Presenting the Joint workshop on Games-Human Interaction (GHItaly21) and Multi-party Interaction in eXtended Reality (MIXR)

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This paper shortly summarizes the research lines underlying the joint workshop held at CHItaly 2021 with title "Joint workshop on Games-Human Interaction (GHItaly21) and Multi-party Interaction in eXtended Reality (MIXR)", and sketched the expected contributions.

CCS Concepts: • **Applied computing → Arts and humanities**; • **Human-centered computing → Collaborative and social computing systems and tools**; **Mixed / augmented reality**; • **Information systems → Multimedia content creation**.

Additional Key Words and Phrases: Game Design, Game Experience, Extended Reality, Multiparty Interaction

1 INTRODUCTION

The present research trends highlight two symmetric and apparently contrasting approaches. An increasing over-specialization focuses on increasingly narrow aspects of a common area, especially after the general problems are tackled and solved. The new challenging aspects can represent in themselves a valid research topic. However it is also possible to observe the opposite process, where formerly separated areas converge towards a joint achievement of common goals. The joint workshop whose contributions appear in this volume represents an example of such convergence. As a matter of fact, the two research lines represented by game-human interaction and multi-party interaction in extended reality seem to naturally converge. For instance, this happens in the design and implementation of immersive multiplayer/multi-party games, as well as in the design and implementation of serious/applied games for collaborative learning and training in an extended reality. Along this line, it is possible to envision several applications in different fields that fuse the results from the two areas. This fully adheres to the spirit of the pioneering work by Milgram et al. [1]. When Graphical User Interfaces (GUIs) were still in their infancy, this visionary work already

Joint workshop on Games-Human Interaction (GHItaly21) and Multi-party Interaction in eXtended Reality (MIXR21), July 12, 2021, Bolzano, Italy

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devised a mixed world with borders of reality and "digitality" fading into each other. Given these observations, it was natural to fuse the two workshops in order to create a common ground of scientific growth and discussion.

2 GAMES-HUMAN INTERACTION (GHITALY21)

Nowadays, the design and implementation of video games and their applications, from pure amusement to serious games, fascinate researchers and attract contributions from a broad group of disciplines. These range from pure technology to arts and humanities. The technological advances allow more and more sophisticated application scenarios than mere exercise of speed and ability. New sensors and more sophisticated software applications allow to provide an increasingly complex cognitive experience and a feeling of embodiment that goes beyond the virtual reality technological aspects. Video games have become and must be considered as intrinsically multidisciplinary and conceptually complex artifacts, that require a suitable blending of many different expertise in very different scientific and technological areas. As for the previous editions, the 4th Workshop on Games-Human Interaction (GHItaly21) aimed at representing a meeting venue for scholars from many different disciplinary areas, in order to set up a common ground on the topics related to all the steps of the creation of video games. The quality of the provided User eXperience (UX) is the main goal to achieve and the main parameter to evaluate. The organizers hope that the workshop has inspired a constructive exchange of ideas, and development of new trends in HCI applied to the design and production of video games.

3 MULTI-PARTY INTERACTION IN EXTENDED REALITY (MIXR)

XR, or eXtended Reality, is an umbrella term that encompasses the areas of AR, VR, and MR. The strongest emphasis is on immersiveness, multimodality and presence. As video game design, also XR is a multidisciplinary field incorporating subjects such as computer science, psychology, cognitive science, and digital humanities. Within XR, collaborative environments are especially growing, as can be seen by the number of social VR worlds available today. Most of these environments focus on graphical aspects, and to not fully take advantage of multimodal/multi-party design. As a matter of fact, interaction in these environments is largely limited to text chats and, in a few systems, to voice interaction. The principles of Social Signal Processing (SSP) and Affective Computing (AC) can support deeper and more meaningful engagement and interaction in XR. In this context, the simultaneous one-to-one and one-to-many interactions that establish and evolve over time, namely Multi-party (group) Interaction in XR, represent an especially complex open challenge in SSP/AC. Nowadays, people are increasingly meeting remotely through teleconferencing tools for practical reasons (e.g., working and living abroad). This calls for exploring Multi-party Interaction in XR settings. In addition, MIXR embeds Multi-party Interaction in XR by investigating how social science theories and models of Multi-party Interaction can be applied in or possibly adapted to XR scenarios; by developing techniques for collecting multimodal data of Multi-party Interaction; by promoting interdisciplinary discussion between scholars in Computer Science and Social Sciences on XR, SSP, AC and Multi-party Interaction.

