Transactions on Edutainment III
With great pleasure we would like to present the third volume of the journal *Transactions on Edutainment*. This journal, part of the Springer series *Lecture Notes in Computer Science*, is devoted to research and development in the field of edutainment. Edutainment, also known as educational entertainment or entertainment-education, denotes all forms of entertainment designed to educate as well as to provide fun. This approach is motivated by the growing demands on individuals for life-long learning and the need to integrate effective learning opportunities throughout life. As such, edutainment has attracted increasing interest in the last few years.

The first 12 articles of this issue represent a selection of outstanding contributions from *Edutainment 2009*, the 4th International Conference on E-Learning and Games held in Canada, in August 2009. The main purpose of the Edutainment conferences is the discussion, presentation, and information exchange of scientific and technological developments in the new community. These 12 papers cover mainly the topic of using games to stimulate learners’ learning motivation, i.e., learning by playing, including: “Engaging Kids with the Concept of Sustainability Using a Commercial Videogame—A Case Study,” “Doing It Right: Combining Edutainment Format Development and Research,” “Edutainment Robotics as Learning Tool,” “SoundTag: RFID-Based Wearable Computer Play Tool for Children,” “Do Improve Typing Skill but No Significant Difference Between Drill-Based and Game-Based Typing Software,” “Widget-Based Simulator for Testing Smart Space,” “Entertaining Education – Using Games-Based and Service-Oriented Learning to Improve STEM Education,” “Learning English Through Serious Games – Reflections on Teacher and Learner Performance,” “Motivational Factors in Educational MMORPGs: Some Implications for Education,” “A Distributed Multi-agent Architecture in Simulation-Based Medical Training,” “Designing a Trading Card Game as Educational Reward System to Improve Students’ Learning Motivations,” and “Sketch Learning Environment with Diagnosis and Drawing Guidance from Rough Form to Detail Contour.”

The following ten papers are regular papers. In “Application of Visualization in Virtual Endoscopy System,” Yanjun et al. developed an efficient algorithm to solve path planning based on distance transform. In “Design and Implementation of Virtual Museum Based on Web3D,” Zhang and Yang explain how to develop a Web3D-based virtual museum. In “Large Area Interactive Browsing for High-Resolution Digitized Dunhuang Murals,” Yuan et al. use a Gaussian pyramid structure on Dunhuang Mural arts and allowed visitors to interact with the system by gestures. In “Research of Autonomous Active Control for Virtual Human Based on Emotion-Driven Model,” Wang et al. create an emotion-driven virtual human on the smartphone. In “An XML-Based Interface Customization Model in Digital Museum,” Wang et al. propose an XML-based Web interface customization model which can be used to construct a digital museum. In “Animation as an Aid for Higher Education Computing Teaching,” Taylor and Pountney examine the potential use of animation for supporting teaching courses in UK higher education. In “Bringing Integrated Multimedia Content into
Virtual Reality Environments,” Sampaio and Rodríguez Peralta propose a solution for the integrated presentation of different kinds of media objects inside virtual environments based on the Graphical Engine OGRE. In “Virtual Reality House for Rehabilitation of Aphasic Clients,” Horváth et al. develop an innovative virtual reality house therapy, Virtual ELA®-House, for patients with language and speech disorders and cognitive neuropsychological disorders, e.g., aphasia, apraxia of speech, and neglect. In “Investigating the Effects of Educational Game with Wii Remote on Outcomes of Learning,” Ho et al. develop a health education-based game with the Nintendo Wii remote. In “Using Computer Games for Youth Development,” Yun et al. describe how to use games to assist students learning declarative knowledge, developing intellectual skills and psychomotor skill, and forming attitude structure.

The papers in this issue present a large number of application examples of edutainment, which gives more evidence of the great potential and high impact of edutainment approaches. We would like to express our thanks to all those people who contributed to this issue. They are authors of all papers, the reviewers of the regular papers, and the IPC of Edutainment 2009 for recommending high-quality to this new journal. Special thanks go to Yi Li, Ruwei Yun and Qiaoyun Chen from the journal’s Editorial Office in Nanjing Normal University: they put in a lot of effort in contacting authors, managing the reviewing process, checking the format of all papers, and collecting all the material.

October 2009

Maiga Chang
Adrian David Cheok
Zhigeng Pan
Abdennour El Rhalibi
This journal subline aims to provide a highly visible dissemination channel for remarkable work that in one way or another addresses research and development on issues related to this field. It targets to serve as a forum for stimulating and disseminating innovative research ideas, theories, emerging technologies, empirical investigations, state-of-the-art methods, and tools in all the different genres of Edutainment, such as game-based learning and serious games, interactive storytelling, virtual learning environments, VR-based education, and related fields. It will cover aspects of educational and game theories, human–computer interaction, computer graphics, artificial intelligence, and systems design.

