

# IEEE International Games Innovation Conference November 2-3, 2011

Chapman University City of Orange California USA ( Near Disneyland and Newport Beach )



## 2-Day Conference Program

Wednesday - November 2, 2011		
<b>Morning Program</b>		
8:00	Registration at Sandhu Conference Center, Chapman University	
09:00 - 09:20	Conference Opening at Sandhu Conference Center	
09:20 - 10:05	Opening Keynote - The Next Big Thing For Games	<i>Trip Hawkins, Digital Chocolate</i>
10:10 - 10:40	Security, Complexity, and the Future of Gaming	<i>Ben Jun, Cryptography Research inc.</i>
10:40 - 11:15	Conference Keynote	<i>Susan Bonds, 42 Entertainment</i>
<b>Lunch Program</b>		
	Lunch at Beckman Hall	
11:40 - 13:10	Innovation Summit Keynote: Natural User Interface	<i>Ohad Shvueli, PrimeSense</i>
	Keynote - Finding Moments of Play in the Enterprise	<i>Li-Te Cheng, IBM</i>
<b>Afternoon Program</b>		
13:35 - 14:10	"No Storage, No Game: The Role of Memory and Storage Architectures in Game Design and Performance" <i>Tom Coughlin, Coughlin Associates</i> <i>Michael Wang, Macronix</i>	"Playing with Reality, Alternate Reality Games, Urban and Serious Play" <i>Patricia Gouveia, Universidade Lusofona de Humanidades e Tecnologias, Portugal</i> <i>Jeff Watson, University of Southern California</i>
14:15 - 16:05	Paper Session 1	Paper Session 2
16:10 - 17:20	Tutorial: Culture, Learning, Play in Radically Connected Era <i>Adrian Cheok, National University of Singapore</i>	Paper Session 3
<b>Conference Reception</b>		
17:40 - 19:00	Reception at Beckman Hall	
	Reception Keynote	<i>Robert Mical, Video Game Industry Pioneer</i>

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## Thursday - November 3, 2011

### Morning Program

8:00	Registration at Sandhu Conference Center, Chapman University	
09:00 - 09:45	Innovation Summit Keynote: Innovation and Gaming – The Anytime, Anywhere Player	<i>Dave Durnil, Qualcomm</i>
09:45 - 10:20	High Speed Memory for Games	<i>Steven Woo, Rambus</i>
10:25 - 11:00	The Process of Innovation in Game Design	<i>Brian Winn, Michigan State University</i>
11:00 - 11:40	High Quality Mobile Experience - IEEE P2200: Impact of Data Caching over Network on Games	<i>William Fisher, Quicksilver Software</i> <i>Yehuda Hahn, SanDisk</i>

### Award Lunch

	Award Lunch in Beckman Hall	
12:00 - 13:35	Keynote - Free Transistors: How can gaming benefit from the plenty?	<i>Craig Hampel, Rambus</i>
	Keynote: Serious Games Untie the Gordian Knot - The Art of the Possible	<i>Phaedra Boindiris, IBM</i>

### Afternoon Program

14:00 - 14:45	"Advanced Graphics Programming on Next-Gen Mobile Platforms" <i>Wolfgang Engel, Confetti Special Effects</i>	Poster Session
15:00 - 16:15	Paper Session 4	Paper Session 5
16:15 - 17:30	Paper Session 6	Paper Session 7
17:40 - 18:15	Closing Ceremony Keynote: Motivating Students to Become Possibility Strategists <i>Glennon Neubauer, Westwood College</i> Announcement: IEEE 2012 International Games Innovation Conference	

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## Paper Sessions

### **Wednesday, November 2, 2011**

- 14:16 - 16:05**      Session 1: Innovative Ideas for Games (6 papers)  
                         Session 2: Lessons Learned, Social Impact and Cultural Impact (6 papers)
- 16:10 - 17:40**      Session 3: Games for Business and Multiple Players (5 papers)

### **Thursday, November 3, 2011**

- 14:00 - 15:00**      Poster Session (5 papers)
- 15:00 - 16:15**      Session 4: Games for Learning, Training and Exercise (4 papers)  
                         Session 5: Design of Game (4 papers)
- 16:16 - 17:30**      Session 6: Interface Device, Location Awareness and Security (4 papers)  
                         Session 7: Education, Health and Training (4 papers)

*Paper titles and abstracts are listed on the following pages.*

**Wednesday, November 2, 2011 14:16 – 16:05**

**Paper Session 1: Innovative Ideas for Games**

**14:16 *The iTron Family of Geocast Games (Extended Abstract)***

Robert J Hall (AT&T Labs Research, USA)

The iTron Family of geocast games illustrates how athletic play can be combined with real-time-strategic, imaginative, and creative play from digital games to produce sports of the future appealing to a wider range of users.

