

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Microsoft Research, Cambridge, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Stéphane Natkin Jérôme Dupire (Eds.)

Entertainment Computing – ICEC 2009

8th International Conference
Paris, France, September 3-5, 2009
Proceedings

Volume Editors

Stéphane Natkin

Jérôme Dupire

Conservatoire National des Arts et Métiers, CEDRIC

292, rue St. Martin, 75141 Paris Cedex 03, France

{stephane.natkin; jerome.dupire}@cnam.fr

Library of Congress Control Number: 2009933197

CR Subject Classification (1998): H.5, H.4, H.3, I.2.1, I.3, J.4, J.5, K.3, K.4

LNCS Sublibrary: SL 3 – Information Systems and Application,
incl. Internet/Web and HCI

ISSN 0302-9743

ISBN-10 3-642-04051-9 Springer Berlin Heidelberg New York

ISBN-13 978-3-642-04051-1 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

springer.com

© IFIP International Federation of Information Processing 2009

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper SPIN: 12744916 06/3180 5 4 3 2 1 0

Preface

ICEC 2009 was hosted in Paris, following Carnegie Mellon (2008) and Shanghai (2007). It took place in the CNAM (Conservatoire National des Arts et Métiers), a legendary place of education, research and culture in France and in Europe. The CNAM was founded by l'Abbé Grégoire during the French revolution to deliver the knowledge of science and crafts to everyone ("Omnes Docet Ubique"). It also includes a famous museum of technology, "le Musée des Arts et Métiers," described in the book of Umberto Eco, "Foucault's Pendulum," where one can see the ancestor of all computers "la machine de Pascal" and the first TV set. Today, it is a place where you can find the Computer Research Laboratory, the CEDRIC, where 30 researchers are involved in the field of interactive media and intelligent spaces, the graduate school for games and interactive media (ENJ-MIN) and where students coming from all around the world can obtain a master degree and a PhD in, for example, game and interactive media or in interaction design. Thus, it is a good place to host the International Conference on Entertainment Computing.



Fig. 1. Machine de Barthélémy (copyright Musée des Arts et Métiers)



Fig. 2. Machine de Pascal (copyright Musée des Arts et Métiers)

The papers selection process was a hard task: we received 105 submissions coming from 25 countries, most of them having a high quality level. The submission comprised: 39 long papers, 37 short papers, 29 posters and demos. The acceptance rate was, according to each category, 36% (14 long papers), 53% (19 short papers), 77% (23 posters and demos). The themes of these papers cover all the main domains of entertainment computing, from interactive music to games, including a wide range of scientific domains from esthetic to computer science. We were very happy to welcome as keynote speakers six well-known researchers, artists and industrialists from the field of digital art and entertainment: Luc Courchesne, Professor at the University of Montreal and one of the initiators of new media art, Nicolas Gaume, one of the leaders of the French game industry and CEO of Mimesis Republic, Gonzalo Frasca, the famous provocative researcher in the field of game design, Susan Gold, Chairperson of the IGDA Education Sig, Yukiharu Sambe CTO Executive Director at TAITO corporation, the leading Japanese arcade entertainment company, and Michael Stora, the psychologist who uses video games as a therapeutic object. The demo part of the conference, installed in the museum, included a great variety of prototypes and installations demonstrating the creativity of this field. If I try to characterize the evolution of ICEC during the last few years and the 2009 issue, I would point out an increasing number of papers devoted to games and the user's model, a significant number of presentations devoted to sound, and a decreasing number of contributions in the field of computer graphics. The content seems to have become more important than the technology.

I would like to thank all the people and institutions that helped us to realize this conference, in particular: The IFIP as the supporting organization of ICEC and the TC14 Technical Committee; our sponsors, the National Center for Cinema (CNC) and Cap Digital, the Paris cluster in the digital contents field; the universities of Paris 6 and La Rochelle co-organizers of this conference; The AR CNAM Poitou-Charentes in charge of the financial management of the conference; all the people who helped us in the organization of ICEC 2009 and in particular Cecile Le Prado, Daniele Lejais, Jerome Dupire, Ben Salem and all the students of CNAM who were involved in many tasks from designing the web site to helping attendees.

