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Transactions on Edutainment IV
Preface

E-learning and digital entertainment techniques, tools and systems are becoming popular and can be found in many real-world educational applications in many countries. The driving force behind these technologies is the rapidly growing requirements of edutainment, especially from the perspective of the users. This has led to the increasing interest of researchers in this area. The articles in this issue give a rich overview of how edutainment technologies can be creatively used for training and education purposes.

The first 12 articles of this issue represent a selection of outstanding contributions from Edutainment 2010, the 5th International Conference on E-learning and Games, held in Changchun, China, in August 2010. The main purpose of this event is to facilitate the discussion, presentation, and information exchange on the scientific and technological developments in the emerging field of digital entertainment techniques and systems for education. These 12 papers concentrated on three aspects: e-learning system and applications, game techniques for learning, and virtual reality techniques for entertainment. They are closely related to the topics of this journal.

The first four papers cover e-learning systems and applications: “The Study and Design of Adaptive Learning System Based on Fuzzy Set Theory,” “Modeling Personalized Learning Styles in a Web-Based Learning System,” “An Emotional Agent in Virtual Learning Environment,” and “Lunar Surface Collaborative Browsing System for Science Museum Exhibitions.” The next four papers are on game techniques for learning: “Towards a Structural Model for Intention to Play a Digital Educational Game,” “Case Study of FISS: Digital Game-Based Learning for a Broad Range of Ages,” “Woodment: Web-Based Collaborative Multiplayer Serious Game,” and “Learning with Virtual Reality: Its Effects on Students with Different Learning Styles.” The subsequent four papers are about virtual reality techniques for entertainment: “Automatic Motion Generation Based on Path Editing from Motion Capture Data,” “Exploration of Metaphorical and Contextual Affect Sensing in an Intelligent Agent,” “Synchronizable Objects in Distributed Multimedia Applications”, “Anisotropic Cloth Modeling for Material Fabric.”

The last ten papers in this issue are regular papers, focusing on two main topics: virtual reality and game systems for learning, and animation and interaction for entertainment. In “A Virtual Reality Simulator Prototype for Learning and Assessing Phaco-sculpting Skills,” Kup-Sze Choi presents a virtual reality-based simulator prototype for learning phacoemulsification in cataract surgery. In “An Augmented Reality Nanomanipulator for Learning Nanophysics: The ‘NanoLearner’ Platform,” Florence Marchi et al. focus on the development and evaluation of an augmented reality nanomanipulator, called the “NanoLearner” platform, to be used as an educational tool in practical work for nanophysics. In “Fast Prototyping of Virtual Reality-Based Surgical Simulators with PhysX-Enabled GPU,” Wai-Man Pang et al. present their efficient approach in prototyping of a series of important but computation-intensive
functionalities in surgical simulators based on newly released PhysX-enabled GPU. In “Dance-Based ExerGaming User Experience Design Implications for Maximizing Health Benefits Based on Exercise Intensity and Perceived Enjoyment,” Alasdair Thin et. al. indicate that the game play mechanics and skill demands of the dance-based ExerGames limited the subjects’ level of physical exertion over the period of study. In “Learning Ultrasound-Guided Needle Insertion Skills Through an Edutainment Game,” Wing-Yin Chan et al. present a novel training system with the integration of game elements in order to retain the trainees’ enthusiasm.

In “Sketch-Based 3D Face Modeling for Virtual Characters,” Wei Jiang et al. propose a mapping mechanism on the basis of contour lines for the use of sketch-based interface in 3D face modeling and focus on how to map 2D sketchy features onto a 3D model. In “A Framework for Virtual Hand Haptic Interaction,” Xiaoxia Han et al. propose a framework for virtual hand haptic interaction, in which a virtual hand model simulates natural anatomy in its appearance, motion and deformation, and the feature of force feedback data gloves is reflected. In “Phone, Email and Video Interactions with Characters in an Epidemiology Game: Towards Authenticity,” Muriel Ney et al. show how four challenges faced by the designer of authentic games have been addressed in a game for an undergraduate course used in a medical school. In “A Real-Time Interactive System for Facial Make-up of Peking Opera,” Feilong Cai et al. offer a vector-based free form deformation (FFD) tool to edit patterns for facial make-up and, based on editing, the system creates automatically texture maps for a template head model. In “Design of Educational Games: A Literature Review,” Ting Wei et al. point out the balance and integration between educational characters and playfulness in educational games, and suggest limited research areas in the existing literature and possible further research in educational game design.

The papers in this issue represent a large number of techniques and application examples of edutainment. These verify the potential and impact of digital entertainment technologies on the education and training domain. We would like to express our appreciation to all who contributed to this issue. They are the authors of the papers, the reviewers, and the International Program Committee members of Edutainment 2010 for recommending high-quality articles for this issue. Special thanks to Yi Li, Ruwei Yun and Qiaoyun Chen from the Editorial Office in Nanjing Normal University, and to Wei Wang in Northeast Normal University. They put a lot of effort into contacting authors, managing the reviewing process, checking the format of all papers, and co-collecting all material.

May 2010

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This journal subline serves as a forum for stimulating and disseminating innovative research ideas, theories, emerging technologies, empirical investigations, state-of-the-art methods, and tools in all different genres of edutainment, such as game-based learning and serious games, interactive storytelling, virtual learning environments, VR-based education, and related fields. It covers aspects from educational and game theories, human-computer interaction, computer graphics, artificial intelligence, and systems design.

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