**14:34 *Musical Mood-Based Mobile Gaming***

Alexander Hodge (University of Waterloo, Canada); Karen Collins (University of Waterloo, Canada); Kelvin Lam (University of Waterloo, Canada); Peter Taillon (University of Waterloo, Canada)

We explore ways of using mood-based extraction methods on player-selected music to drive content in mobile video games. We describe the methods for a game engine adapting the CLAM C++ Library for the Apple iPod.

**14:52 *Applying Monte-Carlo Tree Search to Collaboratively Controlling of a Ghost Team in Ms Pac-Man***

Kien Q. Nguyen (Ritsumeikan University, Japan); Ruck Thawonmas (Ritsumeikan University, Japan)

We present an application of Monte-Carlo Tree Search to controlling ghosts in the game of Ms Pac-Man. We approached the problem by performing MCTS on each ghost tree represents the game-state from the ghost perspective.

**15:10 *Fractal Territory Board Game***

S. F. Siao (National Dong Hwa University, Taiwan); Hung-Wei Hsu (National Dong Hwa University, Taiwan); Wen-Kai Tai (National Dong Hwa University, Taiwan); Andrew Yip (Excel Computers of Silicon Valley, USA)

Novel fractal board games that can be infinitely subdivided for generating the subgames to balance the dominance of the leading player in the abstract board game is proposed, making connection board games truly fractal games.

**15:28 *Immersive Mobile Gaming with Scanned Laser Pico Projection Systems***

P. Selvan Viswanathan (Microvision, Inc., USA); David Lashmet (Microvision, Inc., USA); Jari Honkanen (Microvision, Inc., USA)

A scanned laser pico-projector's unique advantages in the space of motion sensed and/or mobile gaming domain is presented and immersive gaming with such components is described. We also discuss user survey results from CeBIT, 2011.

**15:46 *Achieving Connected Home Architectural Simplicity***

Sathia Narayanan Mahadevan (Infosys Technologies Limited, USA)

Next generation platforms built around mobility, "smart" systems needs applications that are cloud based and require seamless common communication among each other. This paper argues on the basic tenet of communication, IPC mechanism to be standardized to a considerable scale.

**Wednesday, November 2, 2011 14:16 – 16:05**

**Paper Session 2: Lessons Learned, Social Impact and Cultural Impact**

**14:16 *IgnitePlay: Encouraging and Sustaining Healthy living through Social Games***

Magy Seif El-Nasr (Northeastern University & Simon Fraser University, USA); Lisa Andres (Ignite Play, Canada); Terry Lavender (Simon Fraser University, Canada); Natalie Funk (Simon Fraser University, Canada); Nasim Jahangiri (Simon Fraser University, Canada); Mengting Sun (Simon Fraser University, USA)

Many successful social and casual games use motivational techniques in their design that sustain players' interest over time. In this paper, we discuss a novel technique to guide motivation towards a healthy life style using concepts from social online games.

**14:34 *Survey on How Norwegian Teenagers Play Video Games***

Alf Inge Wang (Norwegian University of Science and Technology, Norway)

A survey among 103 Norwegian teenager about how they play video games, how much they play, the game platform they prefer, how much time they spend playing mobile games, and the game genres they prefer.

**14:52 *Applying the Technology Acceptance Model to Investigate the Factors Comparing the Intention between EIVG and MCG Systems***

Jon-Chao Hong (National Taiwan Normal University, Taipei, Taiwan); Kai-Hsin Tai (National Taiwan Normal University, Taipei, Taiwan)

This study investigated technology acceptance model of students by using Embodied Interactive Video Games and Mouse Click Games to learn tenses in English. Participants were junior high students, and they were divided into two groups.

**15:10 *Classification of cognitive states of attention and relaxation using supervised learning algorithms***

Candy Obdulia Sosa Jimenez (University of Veracruz, Mexico); Héctor Gabriel Acosta Mesa (University of Veracruz, Mexico); Genaro Rebolledo-Mendez (University of Veracruz, Mexico); Sara de Freitas (Coventry University, United Kingdom)

This paper shows results related to accuracy of Artificial Intelligence techniques to classify physiological data during video game use. Future studies will be geared towards automatic recognition of cognitive states and self-adaptation in video games.