July 2009

Stéphane Natkin

Organization

Conference Chair	Stéphane Natkin	CNAM, France
Program Committee Chairs	Brad Bushman Masayuki Nakajima	University of Michigan, USA Technical University of Tokyo, Japan
Steering Committee	Ryohei Nakatsu Mark Cavazza Zhigeng Pan Stéphane Natkin Matthias Rauterberg	National University of Singapore, Singapore University of Teesside, UK Zhejiang University, China CNAM/ENJMIN, France Technical University of Eindhoven, The Netherlands
Organization Chair	Don Marinelli Hyun Yang Jérôme Dupire	CMU, USA KAIST, Korea CNAM, France
Organization Committee	Françoise Le Vezu Danièle Lejais Ben Salem	ARCNAM, France CNAM, France Technical University of Eindhoven, The Netherlands
Treasurer	Chantal Delaveau	ARCNAM, France
Web Design	Stéphane Gros Xiang Qiu Hou Guillaume Levieux	CNAM, France CNAM, France CNAM, France

Program Committee

Stephen Hansen	Naoko Tosa	Kevin Wong
Peter Purgathofer	Hyun S. Yang	Anton Nijholt
Radslav Yoshinov	Matthias Rauterberg	Sam Ge
Sidney Fels	Ben Salem	Masayuki Nakajima
Zhigeng Pan	Jaap van den Herik	Junichi Hoshino
David Obdrzalek	Nuno Correia	Woontack Woo
Ville-Veikko Mattila	Adrian David Cheok	Noriko Nagata
Rainer Malaka	Marc Cavazza	Haruhiro Katayose
Barnabas Takacs	Andy Sloane	Kazushi Nishimoto
Richard Reilly	Lyn Pemberton	Hirokazu Katoh
Paolo Ciancarini	Donald Marinelli	Yoshifumi Kitamura
Ryohei Nakatsu	Nahum Gershon	Tetsuo Ono
Takehiko Kamae	Milner Makuni	Michita Imai
Hitoshi Matsubara	Tony Manninen	Duh Been-Lirn

Sofia Tsekeridou	Marcello Carrozzino	Pierre Jouvelot
Roel Vertegaal	Artur Lugmayr	Stefan Gruenvogel
Hyung-Gon Kim	Panos Markopoulos	Didier Arques
Hisham Bizri	Elina M.I. Ollila	Craig Lindley
Hiroshi Okuno	Lucia Vera	Ludovic Le Bigot
Yasuyuki Sumi	Maria Roussou	Stephane Donikian
James Gimzewski	Lucia Pannese	Ruth Aylet
Victoria Vesna	Anne Braun	Jean-Claude Lescure
Inkwon Lee	Phillipe Codognet	François Pachtet
Gerard J. Kim	Pascal Estraillier	Kristof Berg
Huaqin Shen	Emmanuel Chailloux	Sebastien Deguy
Javier Jaen-Martinez	Vincent Corruble	Armelle Prigent
Oscar Garcia-Panyella	Emmanuel Guardiola	Wang Yansheng
Marco A. Gomez-Martin	Nicolas Szilas	Dominique Archambault
Tsutomu Terada	Eric Gressier	Jesper Juul
Marco Rocchetti	Hugues Vinet	Ernest Adams
Fionnuala Conway	Miguel Sicart	Jean-Marc Jot
Seiichi Nishihara	Guillaume Hutzler	Ian Marshall
Kazunori Miyata	Jean-Baptiste Labruno	Cristina Portalés
Hiroki Takahashi	Xavier Reteaux	Stéphane Gros
Akihiko Shirai	Valérie Gouet-Brunet	Guillaume Levieux
Kaoru Sumi	Catherine Pelachaud	Shuo Hsiu Hsu
Masanori Sugimoto	Michel Simatic	

Organizers and Sponsors

Conservatoire National des Arts et Métiers
Université de La Rochelle
Université Pierre et Marie Curie

Cap Digital
Centre National de la Cinématographie
IFIP

Table of Contents

Long Papers

Player's Model

Player Performance, Satisfaction, and Video Game Enjoyment	1
<i>Christoph Klimmt, Christopher Blake, Dorothee Hefner, Peter Vorderer, and Christian Roth</i>	
Analysis of Area Revisitation Patterns in World of Warcraft	13
<i>Ruck Thawonmas, Keisuke Yoshida, Jing-Kai Lou, and Kuan-Ta Chen</i>	
Scaling the Level of Difficulty in Single Player Video Games	24
<i>Maria-Virginia Aponte, Guillaume Levieux, and Stéphane Natkin</i>	

Interfaces and Interactions

Dance Motion Control of a Humanoid Robot Based on Real-Time Tempo Tracking from Musical Audio Signals	36
<i>Naoto Nakahara, Koji Miyazaki, Hajime Sakamoto, Takashi X. Fujisawa, Noriko Nagata, and Ryohei Nakatsu</i>	
Marker-Less Tracking for Multi-layer Authoring in AR Books	48
<i>Kiyoung Kim, Jonghee Park, and Woontack Woo</i>	
Personal Space Modeling for Human-Computer Interaction	60
<i>Toshitaka Amaoka, Hamid Laga, Suguru Saito, and Masayuki Nakajima</i>	
Technology-Enhanced Role-Play for Intercultural Learning Contexts	73
<i>Mei Yui Lim, Michael Kriegel, Ruth Aylett, Sibylle Enz, Natalie Vannini, Lynne Hall, Paola Rizzo, and Karin Leichtenstern</i>	
MusicCommentator: Generating Comments Synchronized with Musical Audio Signals by a Joint Probabilistic Model of Acoustic and Textual Features	85
<i>Kazuyoshi Yoshii and Masataka Goto</i>	
MiniDiver: A Novel Mobile Media Playback Interface for Rich Video Content on an iPhone TM	98
<i>Gregor Miller, Sidney Fels, Matthias Finke, Will Motz, Walker Eagleston, and Chris Eagleston</i>	

