

AVI-CH 2022: Workshop on Advanced Visual Interfaces and Interactions in Cultural Heritage

Preface

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Abstract

AVI-CH is the 14th workshop in the series of PATCH workshops, since 2007 and the 4th in a row at AVI. It is the meeting place for researchers and practitioners focusing on the application of advanced information and communication technology (ICT) in cultural heritage with a specific focus on user interfaces, visualization and interaction. This year, eight papers were submitted by researchers from Greece, Italy and Israel. All were accepted.

Keywords

advanced visualization, user interface, cultural heritage

1. Introduction

The rapid development of ICT and the Internet has enabled cultural heritage (CH) institutions to provide access to their collections in multiple various ways, both onsite and online, and to attract even wider audiences than those that visit the physical museums. In parallel and part of the above, there is an enormous growth in user interfaces and in information visualization technologies. The range of interfaces is growing by the day – from tiny smartwatch screens to wall-size large public displays. Regarding virtual advanced interfaces, there are several successful examples, for instance, applications of 3D technologies for virtual and even physical museums.

The use of (web) 3D in CH promotion allows the general public to live immersive experiences in virtual, reconstructed locations, like ancient towns and locations, and to visit existent, but remotely located locations, such as worldwide cultural institutions (such as Google Arts &

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Culture Project ¹). For preservation purposes, web 3D provides scholars and CH professionals with a way to consult and maintain visual repositories of real exhibits, with the possibility of visualizing, comparing and studying 3D digital equivalents of real artworks physically situated in different locations. CH is one challenging domain of application for such novel ICT technology. CH is ubiquitous – just look around you.

There is an abundance of CH related information available, about almost every object we can think of. How can we access and enjoy this information in a ubiquitous computing scenario? The visitor location is a key aspect of context-aware information delivery, in addition to the ability to adapt the delivery to the environment. Advanced and natural human-computer interaction is another key factor in enabling access to CH. Visual interfaces, whether they are tiny mobile screens or large wall-mounted displays, can all be part of a ubiquitous CH infrastructure, where information can be personalized and displayed/projected on screens or overlaid on real objects and advanced forms of interaction could be experimented with (e.g., gestural interaction, augmented interaction, vocal interaction, etc.).

Following the wealth of studies and publications in recent years focusing on exploring the potential of novel technology to enhance the CH experience, the success of previous AVI-CH workshops [1, 2, 3] (that yielded a follow-up special issue focused on advanced visual interfaces for CH), the goal of the workshop is again to bring together researchers and practitioners interested in exploring the potential use of state-of-the-art advanced visual interfaces in enhancing our daily CH experience.

2. AVI-CH Papers

Eight papers were presented at the workshop and are fully reported in the CEUR-WS proceedings [4]. They ranged in type (position paper, short paper, long paper) and topic. A brief discussion on them follows.

The papers that were submitted to the workshop addressed a diversity of topics, but one aspect seems to be of mutual interest due to the impact of the COVID-19 pandemic; it is the virtual and hybrid CH visit. A special focus was on mixed museum visits. Antoniou [5] considered the contextual model of museum learning to describe possible scenarios of use for mixed cultural visits. She suggested extending the models of Falk and Dierking [6, 7] to also include the mixed visit modality, including synchronous and asynchronous visits. Related to that, De Carolis et al. [8] explored the potential of using virtual assistants as visitors' guides in a virtual museum. Their initial evaluation results show that the visitors were satisfied with the overall concept and especially with the possibility to interact with the guide. Following the same path, Vayanou et al. [9] focused on the social aspects of the virtual reality (VR) experience in a physical setting, where users wear a head-mounted display (HMD) and walk in a virtual exhibition. They enabled visitors, represented by avatars, to interact with each other during the visit, while also experimenting using the volume of the voice to represent the distance between the visitors. While they noted that there are many open issues to explore in order to fully harness the potential of the medium, still, they concluded that social VR can be a key motivation for user engagement with virtual museums, and even attracting new audiences.

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Now, back to the physical world, a few works focused again on the physical setting. Origlia et al. [10] integrated the virtual and physical spaces by suggesting the use of VR to introduce the visitor to a complicated and information-rich CH site. They developed a complex 3D model of the CH site and enriched it with semantic maps that enabled visitors to explore the CH site before the physical visit. Their evaluation revealed that visitors that experienced the pre-visit setting tended to be able to detect more target items during the visit, than the control group, indicating a successful application of the design concepts to the technological installation that was designed. Petousi et al. [11] also aimed at integrating the virtual world into the physical world, by using role-playing gaming combined with storytelling as a tool to promote historical understanding, meaning-making, and empathy in an informal-education CH context. They presented their vision for a tabletop role-playing game-based museum kit and aimed to explore further the needs of such a hybrid museum kit working closely with museum professionals, educators, and other CH experts as well as experienced game masters, towards prototypes to be iteratively co-designed and tested.

The social aspect seems to be another issue that attracts research attention, from various aspects. The work of Vayanou et al. [9] about social interaction in a physical-virtual setting was already presented. Chrysanthi et al. [12] proposed a novel synthesis of proxemic interaction, sensor-based technologies, and narrative design and discussed the case of building an interactive exhibition for traditional professions surrounding the case study of olive oil production. They designed a CH visit where visitors can individually explore parts of an exhibition while being brought together in specific points of interest, experience a common narrative, and are prompted to interact. A completely different point of view while still considering social aspects is the work presented by Nasrolahi et al. [13], who proposed a model to engage the community in all the stages of the management of CH sites in their region. The paper describes the iCommunity model, which is a method for community engagement process in the Bisotun world heritage site by using a web-app application as a tool. The idea was to encourage different stakeholders to take active roles in decision-making processes related to management and conservation. The authors envisaged that the model and application would provide sufficient information and clear data for direct and indirect education of users and that the data shown in the application would also help people to understand the reasons behind the implementation of planned activities by taking part in comments and talking with experts or professionals. Moreover, they envisaged that the outcomes would help to understand the real needs and interests of different stakeholders in the Bisotun world heritage landscape zone.

Finally, completely related to the onsite, physical, and outdoors setting is the work of Kuflik et al. [14]. Their focus was on visitors' location, which is also important for most of the applications mentioned earlier, including [12, 13, 10, 9, 11]. The paper presented an application for supporting urban navigation in an outdoors CH setting using smart glasses, demonstrating the potential of the technology and pointing out practical challenges.

3. AVI-CH Summary

The papers that were accepted for presentation at AVI-CH 2022 reflect the change from virtual visits that characterized the era of COVID-19, back to the onsite and physical visits of the

post-COVID-19 era, while still preserving and integrating some lessons learned during the pandemic. The main aspect is the integration of VR into the CH visit, whether completely virtually or as a hybrid/mixed experience. The immense changes in the way people experience CH from the pandemic onwards are reflected in the works of the workshop. Different models of CH visits were (re)introduced, ways to handle less human contact were explored, as well as the interplay between the physical and the digital. At the same time, the need for enhancing the sociality of the visits became also apparent since COVID-19 made us all reflect on the importance of interactions (digital, social, interpersonal, etc.) during CH experiences.

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