**15:28 *Experiment on Social Multiplayer Multimodal Games***

Alf Inge Wang (Norwegian University of Science and Technology, Norway)

This paper presents results from an experiment where 35 teenagers tested a social multiplayer multimodal games discovering attitude towards such games to test differences related to gender and how much the subjects play every week.

**15:46 *The Relation between Students' Anxiety and Interest in Playing an Online Game***

Ming-Yueh Hwang (National Taiwan Normal University, Taiwan); Jon-Chao Hong (National Taiwan Normal University, Taipei, Taiwan); Tsui-Fang Hsu (National Taiwan Normal University, Taiwan); Yu-Ju Chen (National Taiwan Normal University, Taiwan)

A survey was conducted to examine participants' anxiety, interest and cognitive load by using this computer-assisted game. Results indicated that students were interested in this game and would like to play again in the future.

**Wednesday, November 2, 2011 16:10 – 17:40**

**Paper Session 3: Games for Business and Multiple Players**

**16:10 Real-time imaging and recognition techniques for game applications**

Wen-Chung Kao (National Taiwan Normal University, Taiwan)

This talk focuses on the key technologies used for the human machine interface of interactive game applications. The topics cover the real-time color/tone reproduction as well as the image feature extraction under various illumination conditions.

**16:28 The Future of Work is Play**

Ross Smith (Microsoft Corporation, USA)

Shifts in global, societal, technological, economic, and socio-political trends will shape the future of work. The culmination of distinct trends will lead to an increased use of game mechanics in the workplace of the future.

**16:46 Mimicking Player Strategies in Fighting Games**

Simardeep Saini (Loughborough University, United Kingdom); Christian Dawson (Loughborough University, United Kingdom); Paul Chung (Loughborough University, United Kingdom)

Extended abstract providing a high level summary of research regarding the mimicking of human playing strategies in one-on-one fighting games. A novel approach utilizing clustering, supervised learning and data driven finite state machines is used.

**17:04 Cost-effective Virtual World Development for Serious Games**

Hao Liu (University of East London, United Kingdom); Yasmine Arafa (University of East London, United Kingdom); Cornelia Boldyreff (University of East London, United Kingdom); Mohammad Dastbaz (University of East London, United Kingdom)

Developing a virtual environment normally involves model creations, animations and event simulations. This paper introduces an open-source software bundle that will enable developers to easily and quickly create collaborative and scenario-driven environments for serious games.

**17:22 Remote Kenken: A Networked Real Hopping Game Based on Hopscotch**

Jun Munemori (Wakayama University, Japan); Hirotaka Yamashita (Nagoya Ryoju Estate Co., Ltd., Japan); Junko Itou (Wakayama University, Japan)

We proposed an exertainment support system named the "Remote Kenken." Victory or defeat is decided by the accuracy of the step and hourage. We can play with someone in a remote place using a network.

**Thursday, November 3, 2011 14:00 – 15:00**

**Poster Sesssion**

**A Simplified Level Editor**

Brent Cowan (University of Ontario Institute of Technology, Canada); Bill Kapralos (University of Ontario Institute of Technology, Canada)

We present a level editing software tool that simplifies the creation of three dimensional models/scenes by concentrating only on the features specific to the arrangement of models and materials needed to create a three-dimensional environment/scene.

**Motivation-Behavior Relations ; An empirical analysis for playing experience on social network games**

Mijin Kim (Dongseo University, Korea)

\* \* This paper is aimed at analyzing the relationship between users' behaviors in relation to a SNG (Social Network Game), which mainly targets communities, and the motivations that give rise to such selective behaviors.

**Foodie: Play with your food-Extend social cooking game with novel edible interface**

Jun Wei (National Unverisity of Singapore & Keio-NUS CUTE CENTER, Singapore); Adrian Cheok (National University of Singapore, Singapore); Xavier Roman Martinez (Keio-NUS CUTE CENTER, National Unverisity of Singapore, Singapore); Remi Tache (Keio-NUS CUTE CENTER, National Unverisity of Singapore, Singapore); Qing Zhu (National Unverisity of Singapore, Singapore)

FoodGenie achieves synchronous printing of 3-dimensional edible food designed in digital format. It extends the digital cooking games to the real edible food, connecting digital playfulness with active participation in food preparation and eating experience.

**An Innovative Interface Design with Smart Phone for Interactive Computer Game Applications**

Wei Chin Huang (National Chiao Tung University, Taiwan); Tennyson Lu (National Chiao Tung University, Taiwan); Wai-Chi Fang (National Chiao Tung University, Taiwan)

This paper discusses the experiment of using a smart phone as a game controller. Through this attempt, we can get some idea and experience to develop controllers mainly used with computers or new game controllers.

