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These are the proceedings of the 6th International ICST Conference on Intelligent Technologies for Interactive Entertainment, organized in collaboration with ICST and the European Alliance for Innovation and hosted by Columbia College Chicago.

The INTETAIN series of conferences thrives on interdisciplinary research with its focus on creativity applied to technology, AI, cognition, and models of engagement and play. At the core, we are in search of things that are meaningfully smarter and more playful. While we value this shared core, our interdisciplinary agenda faces a reality of different disciplines with different research priorities. The premises of each discipline, anchored in its own priorities, assume diverse impacts in society. The interdisciplinary challenge expands beyond cross-disciplinary academic research: it also includes applications and practices in creative industry, with its own professionals. At INTETAIN 2014 we took up this challenge as “Distributed Creativity.” The aim of this conference was to explore holistic pathways for advances in INTETAIN research to generate impact in two main areas: exploration of unforeseen creativity and its possible consequences in everyday life.

This pathway can be best examined by framing distributed creativity so as to invigorate the moments of convergence not only of topics but also of communities with diverse constituents engaged in emerging research and professional practices. Such constituents come from the communities of science and engineering, technology and entertainment industry, and civic and public engagement, drawing from a diverse range of competencies. The academic research community focuses on peer-reviewed research publications, and INTETAIN provides a forum for the scholarly publication and presentation of working systems. Creative professionals and applied practitioners are also interested in research venues to present their creative outcomes, yet they do not necessarily share the scholarly processes. The interdisciplinary agenda of INTETAIN, therefore, requires the conference to extend far beyond the presentation of its published research papers. The resulting INTETAIN 2014 conference program comprised a diverse spectrum of activities, including presentation of the research papers in this proceedings volume, creative workshops where participants actively engaged in brainstorming and role playing, interactive STEM learning, re-envisioning reading and writing, listening to music performances with telematics, and laughing at comedians’ technology-enabled capers.

This program was proudly hosted by Columbia College Chicago. In a truly integrated urban setting with Millennium and Grant Park for a front yard, Columbia College Chicago shapes the spirit of Chicago’s downtown South Loop with a population of over 10,000 students. Built on its heritage of creativity and innovation since 1890, Columbia College is the largest private nonprofit institute
in North America dedicated to higher education in creative practices, and offers Chicago’s downtown community a cultural home. Columbia College is naturally dynamic and agile, embracing its motto \textit{esse quam videri} on the move with a broad spectrum of creative practices overarching media, design, and fine and performing arts. The main venue of INTETAIN 2014 was in the Media Production Center designed by MacArthur award-winning architect Jeanne Gang. This cool industrial space frames the essence of creative productivity at scale, and is an ideal site for applications of intelligent technologies to interactive entertainment.

**Full Papers**

A selective subset of submitted papers were accepted for presentation as full papers at INTETAIN 2014.

Weintrop et al. discuss the challenge of developing suitable assessment techniques for computational thinking in STEM education. They utilize interactive tools in measuring the thinking and analytic skills empowered by visualization and experimentation with computational models.

“Collaborative Choreography” by Carlson et al. conceives technology as a collaborator, rather than a tool, for exploring the modality shifts from one representation to another. Then the data abstraction is presented to an agent in a choreographic system to support its engagement in a creative process.

Draschkowitz et al. report video analysis and machine learning applications to automate coaching in sports by predictive modeling. Video information extraction is parameterized for table tennis gameplay to train the system for measuring shot success with high accuracy.

“Choreographing Digital Water” explores synesthetic imagery between sound and visuals for live generative methods that can be used in interactive entertainment. Kim proposes the use of nonabstract visual elements for metaphoric extension of human performers. For the visual representation, the digital water is created by physically based water simulation and directed by musical instruments.

Rocca et al. present an optimized solution for a low-cost webcam application to estimate head orientation. Their marker-free method is based on 2D continuous tracking of the face but achieves its efficiency by leveraging the 2D information on a 3D head model by perspective-n-point solution and reference data.

Bos et al. report a experimental method and results to measure the sense of control of the users and the sufficient control for the task. The experiment addresses brain–computer interface performance by manipulating keyboard input for controlling a browser game. The authors demonstrate how both the behaviors and perception of players can be modified by artificial manipulation of the sense of control.

Cha et al. attempt to identify a value chain structure in the consumption of performing arts and social media usage. The authors describe the differences between low- and high-involvement groups’ behaviors and how the
high-involvement group actively changes the value chain structure from social networking to social capital by capitalizing the cultural experience.

