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Entertainment Computing – ICEC 2005

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Proceedings

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Foreword

First of all, we appreciate the hard work of all the authors who contributed to ICEC 2005 by submitting their papers. ICEC 2005 attracted 95 technical paper submissions, 8 poster submissions and 7 demo submissions, in total 110. This number is nearly equal to ICEC 2004.

Based on a thorough review and selection process carried out by 76 international experts from academia and industry as members of the senior and international program committees, a high-quality program was compiled. The program committee consisted of experts from all over the world: 1 from Austria, 3 from Bulgaria, 2 from Canada, 4 from China, 1 from Finland, 4 from France, 10 from Germany, 1 from Greece, 1 from Ireland, 1 from Israel, 1 from Italy, 26 from Japan, 1 from Korea, 4 from The Netherlands, 1 from New Zealand, 1 from Norway, 1 from Singapore, 1 from Thailand, 4 from the UK, and 8 from the USA. In this number, reviewers are included.

The final decision was made at the senior program committee meeting based on three reviewers' feedback, available online via the conference management tool. Through earnest and fair discussion at the meeting, 25 technical papers were accepted as long papers and 32 technical papers were accepted as short papers from 95 submitted technical papers. Moreover, 3 poster papers and 5 demo papers were accepted.

Although accepted, 3 long papers and 7 short papers were unfortunately withdrawn during the registration process. Finally 47 technical papers, 3 poster papers, 5 demo papers and 1 keynote paper were compiled and are presented in this book. A total of 56 contributions are included from Australia, Austria, Canada, China, Denmark, Finland, France, Germany, Japan, Korea, The Netherlands, Singapore, the UK, and the USA. All these papers could be allocated to one of the following topics: (1) interactive digital storytelling; (2) graphics; (3) advanced interaction design; (4) social impact and evaluation; (5) seamful / seamless interface; (6) body and face; (7) robot; (8) music and sound; (9) mixed reality and mobile; (10) education; (11) virtual reality and simulation; and (12) theory. Papers per topic are ordered as follows: a keynote paper, technical papers, demo papers, and poster papers.

September 2005

Fumio Kishino
Yoshifumi Kitamura
Hirokazu Kato
Noriko Nagata

Preface

Entertainment has come to occupy a very important part of our life by refreshing us and activating our creativity. Recently, with the advances made in computers and networks, new types of entertainment have been emerging such as video games, edutainment, robots, and networked games. Unfortunately, until recently, entertainment has not been among the major research areas within the field of information processing. Since there are huge industries and markets devoted to entertainment, this unbalance seems very strange. The new forms of entertainment have the potential to change our lives, so it is necessary for people who work in this area to discuss various aspects of entertainment and to promote entertainment-related research.

With this basic motivation, the General Assembly of the International Federation of Information Processing (IFIP) approved in August 2002 the establishment of the Specialist Group on Entertainment Computing (SG16). The responsibility of SG16 is to monitor and promote research and development activities related to entertainment computing throughout the world. One of the major activities of SG16 is to organize and support the International Conference on Entertainment Computing (ICEC). The ICEC is expected to bring together researchers, developers, and practitioners working in the area of entertainment computing. The conference covers a wide range of entertainment computing issues, such as theoretical studies, hardware/software development, integrated systems, human interfaces, and applications.

Let's take a brief look at the history of ICEC. The annual conference started in 2002 as the International Workshop on Entertainment (IWEC 2002), which was held May 14–17, 2002 in Makuhari, Japan. The workshop attracted more than 100 participants, and 60 papers were published in the proceedings by Kluwer. Based on the success of IWEC 2002, SG16 upgraded the workshop to a conference and organized ICEC 2003. ICEC 2003 was held May 8–10, 2003 at the Entertainment Technology Center of Carnegie Mellon University, Pittsburgh, USA. ICEC 2003 was also successful, with more than 100 attendees and 20 highly select papers. All of the papers of ICEC 2003 were accepted by ACM for inclusion in their ACM online digital library. In the next year, ICEC crossed the Atlantic Ocean to move to Europe, and ICEC 2004 was held September 1–3, 2004 at the Technical University of Eindhoven in The Netherlands. The conference attracted more than 150 attendees, and 27 full papers were published by Springer in the Lecture Notes in Computer Science (LNCS) series. In 2005, ICEC came back to Japan, and ICEC 2005 was held at Kwansei Gakuin University, Sanda, Japan. We selected more than 50 papers, and these papers are published in this LNCS volume.

For the success of ICEC 2005, we express our special thanks to the following people who worked so hard to organize the conference: Michihiko Minoh and Akihiro Yagi as co-chairs, Fumio Kishino, Yoshifumi Kitamura and Hirokazu Kato as

program committee chair and co-chairs, Haruhiro Katayose as local organization committee chair, and other local organization committee members. We are also grateful for the contribution of all the paper reviewers as well as the sponsors and cooperating societies.