**FPGA Based 3D Camera Resectioning**

Wai-Chi Fang (National Chiao Tung University, Taiwan); Daniel M Ho (National Chiao Tung University, Taiwan)

This paper describes an embedded system based framework for processing depth and RGB images. This work provides a FPGA accelerated real-time solution for the problem of resectioning image data from a 3D camera to the coordinates of an RGB camera.

Thursday, November 3, 2011 15:00 – 16:15

**Paper Session 4: Games for Learning, Training and Exercise**

**15:00 *Integration of Radiation Transport Models in a 3D Video Game to Train Law Enforcement Officers and First Responders on Preventative Nuclear Detection***

James Winso (Spectral Labs Incorporated, USA); John Rolando (Spectral Labs Incorporated, USA); David Olivares (Spectral Labs Incorporated, USA); Henry Yu (Kalloc Studios, USA); Ronen Shaham (Kalloc Studios, USA); Cliff Halcom (Kalloc Studios, USA); Vythilingam Wijekumar (Indiana University of Pennsylvania, USA)

A new system, the Realistic and Adaptive Interactive Learning System (RAILS), has been developed by integrating radiation transport models into a PC based video game engine to facilitate training in the use of Nuclear Detection equipment by Law Enforcement Officers.

**15:18 *Realistic and Adaptive Interactive Learning System (RAILS) exploiting 3D Video Games***

James Winso (Spectral Labs Incorporated, USA); John Rolando (Spectral Labs Incorporated, USA); David Olivares (Spectral Labs Incorporated, USA)

A new system, the Realistic and Adaptive Interactive Learning System (RAILS), has been developed by integrating radiation transport models into a PC based video game engine to facilitate training in the use of Nuclear Detection equipment by Law Enforcement Officers.

**15:36 *IQube: a cube for learning***

Andrei Stancovici (Politehnica University of Timisoara, Romania); Ovidiu Szanto (Politehnica University of Timisoara, Romania); Viktor Ardelean (Politehnica University of Timisoara, Romania); Remus Barbatei (Politehnica University of Timisoara, Romania); Marius Marcu (Politehnica University of Timisoara & Lasting Software Timisoara, Romania)

This paper presents a new concept to be used, in primary education to address this problem: a learning cube, tangible, exploring and playing platform for children. ICube has a colored display on each of its sides, making it very customizable.

**15:54 *Neuroscience and Simulation Interface for Adaptive Assessment in Serious Games***

Thomas Parsons (USC Institute for Creative Technologies, USA); James Reinebold, III (University of Southern California & Institute for Creative Technologies, USA)

We present an iteration of the Virtual Reality Cognitive Performance Test (VRCPAT) that proffers a framework for adapting scenarios in the Virtual Battlespace 2 (VBS2) game engine based upon the user's neurocognitive and psychophysiological states.

Thursday, November 3, 2011 15:00 – 16:15

**Paper Session 5: Design of Game**

**15:00 *Game Development Frameworks for SE Education***

Bian Wu (Norwegian University of Science and Technology, Norway); Alf Inge Wang (Norwegian University of Science and Technology, Norway)

This paper presents a literature survey about the method of creating/modifying a game on a game development framework (GDF) as an assignment to learn software engineering (SE) and share our recommendation for choosing appropriate GDFs.

**15:18 *Enabling Collaborative Learning with an Educational MMORPG***

Chengzhi Liu (Norwegian University of Science and Technology, Norway)

In order to provide interesting education, this paper presents a collaborative learning environment on the base of a multiplayer online game platform. The implemented educational game can be used as a supplementary tool for traditional classroom teaching.

**15:36 *Player Guiding in an Active Video Game***

Brian Winn (Michigan State University & Games for Entertainment and Learning Lab, USA); Wei Peng (Michigan State University, USA); Karin Pfeiffer (Michigan State University, USA)

The unique challenges in guiding players in an active video game (or exergame) using physical input devices are explored. The solutions discovered through the process of iterative design and multiple rounds of playtesting are discussed.

**15:54 *The Ghost Club Storyscape: Designing for Transmedia Storytelling***

Hank Blumenthal (Georgia Institute of Technology, USA); Yan Xu (Georgia Institute of Technology, USA); Sanika Mokashi (Georgia Institute of Technology, USA); Nachiket Ramanujam (Georgia Institute of Technology, USA); Jason Nunes (Jason Nunes, USA); Richard Shemaka (Georgia Institute of Technology, USA)

Designing transmedia storytelling needs to connect a participant's experience across different media. We extract four components for building such connections—mythology, canon, character and genre, and design several digital media expressions of The Ghost Club Storyscape to experiment with these components.

