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# Technologies for E-Learning and Digital Entertainment

First International Conference, Edutainment 2006  
Hangzhou, China, April 16-19, 2006  
Proceedings



Springer

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## Preface

Edutainment 2006 is an international conference on research and development on e-learning and digital entertainment. The main purpose of the conference is the discussion, information and opinions exchange on the development and use of such systems. It provides a very interesting opportunity for researchers who want to attend or present communications at these events. The conference includes plenary invited talks, workshops, tutorials, paper presentation tracks and panel discussions.

"Edutainment" is a recently coined term that expresses the union between education and entertainment in a television program, game or website. Today, the world of multimedia games and activities is a place where education and entertainment meet. Edutainment has evolved as a prospering research topic banding together formerly disjointed disciplines stemming from education, entertainment as well as computer science. Thus, with this conference, we can bring people from different fields together to discuss techniques for e-learning and digital entertainment as well as about the future of edutainment.

This conference developed from the previous Europe–China Workshop on E-learning and Games called Edutainment 2005 (April 28–March 2, 2005), which was originally based on the ELVIS project, an EU–Asia link project (Prof. Ruth Alyett was the project coordinator and Prof. Zhigeng Pan was the project leader). It was also a sub-event for celebrating the 30th Anniversary of EU China Diplomatic Relations. During this workshop, experts from home and abroad were invited to give keynote speeches, and about 90 people attended the workshop.

At this year's Edutainment 2006, an established and still-growing community of researchers gathered together to exchange results and visions. The Edutainment 2006 conference program provided traditional scientific talks, but also workshops, tutorials and a symposium.

We received 467 submissions in total from 22 different countries, including China (mainland, Honk Kong, Taiwan), USA, UK, Germany, France, Australia, Canada, Switzerland, Korea, Japan and Malaysia. In total, 173 papers (with 121 regular papers, and 52 short papers) were accepted for this volume. The papers in this volume cover topics including: E-Learning Platforms and Tools, Learning Resource Management, Practice and Experience Sharing, E-Learning Standards, Mobile Learning, Education and Remote Classrooms, Effectiveness of VR for Education, Life–Long Learning, Collaborative Environments, Remote Group Simulations, Collaborative Learning, Virtual Reality in Education, Game Design and Development, Game Engine Development Game AI and Artificial Life, Game Physics, Game Rendering, Virtual Characters/Agents, Online/Mobile Game/Video Game, Storytelling and Game Narrative, Affective Interaction in Games, Digital Museum, Digital Heritage, Animation Techniques, Augmented Reality, and Mixed Reality.

The wide range of questions, ideas, concepts and applications discussed in the contributions of this volume reflect the vitality and engagement of the e-learning and

game communities and their neighboring disciplines. The current research situation in edutainment demands interdisciplinary cooperation and mutual stimulation. This accounts for the fact that some contributions address purely technological questions, whereas others present fundamental philosophical concepts. However, most authors search for a middle way that comprises both new technological and conceptual ideas.

With the strong support of Springer, the proceedings of the subsequent Edutainment conferences will also be published in the *Lecture Notes in Computer Science* (LCNS) series. And we do hope in the future more and more authors will be involved in this conference and contribute more to the edutainment field.

February, 2006

Zhigeng Pan  
Ruth Aylett  
Holger Diener  
Xiaogang Jin  
Stefan Göbel  
Li Li

# Organization

## Acknowledgements and Sponsoring Institutions

The international conference series on Technologies for E-Learning and Digital Entertainment (called Edutainment) has been initiated by the DEARC (Digital Entertainment and Animation Research Centre in Zhejiang University) and VRMM (Virtual Reality and Multimedia Division) at the State Key Lab of CAD&CG in Zhejiang University. However, Edutainment 2006 was such a big success owing to the financial and practical support of various institutions.

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- Hangzhou National Animation Base, Zhejiang Province, China

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- Institute of Computer Application, Sun Yat-sen University, China
- Hangzhou Dianzi University, China
- Nanjing Normal University, China
- The Hong Kong Polytechnic University, Hong Kong

We would really like to thank all of them for offering the opportunity to organize Edutainment 2006 in a way that provided a diversified scientific and social program. Especially, we would like to thank all members of the International Program Committee and Organizing Committee for their great job in defining conference topics, reviewing the large number of submitted papers, and managing to put all the material together for this great event.

In addition, this event also functioned as one of the sub-events for celebrating the 70<sup>th</sup> birthday of Prof. Shi, in honor of his contribution to the computer graphics community. We also would like to express our sincere thanks to Prof. Encarnação (the Editor-in-Chief of *Computers & Graphics*), for his strong support in organizing this international conference. Furthermore, Prof. Jose Encarnação arranged to have a

short special issue on edutainment in *Computers & Graphics* in support of this event and in celebration of the 70<sup>th</sup> birthday of Prof. Jiaoying Shi.

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