Contents

Full Papers

A Mobile Game Controller Adapted to the Gameplay and User’s Behavior Using Machine Learning ........................................ 3
Leonardo Torok, Mateus Pelegrino, Daniela G. Trevisan, Esteban Clua, and Anselmo Montenegro

A Participatory Approach for Game Design to Support the Learning and Communication of Autistic Children .......................... 17
Thiago Porcino, Daniela Trevisan, Esteban Clua, Marcos Rodrigues, and Danilo Barbosa

A Real Time Lighting Technique for Procedurally Generated 2D Isometric Game Terrains .................................................. 32
Érick O. Rodrigues and Esteban Clua

Adaptive Automated Storytelling Based on Audience Response ........ 45
Augusto Baffa, Marcus Poggi, and Bruno Feijó

ADITHO – A Serious Game for Training and Evaluating Medical Ethics Skills ................................................................. 59
Cristian Lorenzini, Claudia Faita, Michele Barsotti, Marcello Carrozzino, Franco Tecchia, and Massimo Bergamasco

A Battle of Wit: Applying Computational Humour to Game Design ....... 72
Dormann Claire

Advanced Dynamic Scripting for Fighting Game AI .......................... 86
Kevin Majchrzak, Jan Quadflieg, and Günter Rudolph

Applied Games – In Search of a New Definition ............................... 100
Ralf Schmidt, Katharina Emmerich, and Burkhard Schmidt

Classification of Player Roles in the Team-Based Multi-player Game Dota 2 ................................................................. 112
Christoph Eggert, Marc Herrlich, Jan Smeddinck, and Rainer Malaka

Design-Based Learning in Classrooms Using Playful Digital Toolkits .... 126
K.J. Scheltenaar, J.E.C. van der Poel, and M.M. Bekker

Embedding and Implementation of Quantum Computational Concepts in Digital Narratives ............................................... 140
Nikitas M. Sgouros
EmotionBike: A Study of Provoking Emotions in Cycling Exergames ... 155
Larissa Müller, Sebastian Zagaria, Arne Bernin, Abbes Amira, Naeem Ramzan, Christos Grecos, and Florian Vogt

Evaluating the Impact of Highly Immersive Technologies and Natural Interaction on Player Engagement and Flow Experience in Games ...... 169
Raffaello Brondi, Leila Alem, Giovanni Avveduto, Claudia Faita, Marcello Carrozzino, Franco Tecchia, and Massimo Bergamasco

Evolutionary Changes of Pokemon Game: A Case Study with Focus On Catching Pokemon .................................................. 182
Chetprayoon Panumate, Shuo Xiong, Hiroyuki Iida, and Toshiaki Kondo

Game-Based Interactive Campaign Using Motion-Sensing Technology ... 195
Alf Inge Wang, Mari Hansen Asplem, Mia Aasbakken, and Letizia Jaccheri

Gamification and Family Housework Applications .................... 209
Anne Berit Kigen Bjering, Marikken Høiseth, and Ole Andreas Alsom

IdleWars: An Evaluation of a Pervasive Game to Promote Sustainable Behaviour in the Workplace ........................................... 224
Evangelos Tolias, Enrico Costanza, Alex Rogers, Benjamin Bedwell, and Nick Banks

Interactive Digital Gameplay Can Lower Stress Hormone Levels in Home Alone Dogs — A Case for Animal Welfare Informatics ........ 238
Annika Geurtsen, Maarten H. Lamers, and Marcel J.M. Schaaf

KINJIRO: Animatronics for Children’s Reading Aloud Training ...... 252
Hisanao Nakadai, Lee Seung Hee, Muneo Kitajima, and Junichi Hoshino

Rogue-Like Games as a Playground for Artificial Intelligence – Evolutionary Approach ..................................................... 261
Vojtech Cerny and Filip Dechterenko

Software Architectures and the Creative Processes in Game Development ............................................................... 272
Alf Inge Wang and Njål Nordmark

Storytelling Variants: The Case of Little Red Riding Hood ............ 286
Edirlei Soares de Lima, Antonio L. Furtado, and Bruno Feijó

Tags You Don’t Forget: Gamified Tagging of Personal Images ......... 301
Nina Runge, Dirk Wenig, Danny Zitzmann, and Rainer Malaka
The Design Process Continues: Attending Experiential Values up to Version 1.0 ................................................................. 315  
Rikard Lindell