Sociology of Games

Children’s Choice of Games: The Influence of Prosocial Tendency and Education-Level 110
Vivian Hseuh-Hua Chen, Weirong Lin, Chiew Woon Ng, Su Li Chai, Angeline Cheok Eng Khoo, and Henry Been-Lirn Duh

Player Experience Evaluation: An Approach Based on the Personal Construct Theory 120
Francesco Bellotti, Riccardo Berta, Alessandro De Gloria, and Ludovica Primavera

Interactive Storytelling - Interactive Art

A Plot-Manipulation Algebra to Support Digital Storytelling 132
Börje Karlsson, Simone D.J. Barbosa, Antonio L. Furtado, and Marco A. Casanova

Distributed Episode Control System for Interactive Narrative Entertainment 145
Jun’ichi Hoshino, Katsutoki Hamana, Shiratori Kazuto, and Atsushi Nakano

Virtual Noctiluca: Interaction between Light and Water Using Real-Time Fluid Simulation and 3D Motion Measurement 157
Kyouhei Aida and Noriko Nagata

Short Papers

Interactive Sound

Sound and Movement Visualization in the AR-Jazz Scenario 167
Cristina Portalés and Carlos D. Perales

Experimenting with Sound Immersion in an Arts and Crafts Museum .. 173
Fatima-Zahra Kaghaz, Cécile Le Prado, Areti Damala, and Pierre Cubaud

BayesianBand: Jam Session System Based on Mutual Prediction by User and System 179
Tetsuro Kitahara, Naoyuki Totani, Ryosuke Tokuami, and Haruhiro Katayose

v.morish’09: A Morphing-Based Singing Design Interface for Vocal Melodies 185
Masanori Morise, Masato Onishi, Hideki Kawahara, and Haruhiro Katayose

Design and Experience

New Hitch Haiku: An Interactive Renku Poem Composition Supporting Tool Applied for Sightseeing Navigation System.....	191
<i>Xiaofeng Wu, Naoko Tosa, and Ryohei Nakatsu</i>	
Using Persuasive Technologies for Energy Consumption Management: A South African Case Study	197
<i>Pieter Joubert and Sumarie Roodt</i>	
Designing Interactive Blimps as Puppets	204
<i>Hideki Yoshimoto, Kazuhiro Jo, and Koichi Hori</i>	
Requirements for Supporting Individual Human Creativity in the Design Domain	210
<i>Uta Lösch, Julie Dugdale, and Yves Demazeau</i>	

Interfaces and Interactions

Sonic Gestures Applied to a Percussive Dialogue in TanGram Using Wii Remotes	216
<i>Carlos D. Perales, Cristina Portalés, and Francisco Sanmartín</i>	
TNT: Touch ‘n’ Tangibles on LC-Displays.....	222
<i>Ramon Hofer and Andreas Kunz</i>	
Entertainment Game to Support Interaction between Teachers and Students	228
<i>Marcos Alexandre Rose Silva and Junia Coutinho Anacleto</i>	
Multi-layer Based Authoring Tool for Digilog Book	234
<i>Jonghee Park and Woontack Woo</i>	

Interaction Design – Player’s model

Community Created Narrations as Mobile Entertainment	240
<i>Marjo Mäenpää, Riikka Kiljunen, and Saija Mustaniemi</i>	
Hardcore Classification: Identifying Play Styles in Social Games Using Network Analysis	246
<i>Ben Kirman and Shaun Lawson</i>	
Player Feedback Evaluation: Indicating Mass Public Potential for Pervasive Games	252
<i>Ivo Flammer, Chen Yan, Wolf Ka, August Flammer, Jean-Paul Cheung, and Romain Pellerin</i>	

Programming Interactions

A Real-Time Video Illustration Using CUDA	258
<i>JiHyung Lee, Yoon-Seok Choi, Bon-Ki Koo, and Chi Jung Hwang</i>	

