GUEST EDITORIAL PREFACE

Special Issue on Advances in Computer Entertainment

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SPECIAL ISSUE ON ADVANCES IN COMPUTER ENTERTAINMENT

This special issue of the International Journal of Creative Interfaces and Computer Graphics contains a selection of papers from ACE 2012, the 9th International Conference on Advances in Computer Entertainment (Nijholt et al., 2012). ACE is the leading scientific forum for dissemination of cutting-edge research results in the area of entertainment computing. The main goal of ACE is to stimulate discussion in the development of new and compelling entertainment computing and interactive art concepts and applications. Interactive entertainment is one of the most vibrant areas of interest in modern society and is amongst the fastest growing industries in the world. The 2012 edition of this conference was organized in Kathmandu, Nepal, and its theme was "Entertaining the Whole World".

Technology for entertainment design is becoming cheap or even extremely cheap. Designing interactive entertainment with commercial off-the-shelf technology (cheap sensors, Kinect, Arduino, etc.) is becoming regular business. How can we use this development to invent yet more new ways of harnessing the entertainment power of creating? One interesting issue is that maybe this development allows the conversion from consumers of entertainment into creators of entertainment, where the process of creating is possibly as important as the resulting product.

Designing games for educational purposes, in particular for children, is not a new topic of research. But now we also see a focus on the educational benefits of making games. With the tools that are becoming available, for example the tangible interface construction kits, children and middle school students can learn about basic engineering topics, computing technology (hardware and software design) and computational thinking. University students can learn about creating tangible interfaces

and creating interactive media in general. Artists can use such tools to create interactive art installations. Interactive art or interactive play systems can be developed for exhibitions or other events can be developed with a lifespan of days or weeks, rather than have such installations developed for a long-term museum exposition. Obviously, this development has benefitted from ideas about interface design and (physical) interaction technologies based on research efforts from the previous decades and commercialized by companies such as Microsoft, Nintendo, and Sony. On the other hand, Sploder (http://www.sploder.com/) is a game design platform for parents and teachers that allows the development of platform or shooter videogames. It is not difficult to imagine that such design platforms will be offered for (young) video gamers to make or personalize existing games. Creative gamers can take care that their preferences become available in the content and the challenges of the game (personalization) and can, in cooperation with other gamers, create new game content and challenges.

These views and approaches can be found in the papers of this special issue. More concretely, topics that are discussed are (1) finger gestures to configure multi-display environments using mobile devices, (2) tactile feedback that accompanies page turning and page turning animations for an e-reader device, (3) using visual and auditory cues to simulate a train ride, for example, in a foreign country, and (4) the automatic generation of game content and (platform) game levels.

PAPERS IN THIS ISSUE

Authors of some of the best papers from ACE 2012 have been asked to update and improve their papers to be included in this special issue. Four representative papers have been chosen that fit with the mission of the International Journal of Creative Interfaces and Computer Graphics.

The first paper of this selection is "Using Pinching Gesture to Relate Applications Running on Discrete Touch-Screen" by Takashi Ohta and Jun Tanaka. The authors present a way to configure (and reconfigure) a set of mobile devices (smartphones or tablet PCs) such that they can be used as a multi-display. Interestingly, the layout of the displays can be changed interactively, that is, while an application is running. Devices can be linked or connections can be broken using the touch screens of the devices and some intuitive finger gestures. However, devices are not only connected, but the displayed content also gets distributed over the displays. The design of the system is discussed and so are some applications. As an example, a graphical object can move between connected displays and having the possibility to interact with such an object or objects from many different displays can inspire the design of many interesting games. Such applications have been presented to audiences and audience feedback is also presented in this paper.

The second paper is "Paranga: An Electronic Flipbook that Reproduces Riffling Interaction", by Yuichi Itoh, Hiroyuki Kidokoro and Kazuyuki Fujita. One of the advantages of e-Books is of course the possibility to have our complete library stored on an e-Reader device, taking our library with us and extending it with new books wherever we are and whenever we want. We also have the possibility to annotate our collection with personal notes or comments from others. However, the physical sensation of reading a book, in particular texture and turning pages is not there. Obviously, page turning animations can be provided. This paper is devoted to adding physical page turning experiences to e-Book reading. The Paranga system that has been developed by the authors provides such experiences by embedding an e-Reader in a book-like device with a bending sensor and motor that controls a rotatable roller with pieces of real paper that provide not only auditory feedback, but also tactile feedback to the thumb of the reader. The speed of page turning depends on the bending of the book device and it can be stopped by thumb pressure. The page turning speed can be increased to a flipbook animation. User feedback obtained from interactive flipbook installations is reported.

The third paper in this issue is "A Virtual Train With a Container using Visual and Auditory Representation of Train Movement" by Kunihiro Nishimura and co-authors. The paper discusses an installation designed and developed for an art and designers exhibition. The installation consists of a transport container that has been converted into a (virtually) moving train compartment. This is done by providing auditory train information and visual landscape information. This latter information is displayed on the 'windows' of the compartment. This visual information is presented on displays that represent the moving train windows, that is, presentation on the windows is synchronized following the speed of the train. Visual and auditory information provides the virtual traveler with the feeling that he or she is really on a train ride and, depending on which video is presented, in various countries. The installation has been presented at a designers exhibition and was visited by about 13,000 visitors. The authors mention that the comments of audience members made clear that for many of them the 'feeling of a train ride' was indeed experienced.

While in the previous papers authors focused on integrating advanced sensor technologies with the development of application-dependent algorithms, in the fourth paper the focus is on the development of algorithms that can automatically generate new game content and game levels from an existing level. Algorithmic content generation offers content generation at runtime and an important consequence can be that the content can be personalized, either because the game has detected characteristics of the gamer or because the gamer gets a role in the creation process. In "Using graph-based analysis to enhance automatic level generation for platform videogames" by Fausto Mourato and co-authors the authors use a graph-based approach, where the graphs are related to a level structure and possible modifications of a level structure. This allows adjusting difficulty, inclusion of optional content and personalization. The emphasis is on videogames; in particular two-dimensional platform games such as *Infinite Mario Bros* and *Prince of Persia*. Experiments are under way to investigate their approach for multiplayer platform games.

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