

Module Assessment

3D Recording and Documentation & 3D Modelling and Reconstruction

Fictional Setting: The Institute of Archaeology of the University of Cambridge want to create a 3D print of an aqueduct for their student collection. As they do not have a department on Digital and Computational Archaeology, they have asked you to help them out. The model of the aqueduct should be created within an already existing landscape and should also be textured (the 3D print is coloured). The university provides you with the landscape model as a Cinema4D file. You don't have to take care of the transformation of the model into a printable format, as this will be done by another department! All you must do, is to create **a reconstruction of a Roman aqueduct and texture it**.

Additionally, the university asks you as an expert in Digital and Computational Archaeology to also explain to the students the difference between Structure from Motion and Reflectance Transformation Imaging in a student-friendly way. As we want to help each other out, you are also tasked to provide a one-page handout for both technologies each.

To complete this task:

a) Create a 3D digital reconstruction

Your task is to create a reconstruction in the provided landscape model and to research possible sources. The approx. dimensions are provided in the landscape model, where a "reference object" is placed. Your aqueduct should cover more or less the dimensions of that object. You can delete the "reference object" (green) after you do not need it anymore. You should produce a well-structured and textured 3D object. You do not have to texture the landscape, only your reconstruction. Please consider, that you should create a solid reconstruction with sources and a reconstruction protocol (see part b). Save all the Cinema4D-files created during this step in one folder that can be opened on another computer without missing files (e.g. textures). Utilize the "Save with assets..." function.

b) Create a short online blog

To retrace your steps during reconstruction (part a), create a free online blog and document your progress every day you work on it. You should write a short text describing what you achieved each day and provide some screenshots or renderings of your work. Provide a reconstruction protocol in a way, that your supervisor can retrace your decisions and sources until you reached your final result. This blog should function as a protocol and the posts should be around 200 words. Your final post should provide the 3D model itself, so that one can explore your result interactively online.

c) Create two handouts

As described above, you should create two handouts (1 page each) that summarize and describe the technologies (Structure from Motion and Reflectance Transformation Imaging) as well as provides further literature. Please consider, that these documents are meant for first year archaeology students, that have never heard of these technologies before. It shouldn't be too simple, but also not too overwhelming.

d) Submit a full report on your work

For the 3D reconstruction, create a report (in addition to the informal blog) which allows to understand your choices:

- a) Explain the process and the problems of creating the 3D reconstruction in the first step (a).
Why did you choose the sources you did? What have you learned during the reconstruction?

Where do you see the weaknesses? Report also on the theoretical background of the 3D reconstruction. Provide the sources used and the problems faced during reconstruction.

- b) Discuss the theoretical and ethical implications of the 3D reconstruction. What issues need to be considered when presenting the reconstruction as a 3D print in the collection (if at all)? What would be your suggestion for an accompanying description of the print?

The report should be between 3.000 and 4.000 words, use citations (with exact pages) and have a clear structure. You can write in either German or English. Please use the “Formale Deckblatt für Hausarbeiten”¹ of the Institute of Archaeology (only first page). You can attach both handouts as an appendix to the report.

You need to submit the final versions of the 3D model, the online blog as well as the report (printed and digital as a word document) by **March 15th, 2024**. Please save and send not only the results, but also all the files that you created with different software programs. All digital files should be submitted on a CD or DVD for archiving. Also provide an offline version of your blog on the CD/DVD. (No files should be missing; please provide a full project folder that includes all files.)

¹ https://archaeologie.phil-fak.uni-koeln.de/sites/archaeologie/Dokumente/Studium/DeckblattErkla__rungHausarbeiten_2019_HP_neu.pdf