Thursday, November 3, 2011 16:16 – 17:30

**Paper Session 6: Interface Device, Location Awareness and Security**

**16:16 Motion Selection and Motion Parameter Control Using Data Gloves**

Nik Isrozaidi Nik Ismail (Kyushu Institute of Technology & Universiti Teknologi Malaysia, Japan); Masaki Oshita (Kyushu Institute of Technology, Japan)

This paper presents a data gloves based interface, that can control many types of motion and its styles. We use user's hand positions to select a motion and finger angles to control the motion parameters.

**16:34 Face and Gaze Tracking as Input Methods for Gaming Design**

Florin Nanu (Tessera, Romania); Stefan Petrescu (Tessera, Romania); Peter Corcoran (National University of Ireland Galway, Ireland); Petronel Bigioi (Tessera & National University of Ireland, Galway, Ireland)

Real time face detection with eye-gaze tracking and face analysis provides new means of user input to gaming environments. Game designers can use facial information for UI and to provide smarter modes of player interaction.

**16:52 A Pervasive Game to Know Your City Better**

Bian Wu (Norwegian University of Science and Technology, Norway); Alf Inge Wang (Norwegian University of Science and Technology, Norway)

This paper presents a pervasive game on Android platform where players can play a knowledge competition tour in groups in the city of Trondheim, and gain better understanding of the city through solving different tasks.

**17:10 Dancing Game by Digital Textile Sensor, Accelerometer and Gyroscope**

Chang-Ming Yang (Ming Young Biomedical Corp., Taiwan); Jwu-Sheng Hu (National Chiao-Tung University, Taiwan); Ho Yang (Ming Young Biomedical Corp., Taiwan); Chih-Chung Wu (Ming Young Biomedical Corp., Taiwan); Narisa Chu (CWLab International, Ltd. & California Lutheran University, USA)

A novel dancing game, comprised of pressure sensors on socks with accelerometer and gyroscope on pants to detect the movement of the player, is presented. The firmware in microcontroller can judge the movement of the player with enough accuracy.

Thursday, November 3, 2011 16:16 – 17:30

**Paper Session 7: Education, Health and Training**

**16:16 Power Defense: A Video Game for Improving Diabetes Numeracy**

Ereny Bassilious (Hospital for Sick Children, Canada); Aaron DeChamplain (University of Ontario Institute of Technology, Canada); Ian McCabe (University of Ontario Institute of Technology, Canada); Matthew Stephan (University of Ontario Institute of Technology, Canada); Bill Kapralos (University of Ontario Institute of Technology, Canada); Farid Mahmud (Hospital for Sick Children, Canada); Adam Dubrowski (University of Toronto, Canada)

Adolescents with Type 1 diabetes often have poor control of their disease. We have developed Power Defense, a highly interactive and engaging videogame aimed at improving one particular skill associated with managing diabetes - numeracy.

**16:34 Observations on Designing a Computer Science Curriculum Focusing on Game Programming Using Testimonials from Industry Leaders**

Graham Smallwood (CSULB, USA); Don Black (University of California, USA)

This paper will explain the IEEE standard for a computer science curriculum, and then compare those milestones with what the games industry wants using interviews with game professionals who are responsible for hiring decisions at top companies.

**16:52 SCETF: Serious Game Surgical Cognitive Education and Training Framework**

Brent Cowan (University of Ontario Institute of Technology, Canada); Hamed Sabri (University of Ontario Institute of Technology, Canada); Bill Kapralos (University of Ontario Institute of Technology, Canada); Sayra Cristancho (University of Western Ontario, Canada); Fuad Moussa (Sunnybrook Health Sciences Centre, Canada); Adam Dubrowski (University of Toronto, Canada)

We present a multi-modal, serious game surgical procedure education and training framework (SPETF) that is currently being developed. Domain-specific surgical "modules" can then be built on top of the existing framework, utilizing common simulation elements/assets.

**17:10 A Breathing Game with Capacitive Textile Sensors**

Chang-Ming Yang (Ming Young Biomedical Corp., Taiwan); Ho Yang (Ming Young Biomedical Corp., Taiwan); Chih-Chung Wu (Ming Young Biomedical Corp., Taiwan); Narisa Chu (CWLab International, Ltd. & California Lutheran University, USA)

For an ordinary player, abdominal breathing gives more benefit to the human body than thoracic breath. Yoga, Qigong, Lamaze, and wind instrument players need to practice abdominal breathing. A computer game is provided to encourage breathing practice.