

PROGETTO**Supervisore:** Francesca Pola**Titolo:** **Visitor-centred key enabling technologies for innovative solutions in stratified historical-artistic sites****Descrizione del progetto** (Numero di caratteri inclusi spazi: 2.000-3.000):

The project is intended to develop research dedicated to Key Enabling Technologies (KET) for the knowledge and enhancement of the historical-artistic heritage, an area for which they constitute a significant potential for transformation and innovation. KETs such as Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR) can, for example, create educational and engaging conditions for visitors, activating unprecedented ways of using artworks and historical-artistic contexts; as well as Machine Learning (ML) techniques can help understand and predict visitor behaviour and interests, for the conception of highly personalized experiences.

The research will mainly focus on the case study identified in Villa Pisani in Bagnolo di Lonigo (VI), an early masterpiece by the architect Andrea Palladio, UNESCO heritage site and pole of cultural events and initiatives, focused on the multi-year program of contemporary art exhibitions. The Palladian villa represents a unique site of its kind, a place of multiple stratifications: on the one hand, that linked to the various historical moments in the life of the building with all its iconic and symbolic values; on the other, that connected to contemporary art exhibitions conceived in close inspirational correlation with it, which often translate into permanent art installations. Villa Pisani thus represents an emblematic example of a stratified site, unique in its kind and particularly representative for its historical, artistic and cultural value in continuous transformation.

The objective of this research, which in particular foresees the collaboration with the Associazione Culturale Villa Pisani Contemporary Art, is to prepare scenarios and contents, for applied developments of KET in the context of Villa Pisani, aimed at improving the visitor experience and the accessibility of the site in an innovative key. The study will mainly focus on the study of AI, VR and AR, adopting a "human-centric" approach, i.e. analysing the possibilities offered by these technologies understood as centred on the real and potential visitor (in online, onsite, hybrid contexts and their potential perspectives in relation to the metaverse). The intention is thus to contribute to envisioning technological solutions that are based on in-depth knowledge of the complex stratified historical-artistic identity of the place, and that meet the specific needs of visitors to this site, guaranteeing an experience of knowledge that is both informative, engaging, inclusive and sustainable. The collection of qualitative and quantitative data will have a particular focus on "data quality", which is in itself essential to improve the predictive accuracy and value generation of KET projects. The research proposal is intended to bridge the gap between technology and historical-artistic heritage, in order to identify innovative solutions that enrich the visitor experience and contribute to the development of best practices for an inclusive and sustainable enhancement of the historical-artistic heritage.

Competenze da acquisire dal dottorando (Numero di caratteri inclusi spazi: max 600):

The research products and related skills to be acquired which are required of the PhD student will be both of a scientific nature, i.e. specialized publications and articles, and related to the particular sector of technological innovation related to historical-artistic heritage with which he/she/they will interact, such as, for example, the maturation of decision-making processes and annexed tools functional to development needs of connected to the Italian and European historical-artistic heritage constituted by the typology object of the research.

Bibliografia (max. 15):

- Bozzelli, Guido, Antonio Raia, Stefano Ricciardi, et al. "An Integrated VR/AR Framework for User-Centric Interactive Experience of Cultural Heritage: The ArkaeVision Project." *Digital Applications in Archaeology and Cultural Heritage* 15 (December 2019): e00124.
- Díaz-Rodríguez, Natalia, and Galena Pisoni. "Accessible Cultural Heritage through Explainable Artificial Intelligence." In *Adjunct Publication of the 28th ACM Conference on User Modeling, Adaptation and Personalization*, 317–24. Genoa Italy: ACM, 2020.
- Fanini, Bruno, Alfonsina Pagano, Eva Pietroni, et al. "Augmented Reality for Cultural Heritage." In *Springer Handbook of Augmented Reality*, edited by Andrew Yeh Ching Nee and Soh Khim Ong, 391–411. Springer Handbooks. Cham: Springer International Publishing, 2023.
- Garzia, Fabio. "The Fellini Museum of Rimini in Italy and the Genetic Algorithms-Based Method to Optimize the Design of an Integrated System Network and Installations." *Heritage* 5, no. 2 (June 20, 2022): 1310–29.
- Gines, Jose Luis, and Carlos Cervera. "Computer Vision Algorithms Performance in Architectural Heritage Multi-Image Based Projects. General Overview and Operative Evaluation: The North Tower of Buñol's Castle (Spain)." *SCIRES-IT - SCientific REsearch and Information Technology* 11, no. 2 (December 30, 2021).
- Hutson, James, and Piper Hutson. "Museums and the Metaverse: Emerging Technologies to Promote Inclusivity and Engagement." In *Application of Modern Trends in Museums [Working Title]*. IntechOpen, 2023.
- Nikolakopoulou, Vasiliki, Petros Printezis, Vassilis Maniatis, et al. "Conveying Intangible Cultural Heritage in Museums with Interactive Storytelling and Projection Mapping: The Case of the Mastic Villages." *Heritage* 5, no. 2 (May 18, 2022): 1024–49.
- Pisoni, Galena, Natalia Díaz-Rodríguez, Hannie Gijlers, et al. "Human-Centered Artificial Intelligence for Designing Accessible Cultural Heritage." *Applied Sciences* 11, no. 2 (January 19, 2021): 870.
- Resta, Giuseppe, Fabiana Dicuonzo, Evrim Karacan, et al. "The Impact of Virtual Tours on Museum Exhibitions after the Onset of Covid-19 Restrictions: Visitor Engagement and Long-Term Perspectives." *SCIRES-IT - SCientific REsearch and Information Technology* 11, no. 1 (July 2, 2021).
- Solima, Ludovico. *Le parole del museo: un percorso tra management, tecnologie digitali e sostenibilità*. 1. ed. Roma: Carocci, 2022.

Periodo di studio e ricerca in Impresa

Il periodo per un minimo di 6 mesi fino a un massimo di 18 mesi, anche non continuativi, è **obbligatorio**.

Il dottorando svolgerà il periodo **OBBLIGATORIO** presso RAD HUB srl per n 6 mesi

Sede legale:

Paese	Italia
Città	Desenzano del Garda (BS)
Indirizzo	Via Ticino 10/A

Sede operativa principale, se diversa dalla sede legale, presso cui è svolta l'attività di ricerca del dottorando

Paese	
Città	
Indirizzo	

Periodo di studio e ricerca all'estero

Il periodo per un minimo di 6 mesi fino a un massimo di 12 mesi, anche non continuativi, è **obbligatorio**.

Il dottorando svolgerà il periodo **OBBLIGATORIO** presso HAWK - University of Applied Sciences and Arts per n 6 mesi

Sede legale:

Paese	Germania
Città	Hildesheim
Indirizzo	Bismarckplatz 10/11

Sede operativa principale, se diversa dalla sede legale, presso cui è svolta l'attività di ricerca del dottorando

Paese	
Città	
Indirizzo	

I periodi di cui sopra sono distinti e da svolgere presso soggetti distinti.

Entro fine ottobre 2023 sarà necessario fornire una lettera d'impegno degli enti a ospitare il dottorando (il facsimile della lettera sarà fornita dall'Ufficio Dottorati).