Editorial Board

Editors-in-Chief

Adrian David Cheok  
NUS, Singapore

Wolfgang Müller  
University of Education Weingarten, Germany

Zhigeng Pan  
Zhejiang University, China

Managing Editor

Yi Li  
Nanjing Normal University, China

Editorial Board

Ruth Aylett  
Heriot-Watt University, UK

Judith Brown  
Brown Cunningham Associates, USA

Yiyu Cai  
NTU, Singapore

Maiga Chang  
Athabasca University, Canada

Holger Diener  
Fhg-IGD Rostock, Germany

Jayfus Tucker Doswell  
Juxtopia Group, USA

Sara de Freitas  
The Serious Games Institute, UK

Lynne Hall  
University of Sunderland, UK

Masa Inakage  
Keio University, Japan

Ido A Iurgel  
Universidade do Minho, Portugal

Kárpáti Andrea  
Eötvös Loránd University, Hungary

Lars Kjeldahl  
KTH, Sweden

James Lester  
North Carolina State University, USA

Nicolas Mollet  
IIT, Italy

Ryohei Nakatsu  
NUS, Singapore

Ana Paiva  
INESC-ID, Portugal
Abdennour El Rhalibi  JMU, UK
Daniel Thalmann  EPFL, Switzerland
Kok-Wai Wong  Murdoch University, Australia
Gangshan Wu  Nanjing University, China
Xiaopeng Zhang  IA-CAS, China
Stefan Goebel  ZGDV, Germany
Michitaka Hirose  University of Tokyo, Japan
Hyun Seung Yang  KAIST, Korea

Editorial Assistants

Ru-wei Yun  Nanjing Normal University, China
Qiao- yun Chen  Nanjing Normal University, China

Editorial Office

Address: Ninghai Road 122, Edu-Game Research Center,
School of Education Science, Nanjing Normal University,
Nanjing, 210097, China
E-mail: edutainment@njnu.edu.cn; njnu.edutainment@gmail.com
Tel/Fax: 86-25-83598921
## Table of Contents

Engaging Kids with the Concept of Sustainability Using a Commercial Video Game – A Case Study .................................................. 1  
*Panagiotis Tragazikis and Michael Meimaris*

Doing It Right: Combining Edutainment Format Development and Research .................................................................................. 13  
*Simon Staffans, Annika Wiklund-Engblom, Marc Hassenzahl, and Susanne Sperring*

Edutainment Robotics as Learning Tool .................................................. 25  
*Eleonora Bilotta, Lorella Gabriele, Rocco Servidio, and Assunta Tavernise*

SoundTag: RFID Based Wearable Computer Play Tool for Children .... 36  
*Ryoko Ueoka, Hiroki Kobayashi, and Michitaka Hirose*

A Comparison between Drill-Based and Game-Based Typing Software ........................................................................... 48  
*Chun-Hung Lin and Eric Zhi-Feng Liu*

Widget-Based Simulator for Testing Smart Space ................................. 59  
*Changgu Kang, Yoosoo Oh, and Woontack Woo*

Entertaining Education – Using Games-Based and Service-Oriented Learning to Improve STEM Education .............................. 70  
*Jon Preston and Briana Morrison*

Learning English through Serious Games – Reflections on Teacher and Learner Performance ........................................... 82  
*Bente Meyer*

Motivational Factors in Educational MMORPGs: Some Implications for Education ............................................................... 93  
*Kuo-Hsun Hung, Charles Kinzer, and Cheng-Ling Alice Chen*

A Distributed Multi-agent Architecture in Simulation Based Medical Training .................................................................................. 105  
*Jun Hu and Loe Feijs*

Designing a Trading Card Game as Educational Reward System to Improve Students’ Learning Motivations ............................ 116  
*Peayton Chen, Rita Kuo, Maiga Chang, and Jia-Sheng Heh*
Sketch Learning Environment with Diagnosis and Drawing Guidance from Rough Form to Detailed Contour Form ............... 129
   Masato Soga, Shota Kuriyama, and Hirokazu Taki

Regular Papers

Application of Visualization in Virtual Endoscopy System .......... 141
   Yanjun Peng, Rong Hua, Weidong Zhao, and Xinming Lu

Design and Implementation of Virtual Museum Based on Web3D ...... 154
   JianPing Zhang and YuHui Yang

Large Area Interactive Browsing for High Resolution Digitized Dunhuang Murals ................................................. 166
   Qingshu Yuan, Dongming Lu, Qi Wu, and Gang Liu

Research of Autonomous Active Control for Virtual Human Based on Emotion-Driven Model ....................................... 177
   Fenhua Wang, Xiaodan Huang, and Zhiliang Wang

An XML-Based Interface Customization Model in Digital Museum . .. 190
   Rui Wang, Chengwei Yang, Jinyu Xu, Chenglei Yang, and Xiangxu Meng

Animation as an Aid for Higher Education Computing Teaching ....... 203
   Mark Taylor and David Pountney

Bringing Integrated Multimedia Content into Virtual Reality Environments ................................................................. 219
   Paulo N.M. Sampaio and Laura M. Rodríguez Peralta

Virtual Reality House for Rehabilitation of Aphasic Clients .......... 231
   Milán Horváth, Csaba Dániel, Jacqueline Stark, and Cecília Sik Lanyi

Investigating the Effects of Educational Game with Wii Remote on Outcomes of Learning ............................................. 240
   Jeng Hong Ho, Steven ZhiYing Zhou, Dong Wei, and Alfred Low

Using Computer Games for Youth Development ....................... 253
   Ruwei Yun, Yanyan Jiang, and Yi Li

Author Index .......................................................... 275