September 2005 Ryohei Nakatsu

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The Virtual Reality Society of Japan

IFIP SG16

SG16 (Specialist Group on Entertainment Computing) was established at the General Assembly of IFIP (International Federation on Information Processing) in 2001. The outline of SG16 is described below.

Aims:

To encourage computer applications for entertainment and to enhance computer utilization in the home, the technical committee will pursue the following aims:

- to enhance algorithmic research on board and card games
- to promote a new type of entertainment using information technologies
- to encourage hardware technology research and development to facilitate implementing entertainment systems, and
- to encourage haptic and non-traditional human interface technologies for entertainment.

Scopes:

1. Algorithms and strategies for board and card games
   - algorithms for board and card games
   - strategy controls for board and card games
   - level setups for games and card games
2. Novel entertainment using ICT
   - network-based entertainment
   - mobile entertainment
   - location-based entertainment
   - mixed reality entertainment
3. Audio
   - music informatics for entertainment
   - 3D audio for entertainment
   - sound effects for entertainment
4. Entertainment human interface technologies
   - haptic and non-traditional human interface technologies
   - mixed reality human interface technologies for entertainment
5. Entertainment robots
   - ICT-based toys
   - pet robots
   - emotion models and rendering technologies for robots
6. Entertainment systems
   - design of entertainment systems
   - entertainment design toolkits
   - authoring systems

7. Theoretical aspects of entertainment
   - sociology, psychology and physiology for entertainment
   - legal aspects of entertainment
8. Video game and animation technologies
   - video game hardware and software technologies
   - video game design toolkits
   - motion capture and motion design
   - interactive story telling
   - digital actors and emotion models
9. Interactive TV and movies
   - multiple view synthesis
   - free viewpoint TV
   - authoring technologies
10. Edutainment
    - entertainment technologies for children's education
    - open environment entertainment robots for education

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WG16.3	Matthias Rauterberg Technical University of Eindhoven, The Netherlands
WG16.4	Jaap van den Herik University of Maastricht, The Netherlands
WG16.5	Andy Sloane University of Wolverhampton, UK

Working Groups (WG) Under SG16

WG16.1 Digital Storytelling

Storytelling is one of the core technologies of entertainment. Especially with the advancement of information and communication technologies (ICT), a new type of entertainment called video games has been developed, where interactive story development is the key that makes those games really entertaining. At the same time, however, there has not been much research on the difference between interactive storytelling and conventional storytelling. Also as the development of interactive storytelling needs a lot of time and human power, it is crucial to develop technologies for automatic or semiautomatic story development. The objective of this working group is to study and discuss these issues.

WG16.2 Entertainment Robot

Robots are becoming one of the most appealing forms of entertainment. New entertainment robots and/or pet robots are becoming popular. Also, from a theoretical point of view, compared with computer graphics-based characters/animations, robots constitute an interesting research object as they have a physical entity. Taking these into consideration, it was decided at the SG16 annual meeting that a new working group on entertainment robots is to be established.

WG16.3 Theoretical Basis of Entertainment

Although the entertainment industry is huge, providing goods such as video games, toys, movies, etc., little academic interest has been paid to such questions as what is the core of entertainment, what are the technologies that would create new forms of entertainment, and how can the core technologies of entertainment be applied to other areas such as education, learning, and so on. The main objective of this WG is to study these issues.

WG16.4 Games and Entertainment Computing

The scope of this workgroup includes, but is not limited to, the following applications, technologies, and activities.

Applications:

- Analytical games (e.g., chess, go, poker)
- Commercial games (e.g., action games, roleplaying games, strategy games)
- Mobile games (e.g., mobile phones, PDA's)
- Interactive multimedia (e.g., virtual reality, simulations)

Technologies:

- Search techniques
- Machine learning
- Reasoning
- Agent technology
- Human-computer interaction

WG16.5 Social and Ethical Issues in Entertainment Computing

The social and ethical implications of entertainment computing include:

- actual and potential human usefulness or harm of entertainment computing
- social impact of these technologies
- developments of the underlying infrastructure
- rationale in innovation and design processes
- dynamics of technology development
- ethical development
- cultural diversity and other cultural issues
- education of the public about the social and ethical implications of entertainment computing, and of computer professionals about the effects of their work.

WG 16.5 explicitly cares about the position of, and the potentials for, vulnerable groups such as children, the less-educated, disabled, elderly and unemployed people, cultural minorities, unaware users and others.

Anyone who is qualified and interested in active participation in one of the working groups is kindly invited to contact one of the WG chairs.

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