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Impacts of Technology on Cultural Heritage

Session

3D Documentations and Computer-Aided Analysis Methods in Archaeology

Chairpersons:

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Description and Motivation:

In this session, experiences and developments related to the use of platforms such as UAVs (Unmanned Aerial Vehicles) and UUVs (Unmanned Underwater Vehicles) for capturing images and other sensor data can be presented. Practicable solutions for reliable georeferencing are still being sought, particularly in the field of underwater archaeology. A key aspect of the session will be the software tools used to process, store and analyze the 3D data. Another interesting question here is the extent to which new “AI-supported” methods can support the analysis process (NeRF, Gaussian splatting, CNN, LLM...).

The biggest challenge is to ensure data quality, transparency and reproducibility of research processes and results. Although proprietary software packages have facilitated the process of creating 3D models, they often seem like black boxes. In addition, high license fees represent a barrier to entry that limits the reproducibility of research results. We are therefore particularly interested in developments and advances in open-source software and workflows for creating, analyzing and publishing 3D data.

Another topic under discussion is the development of suitable tools and data structures for working with and storing 3D models and related information.

Nowadays, most 3D models of archaeological sites and cultural heritage assets have a certain presentation character: They provide a good visual impression of the object of interest, but for further analysis, most studies rely on derived products such as plan drawings and orthophotos, which are easier to annotate and analyze. We are interested in innovative ways to harness the potential of 3D data for the documentation, analysis, and monitoring of archaeological and cultural heritage sites in the 3D environment. Case studies could, for example, focus on the classification and annotation of 3D models and their linkage with data structures for documenting qualitative and quantitative information.

Target Audience:

This session invites contributions on topics such as:
- Complete workflows and case studies,
- Decision/planning support processes for excavations and
- Cultural heritage documentation campaigns,
- Georeferencing and quality assurance,
- processing pipelines and workflows for 3D reconstruction,
- AI-supported evaluation methods of the 3D data
- in particular FOSS solutions,
- Monitoring: continuous excavation and recording for documentation, conservation and long-term studies, data management solutions for recorded data, annotation and integration of 3D data with qualitative data and long-term accessibility of 3D data, innovative applications for the analysis of 3D data for archaeological research questions.

Contributions and perspectives are welcome and can address the topics or further improve established practices and processes.

Keywords:

3d documentation, 3d reconstruction, ai-supported evaluation

Click here to make a submission!