Three Apps for Shooting Sports: The Design, Development, and Deployment ........................................................................ 329  
Agnieszka Besz, Maciej Górnicki, Toni Heinonen, Tapani Kiikeri, Ilkka Ratamo, Mika Luimula, Taisto Suominen, Aki Koponen, Jouni Saarni, Tomi “bgt” Suovuo, and Jouni Smed

Yasmine’s Adventures: An Interactive Urban Experience Exploring the Sociocultural Potential of Digital Entertainment .................... 343  
Valentina Nisi, Mara Dionisio, Julian Hanna, Luis Ferreira, and Nuno Nunes

Short Papers

Asterodrome: Force-of-Gravity Simulations in an Interactive Media Theater .................................................................................... 359  
Marcel Köster, Michael Schmitz, Soenke Zehle, and Burkhard Detzler

Exploring the Importance of “Making” in an Educational Game Design ......................................................................................... 368  
Michail N. Giannakos, Varvara Garneli, and Konstantinos Chorianopoulos

Simple Games – Complex Emotions: Automated Affect Detection Using Physiological Signals ....................................................... 375  
Thomas Friedrichs, Carolin Zschippig, Marc Herrlich, Benjamin Walther-Franks, Rainer Malaka, and Kerstin Schill

Studying an Author-Oriented Approach to Procedural Content Generation through Participatory Design ............................ 383  
Rui Craveirinha and Licinio Roque

The Role of Embarrassment to Shape Public Interactions .................... 391  
Licia Calvi

Towards Smart City Learning: Contextualizing Geometry Learning with a Van Hiele Inspired Location-Aware Game .................... 399  
Matthias Rehm, Catalin Stan, Niels Peter Woldike, and Dimitra Vasilarou
## Contents

### Posters

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Simultaneous, Multidisciplinary Development and Design Journey – Reflections on Prototyping</td>
<td>409</td>
</tr>
<tr>
<td><em>Achim Gerstenberg, Heikki Sjöman, Thov Reime, Pekka Abrahamsson, and Martin Steinert</em></td>
<td></td>
</tr>
<tr>
<td>A Role-Switching Mechanic forReflective Decision-Making Game</td>
<td>417</td>
</tr>
<tr>
<td><em>Thomas Constant, Axel Buendia, Catherine Rolland, and Stéphane Natkin</em></td>
<td></td>
</tr>
<tr>
<td>Adaptation to TV Delays Based on the User Behaviour towards a Cheating-Free Second Screen Entertainment</td>
<td>424</td>
</tr>
<tr>
<td><em>Rui Neves Madeira, Pedro Centieiro, and Nuno Correia</em></td>
<td></td>
</tr>
<tr>
<td>Exploring Deep Content in Physical Rehabilitation Games</td>
<td>433</td>
</tr>
<tr>
<td><em>Niels Quinten, Steven Malliet, and Karin Coninx</em></td>
<td></td>
</tr>
<tr>
<td>Games, from Engaging to Understanding: A Perspective from a Museum of Computing Machinery</td>
<td>439</td>
</tr>
<tr>
<td><em>Giovanni A. Cignoni, Leonora Cappellini, and Tommaso Mongelli</em></td>
<td></td>
</tr>
<tr>
<td>Interactive Painterly Rendering for Mobile Devices</td>
<td>445</td>
</tr>
<tr>
<td><em>Dongwann Kang and Kyunghyun Yoon</em></td>
<td></td>
</tr>
<tr>
<td>Lessons from Practicing an Adapted Model Driven Approach in Game Development</td>
<td>451</td>
</tr>
<tr>
<td><em>Hong Guo, Hallvard Trætteberg, Alf Inge Wang, Shang Gao, and Maria Letizia Jaccheri</em></td>
<td></td>
</tr>
<tr>
<td>Measuring Latency in Virtual Reality Systems</td>
<td>457</td>
</tr>
<tr>
<td><em>Kjetil Raaen and Ivar Kjellmo</em></td>
<td></td>
</tr>
<tr>
<td>MindSpace: A Cognitive Behavioral Therapy Game for Treating Anxiety Disorders in Children</td>
<td>463</td>
</tr>
<tr>
<td><em>Barbara Göbl, Helmut Hlavacs, Jessica Hofer, Isabelle Müller, Hélen Müllner, Claudia Schubert, Halina Helene Spallek, Charlotte Rybka, and Manuel Sprung</em></td>
<td></td>
</tr>
<tr>
<td>Noise Modeler: An Interactive Editor and Library for Procedural Terrains via Continuous Generation and Compilation of GPU Shaders</td>
<td>469</td>
</tr>
<tr>
<td><em>Johan K. Helsing and Anne C. Elster</em></td>
<td></td>
</tr>
<tr>
<td>Serious Games: Is Your User Playing or Hunting?</td>
<td>475</td>
</tr>
<tr>
<td><em>Sofya Baskin, Sharon Anavi-Goffer, and Anna Zamansky</em></td>
<td></td>
</tr>
<tr>
<td>Space for Seriousness? Player Behavior and Motivation in Quiz Apps</td>
<td>482</td>
</tr>
<tr>
<td><em>Heinrich Söbke</em></td>
<td></td>
</tr>
</tbody>
</table>
## Contents

