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International Congress on Cultural Mapping: Linking Heritage (Tangible and Intangible) and Creative Tourism

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Brief resume:

Sara Eloy is the Director of the Information Sciences, Technology and Architecture Research Center (ISTAR-IUL) and Assistant Professor at the Department of Architecture and Urbanism ISCTE-IUL in Lisbon where she teaches Architectural Computer Aided Design, Virtual and Augmented Reality and Research Methodologies. Eloy's research focuses on the use of computer aided design and visualization systems for architecture. She has published several works and participated in research projects on the topic of mixed, virtual and augmented reality applied to the architecture process and visualization of the building fabric of cities. With such technologies Eloy also aims at evaluating users' space perception and analyze the impact that the building environment has on society. She has been researcher and advisor of several projects in this topic (André, Eloy, Resende, Curado, & Dias, 2016; Eloy, André, Resende, & Dias, 2016; Gaspar et al., 2016; Mendonça, 2014; Raposo, Eloy, & Dias, 2017). More info: <http://istar.iscte-iul.pt/dls/space-visualization-and-interaction/>

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Title:

Mapping architecture through digital technologies

In this presentation I will present the research developed lately in ISTAR-IUL regarding the use of digital technologies, namely Augmented Reality (AR), Virtual Reality (VR) and Spatial Augmented Reality (SAR) to explore architecture contents, namely the ones focusing cultural tourism, through several perspectives.

The goal of this research is to combine knowledge from several disciplines, including History of Architecture and the City, Architecture in the broadest sense, Information and Communication Technologies (with an emphasis on Computer Graphics) and Tourism studies. These fields have been integrated in the development of a common base of information on the architecture of cities. In general, the main goals of our research are: i) to create an information system that allows access to digital information useful for the understanding of the built and urban areas; ii) to increase the knowledge about the built environment through the use of more informational media; iii) to collaborate with IT researchers in the development of real VR and AR implementations for the city; iv) to enhance collaboration between education architecture and multimedia students through the use and development of new technologies and processes.

In the book *Theorizing Digital Cultural Heritage*, Fiona Cameron and Sarah Kenderdine (2007), present a compilation of papers that discuss the mutual transformation that emerging digital technologies and heritage organizations cause on each others due the current trend of combining both. In this line of thinking the research we have been doing contributes to the discussion on the combination between the digital technologies and the elements and places they refer to. Both AR and VR tools have been developed by our team to enhance a better understanding of architecture, namely the cultural heritage, to students and the broad public. All these technologies have been presented in exhibitions on cultural heritage such as the "Escola de Chicago: arranha-céus digitais" exhibition in 2014 at ISCTE-IUL where digital technologies allowed

visitors to observe the story of such period in an innovative way. In this exhibition several digital tools developed were presented. Semi-immersive Virtual Reality enabled participants to explore the downtown city of Chicago by navigating in a 3D model (Coroado, Pedro, D'Alpuim, Eloy, & Dias, 2015). Individual buildings representative of the period, as the Old Colony, were presented with an AR app (ARch) that enables users to navigate into these buildings using several functionalities as hide/show parts of the building (Mendonça, 2014). Spatial Augmented Reality was used to augment physical models at the scale 1:10 that were positioned in the exhibition as a complement to the ones digitally presented by AR (Velhinho, 2014). The mobility and ease of use enabled by the augmented reality apps lead us to continuing using this technology for creating solutions of visualization of cultural information targeting tourists. In this scope we developed an app to be used for the augmented visualization of paper maps (ARch4maps) (Gaspar et al., 2016). In this case the Lisbon map of the Prémios Valmor was used and the awarded buildings were mapped by AR in the physical map. SeeARch is a recent AR app developed to be use outside while e.g. a tourist is walking through the city and aims to acquire information on buildings and places. All the developed apps were tested (satisfaction and usability tests) and they use of digital visualization tools proved to be of outmost interest for linking city knowledge and visitors and therefore heritage and cultural tourism.

References

- André, P., Eloy, S., Resende, R., Curado, L., & Dias, J. (2016). Exposição “Escola de Chicago: Arranha-ceús digitais.” In *E-learning & tecnologias digitais. Experiências de Inovação Pedagógica no Ensino Superior*. Retrieved from http://iptel-el.ie.ulisboa.pt/?page_id=266
- Cameron, F., & Kenderdine, S. (Eds.). (2007). *Theorizing Digital Cultural Heritage. A Critical Discourse*. MIT Press.
- Coroado, L., Pedro, T., D'Alpuim, J., Eloy, S., & Dias, M. S. (2015). VIARmodes: Visualization and Interaction in Immersive Virtual Reality for the. In *Proceedings of the 33rd eCAADe* (Vol. 1, pp. 125–134).
- Eloy, S., André, P., Resende, R., & Dias, J. (2016). See architecture through digital technologies . In *CREATE ACHI CONFERENCE*. Retrieved from http://www.create.humanities.uva.nl/wp-content/uploads/2016/10/Programmaboekje_conference_def.pdf
- Gaspar, F., Gomes, S., Resende, R., Eloy, S., Dias, M. S., Lopes, M., & Faria, N. (2016). ARch4maps: a mobile augmented reality tool to enrich paper maps. In *Proceedings of the Symposium on Simulation for Architecture and Urban Design (SIMAUD)* (pp. 179–182). London. Retrieved from <http://www.scs.org/simaud>
- Mendonça, N. (2014). *Arquitetura ou Revolução Learning from the satallite Expor Arquitetura Desmontando-a com Realidade Aumentada*. Instituto Universitário de Lisboa (ISCTE-IUL).
- Raposo, M., Eloy, S., & Dias, M. S. (2017). Revisiting the city, augmented with digital technologies: the SeeARch tool. In *Proceedings of the REHAB 2017 conference*. Braga. Retrieved from <http://rehab.greenlines-institute.org/>
- Velhinho, G. (2014). *Projeção Vídeo Mapping como ferramenta de exposição de arquitetura*. Instituto Universitário de Lisboa (ISCTE-IUL).