A Distributed Render Farm System for Animation Production	264
<i>Jiali Yao, Zhigeng Pan, and Hongxin Zhang</i>	
Extending the STRADA Framework to Design an AI for ORTS	270
<i>Laurent Navarro and Vincent Corruble</i>	
Services in Game Worlds: A Semantic Approach to Improve Object Interaction	276
<i>Jassin Kessing, Tim Tutenel, and Rafael Bidarra</i>	
Posters and Demoonstrations	
Glasses-Free 3D Image Viewer by Handmade DIY Craft	282
<i>Takashi Ohara and Kunio Sakamoto</i>	
Monocular 3D Vision Using Real-Time Generated Scene with Depth of Field Effect	284
<i>Takashi Hosomi and Kunio Sakamoto</i>	
RFID Painting Demonstration	286
<i>Olivier Haberman, Romain Pellerin, Eric Gressier-Soudan, and Ugo Haberman</i>	
Development and Evaluation of a Digital Vegetation Interaction Game for Children	288
<i>Akiko Deguchi, Shigenori Inagaki, Fusako Kusunoki, Etsuji Yamaguchi, Yoshiaki Takeda, and Masanori Sugimoto</i>	
4-Views Display System for Collaborative Tasks on Round Table	290
<i>Mitsuru Okumura and Kunio Sakamoto</i>	
Invisible Two-Dimensional Code Display for Additional Information	292
<i>Tomofumi Yamanari and Kunio Sakamoto</i>	
MobiSpell: Educational Mobile Game Design and Development for Teaching Spelling to Young Children	295
<i>Menelaos Bakopoulos and Sofia Tsekeridou</i>	
Live Demonstration of the Pervasive Game “GPS Joker”	297
<i>Ivo Flammer and David Guyard</i>	
Rapid Interactive Installation Development Using Robust Computer Vision and Image-Based Rendering	298
<i>Denis Perevalov</i>	
Reinforcement Learning for Blackjack	300
<i>Saqib A. Kakvi</i>	

“Plug: Secrets of the Museum”: A Pervasive Game Taking Place in a Museum	302
<i>Michel Simatic, Isabelle Astic, Coline Aunis, Annie Gentes, Aude Guyot-Mbodji, Camille Jutant, and Emmanuel Zaza</i>	
In-Game Peer Performance Assessment Role That Fosters Metacognitive Agility and Reflection	304
<i>Elaine M. Raybourn</i>	
Edutainment Games for Mobile Multimedia Museum Guidance Systems: A Classification Approach	307
<i>Areti Damala</i>	
Orpheus: Automatic Composition System Considering Prosody of Japanese Lyrics	309
<i>Satoru Fukayama, Kei Nakatsuma, Shinji Sako, Yuichiro Yonebayashi, Tae Hun Kim, Si Wei Qin, Takuho Nakano, Takuya Nishimoto, and Shigeki Sagayama</i>	
A Handy Laser Show System for Open Space Entertainment	311
<i>Toru Takahashi, Miki Namatame, Fusako Kusunoki, Isao Ono, and Takao Terano</i>	
Sketch-It-Up! Demo	313
<i>Bulut Karakaya, Camilo Garcia, Daniel Rodriguez, Manoj Nityanandam, Nadia Labeikovsky, and Theyab Al Tamimi</i>	
Automatic Chat Generation of Emotional Entertainment Characters Using News Information	315
<i>Jun'ichi Hoshino, Tetsuya Saito, and Kenichi Hirota</i>	
Incremental Learning Algorithm for Online Action Game System	319
<i>Jun'ichi Hoshino and Hiroshi Mori</i>	
Task-Based Second Language Learning Game System	323
<i>Jun'ichi Hoshino, Tetsuya Saito, and Shiratori Kazuto</i>	
Designing a Game Controller for Novice HALO3 Players	325
<i>Matthijs Kwak and Ben Salem</i>	
AZ66: How Can We Play with Emotions?	327
<i>Stéphan Froment, Mélanie Ginibre, Stéphanie Mader, Antoine Sarafian, Aymeric Schwartz, Delphine Soriano, Alexandre Topol, and Jérôme Dupire</i>	
WHO AM I?: A Art Ludic Installation in Virtual Reality	329
<i>Sophie Daste and Karleen Groupierre</i>	

Affective Interaction: Challenges at the Ubiquitous Computing Times 331
Stephane Gros, Jérôme Dupire, and Stéphane Natkin

Invited Speakers

You Are Here 333
Luc Courchesne

Game Experience May Vary: Understanding Play 334
Gonzalo Frasca

The New Pact: How Online Worlds Forge a New Form of Alliance between Players and Designers 335
Nicolas Gaume

The International Game Developer Association (IGDA) Education Special Interest Group (EdSIG) 336
Susan Gold

Story of a Video Game Workshop: “Ico,” an Interactive Fairy Tale for Children Less Interaction 337
Michael Stora

Japan Arcade Entertainment and It’s Technology 338
Yukiharu Sambe

Author Index 339