Spheres of Play: Designing Games and Interfaces for Media Architectures ........................................... 490

*Michael Schmitz, Dominik Scholl, Julian Saraceni, Pascal Klein, Carsten Blaser, Jorge Olmeda, Soenke Zehle, and André Miede*

Supporting the Collaboration between Programmers and Designers

Building Game AI ............................................. 496

*Ismael Sagredo-Olivenza, Marco Antonio Gómez-Martín, and Pedro A. González-Calero*

The Impact of Sensor Noise on Player Experience in Magic Window Augmented Reality Aiming Games ........................................ 502

*Farjana Z. Eishita and Kevin G. Stanley*

Towards a Framework for Gamification-Based Intervention Mapping in mHealth ........................................................ 508

*Helf Christopher, Patrick Zwickl, Helmut Hlavacs, and Peter Reichl*

### Demonstrations

[self.]: Realization/Art Installation/Artificial Intelligence: A Demonstration ................................................ 517

*Axel Tidemann and Øyvind Brandtsegg*

Bridging Tangible and Virtual Interaction: Rapid Prototyping of a Gaming Idea .................................................... 523

*Thov Reime, Heikki Sjöman, Achim Gerstenberg, Pekka Abrahamsson, and Martin Steinert*

Can Interactive Art Installations Attract 15 Years Old Students to Coding? .................................................... 529

*Mihail N. Giannakos, Finn Inderhaug Holme, Letizia Jaccheri, Irene Dominguez Marquez, Sofia Papavlasopoulou, and Ilse Gerda Visser*

Digital Art Application Development: A Project to Increase Motivation in Systems Development Courses for Bachelor Students in Computer Engineering ..................................................... 533

*Anniken Karlsen and Robin T. Bye*

Pedal Tanks: A Multiplayer Exergame Based on Teamwork and Competition .................................................... 539

*Kristoffer Hagen, Stian Weie, Konstantinos Chorianopoulos, Alf Inge Wang, and Letizia Jaccheri*

The Vocal Range of Movies - Sonifying Gender Representation in Film ..................................................... 545

*Marcello A. Gómez Maureira and Lisa E. Rombout*
Workshops and Tutorials

Workshop: AI and Creativity in Entertainment ........................................ 553
Axel Tidemann and Agnar Aamodt

Creating Video Content for Oculus Rift: Scriptwriting for 360°-Interactive Video Productions .......................................................... 556
Mirjam Vosmeer and Ben Schouten

Game Mechanics Supporting Pervasive Learning and Experience in Games, Serious Games, and Interactive & Social Media ................... 560
J.M. Baalsrud Hauge, T. Lim, S. Louchart, I.A. Stanescu, M. Ma, and T. Marsh

Making as a Pathway to Foster Joyful Engagement and Creativity in Learning ............................................................... 566
Michail N. Giannakos, Monica Divitini, Ole Sejer Iversen, and Pavlos Koulouris

Playful Experiences and Game Concepts for Multi-screen Environments ................................................................. 571
Jeroen Vanattenhoven and David Geerts

Quantum and Entertainment Computing ............................................. 575
Nikitas M. Sgouros

Tutorial: Service-Oriented Architecture (SOA) Development for Serious Games ................................................................. 578
Maira B. Carvalho, Jun Hu, Francesco Bellotti, Alessandro De Gloria, and Matthias Rauterberg

Author Index ................................................................. 581
Entertainment Computing - ICEC 2015
14th International Conference, ICEC 2015, Trondheim, Norway, September 29 - October 2, 2015, Proceedings
Chorianopoulos, K.; Divitini, M.; Baalsrud Hauge, J.; Jaccheri, L.; Malaka, R. (Eds.)
2015, XVI, 583 p. 168 illus. in color., Softcover
ISBN: 978-3-319-24588-1