3D modelling in archaeological research. Drawing on his own projects, he demonstrated how digital reconstruction

can be both a scientific tool and a medium for public outreach. His examples clearly showed how 3D technology bridges documentation, interpretation, and communication, inspiring many of us to apply similar ideas in our own work.

In the afternoon, Martin Koštál introduced us to the finer points of 3D scanning and data processing.

The day concluded with two online guest talks, joining us from Scotland and Ukraine. Both presentations showcased real-world projects where 3D digitization plays a key role in preserving and sharing archaeological heritage.

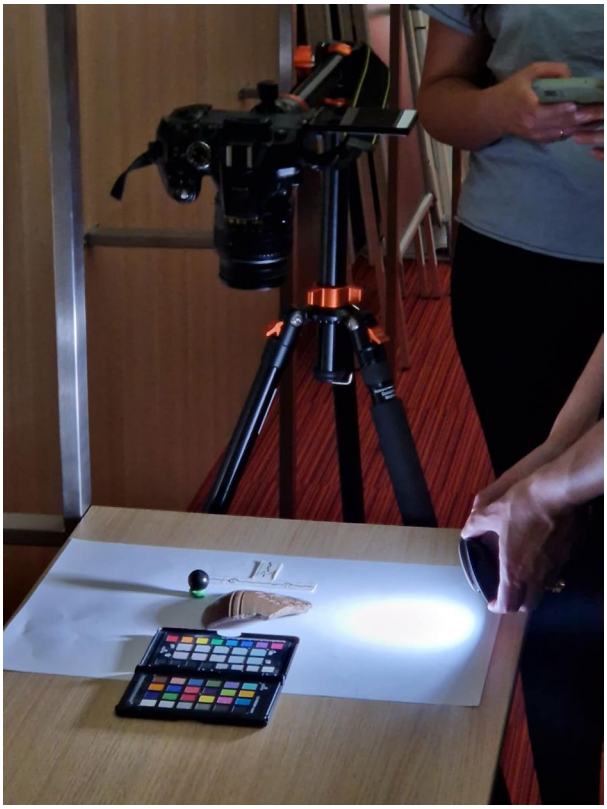


Modelling in RealityScan 2.0

Day 5 (19 Sept): Practical session on Reflectance Transformation Imaging (RTI), Q&A discussions, and closing reflections.

The final day focused on deepening our practical skills. Participants had the chance to revisit questions that had arisen throughout the week and explore solutions in detail. One of the highlights was experimenting with Reflectance Transformation Imaging (RTI), a method that captures how light interacts with an object's surface to reveal fine details invisible to the naked eye.

Later in the day, we briefly explored additional processing tools, including Blender and CloudCompare, putting some finishing touches on the models we had been working on. By the end of the session, it felt like all the pieces of the week had come together — a satisfying mix of hands-on experience, problem-solving, and creative exploration.



Practicing the RTI technique

In conclusion, the ATRIUM 3D Summer School in Brno was a deeply rewarding and inspiring experience. It provided not only valuable technical knowledge but also a sense of community and shared curiosity. I am grateful for the opportunity to attend to the training school. Huge thanks to the organizers, namely Zuzana Kopáčová, David Spáčil, Vojtěch Nosek, Tomáš Chlup, Jiří Unger and Martin Koštál for their preparation and guidance throughout the week.

I wholeheartedly recommend it to anyone eager to expand their understanding of photogrammetry, 3D modelling, and the digital preservation of archaeological heritage.