Affective and semantic computing adds an emerging dimension into virtual drama. Zhang et al. describe semantic enrichment of dialogues by theme detection with trained documents, the use of latent semantic analysis, neural net models to predict the states of affect, and the usage of active learning in cases of uncertainly. The paper identifies improvements to an AI agent’s emotional and social intelligence.

Special Session on Humor in Intelligent Environments

A dedicated set of papers, curated by Nijholt, discuss the use of technology to mediate humor. The authors’ presentations range from theoretical AI frameworks to applications in performance practice demonstrated by professional comedians. The papers cover broad brushstrokes from the proposition of the sensor-actuator model for building a sense of humor in an environment, to analysis of humor in gameplay, to the presentation of a practitioner’s narrative toolkits and categorizations, as well as a demonstration of a simple speech recognition application in a virtual comedic setting. Speech synthesis and telepresence automation are presented as trending toward identities as additional performers. To accompany the scholarly presentation with live enlightenment, appearances are anticipated by Chicago’s renowned Second City comedy troupe and by comedians from Manchester, the UK’s seat of comedy.

Creative Showcases

The INTETAIN 2014 Creative Showcase session provided live demonstrations through which creative exploration was prototyped. Applications included body movement recognition applied to DJ performance, music and movement controlling simulated water patterns, tourism applications of drone technology, sound synthesis applied to real-time sonification of network activity, and speech recognition used in virtual stand-up comic character talkback. Demonstrations from the STEM education panel were also presented in the creative showcase.

Panels

The INTETAIN 2014 conference program included a series of panels that aim to close the gap between creative research and practice, and between academia and industry. The contributions of the various panels are outlined below.

Engaging Participants in STEM Education: Creating Meaningful Experiences with Interaction Design

Panelists discussed and demonstrated interactive technologies applied to STEM (science, technology, engineering, and mathematics) education. Projects included
a flowchart of the process of scientific inquiry, a worldwide telescope system applied to data from NASA Mars orbiters, and serious games that explores scientific issues including interpretation of data from deep core ocean drilling.

Immersive, Interactive, Real and Imagined Sonic Environments

The panel outlined a special session on audio. The session included a panel discussion, demos, and performance examples to understand the effect of “encountering the aural muse in imagined, implied spaces.” Various encounters include innovative microphone and 9.2 speaker array for 3D sound formats, a novel interactive performance paradigm based on a social agents simulation, compositional use of surround sound, movement analysis applied to hypermedia performances, distributed concert performance as a technology-mediated creative engagement, and possibilities for the audio dimension in a museum setting. In a live tele-performance, musicians at the University of Salford, UK, controlled their sounds’ spatial presence at the INTETAIN venue in Chicago.

RPGs as Knowledge-Creating Chronotopes

Emotional intelligence and role-playing games was a session organized as a distributed workshop model with floating panel members engaging each working group in discussion. The session advanced the bold premise that a knowledge base is an environment in which role-playing game participants can be emotionally engaged in creating knowledge evoking the use of emotional intelligence.

Radical Publishing: The Organization and Distribution of Art, Literature, and Information in the 21st Century

Citing developments over the past 50 years that have accelerated to radical change, practitioners from creative book-making and literary arenas presented the non-obvious implications of recent shifts in readable media economies of scale. Among these are concerns for identities of makers, editors, and distributors in the contexts of archival preservation, ownership, and changing modes of authorship. The value of immaterial property and the cognitive role of touch in the creative process connect the individual reader to the industrial proportions of these changes.

Creative Rumble

Modes of mediated storytelling and interactive delivery are an ever-moving target, with creative content perpetually outpacing algorithmic and computational support systems. Given industry practices where media technology both leads and follows the creation of expressive content, it is valuable for creative researchers to develop methodologies to substantiate their results through test cases relevant to professional creative practitioners in media making and storytelling. In this spirit, the final chapter of INTETAIN 2014 dove into a “Creative Rumble” where a Chicago-based creative media marketing-production company led a mash-up of group brainstorming sessions. We aim to produce branded media sketches about the INTETAIN 2014 contributions, to envision the possible products, services, and novel end-user experiences by applying the research ideas and demos presented during the conference. The result of this final chapter of
the program will hopefully serve to extend the impact of the INTETAIN community further beyond the conference, reflecting the core aims and values of the INTETAIN series of conferences.

April 2014

Insook Choi
Dennis Reidsma
Robin Bargar
The 6th International ICST Conference on Intelligent Technologies for Interactive Entertainment was jointly organized in Chicago, USA, by EAI, ICST, and Columbia College Chicago.

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