4 INTRODUCTION TO PAPERS IN THE VOLUME

This volume of CEUR proceedings will maintain the union of the two topics, namely Games-Human Interaction (GHItaly21) and Multi-party Interaction in eXtended Reality (MIXR).

4.1 GHItaly21

The first paper presented at GHItaly21 is titled "How to design taskification in video games. A framework for purposeful game-based crowdsourcing" and is authored by Anna Quecke and Ilaria Mariani. The paper deals with the embedding in gamified applications of tasks that are "useful" for research purposes. When these tasks are intended to be carried out by non-technical users, or by users not directly involved in the research, the possibility to increase their interest and engagement is very important. The more or less seamless integration of the tasks into suitable established game experiences, allows to target players and direct them to perform the designed crowdsourcing activity and to obtain better and more reliable data. The paper presents a framework to "taskify" games with crowdsourcing activities.

The second paper is "Physical or On the Cloud: Play with IoTgo and Design Smart Things" by Rosella Gennari, Alessandra Melonio, Mehdi Rizvi and Maristella Matera. The paper focuses on strategies and tools to engage end-users in the design of smart things and in particular to reflect on the possible risks entailed by the safety risks due to their physical nature or data they exchange. This paper reports on the latest evolution of the IoTgo toolkit for engaging different end users, and especially teens, and presents a case-study across a pandemic with IoTgo used by teens and adults.

The following paper by Marie-Luise Meier and Mattia Bellini is titled "Framing the Dilemma: The Influence of Immersion in Ethical Choice Making". It deals with ethical choices, which are present in a number of video games and allow the players to test their ethical values. However, the authors' consideration that inspires the work is that the ethical choices, when related to actions in a videogame, are not necessarily driven by rationality or ethical thinking. In particular, immersion can influence actions, if the gameplay is far from real situations. In particular, game designer's default choices can have a significant impact on the player's behavior and possibly distort it with respect to the "normal" one. The authors also take into account the loss of self-consciousness afforded by imaginative immersion and gameflow and reflect on the implication of these aspects on players' ethical choice-making.

The last paper in the part of the joint workshop proceedings belonging to GHItaly21 topics is "Interactive systems as storyworlds. An approach for building coherent interactive narratives" by Leonardo Codamo and Ilaria Mariani. The paper builds on the difference of interactive game artifact with respect to a fixed narrative sequence. In the former case, the player can influence the course of events according to ability and experience. The paper reports the results of a study investigating the scope of Interactive Storytelling with a narrative approach. Starting from the construction of an imaginary world, it is possible to trace a framework for the creation of interactive narratives and then apply it on a pre-existing story: The Mask of the Red Death by Edgar Allan Poe, turning it into an interactive narrative. The original narrative and the interactive one are tested by two groups of users, to evaluate the potential of the interactive narrative in terms of immersion and participation.

4.2 MIXR

The part of the joint workshop devoted to Multi-party Interaction in eXtended Reality (MIXR) includes two papers. The first paper is authored by Maurizio Mancini, Jake Spreadborough, Laura Maye, Beatrice Biancardi, and Giovanna Varni. The title is "Interaction Fidelity vs User'sWorkload in a VR Environment: A Pilot Study" and it reports about a pilot experiment and preliminary analysis on how Interaction Fidelity, shaped by a combination of visual, auditory

and haptic modalities, can impact the user's workload. The study exploits a VR escape room environment. It consists of 5 puzzles to be solved in a pre-defined order. Actually, the pilot experiment focuses on one of these puzzles. The presented preliminary analysis shows that further investigation on the VR escape room environment is worth, that could provide depper insights on how IF influences workload also depending on the type of task.

The last, but not least, paper is this volume is "Evaluation of Multi-party Virtual Agents" by Reshmashree B. Kantharaju and Catherine Pelachaud. The paper deals with the experience of the Council of Coaches project, which aims to develop a tool to provide virtual coaching for ageing people to improve their physical, cognitive, mental and social health. The council consists of a number of Embodied Conversational Coaches (ECCs), each specialised in their own specific domain, which interact with each other and with the user. Relevant conversation topics are health and well-being and the aim of the conversations is to inform and motivate the users with regard to these topics. In order for the approach to be effective, it is important to develop agents able to handle the differences in individual goals and to overcome these differences to decide and achieve the group goal. The paper presents two evaluation studies conducted on the platform developed in the course of the project, whose aim is to evaluate the technical aspects of the prototype and the model of agents' non-verbal behavior, respectively.

We hope that the readers will enjoy this small but interesting group of papers, and that their discussion can spur new research and interests.

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