

iLRN 2016 Preface

The iLRN conference is in its 2nd iteration reporting high quality results in immersive learning research. It is organized by the Immersive Learning Research Network (iLRN), an international organization of developers, educators, and research professionals collaborating to develop the scientific, technical, and applied potential of immersive learning. Effective immersive learning experiences are created within multiple media using myriad techniques and employing a wealth of knowledge that spans many disciplines wherein immersive learning and training may be relevant. The vision of iLRN is to seek out, innovate, and share the evidence and potential for immersive learning. One way of doing this is by hosting a worldwide conference of immersive scholars from across the disciplines, beginning in 2015 in Prague, Czech Republic. These conferences are designed to support and create opportunities for iLRN members to meet and share in collaborative contexts and build their professional immersive learning research and development capacities, and share practical experiences in various scientific tracks and other presentation formats. But more than this, they were devised as an incubator during which iLRN members can collaboratively develop a comprehensive research and outreach agenda that encompasses the breadth and scope of learning potentialities, affordances and challenges of immersive learning environments.

2016 marks the 2nd Annual iLRN conference, hosted at the University of California at Santa Barbara, a beautiful and sunny place near the beach, amidst a busy network of immersive technology corporations, non-profits, entertainment and tourist attractions, and other learning and research institutions in the California area. It's a setting where we hope to better define "immersion" and what that means across our connected interdisciplinary focus. We hope to highlight what "immersive" learning means to a number of focused disciplinary areas. We hope to immerse ourselves in a number of designed experiences to compare and contrast what capabilities they bring – and what things they disallow or take away.

This year's special focus is set on the concept of "The Versatilist". Creating effective learning experiences using immersive technologies requires the coordination of multiple types of special expertise and effort. Artists, programmers, developers, content specialists and evaluators must work together. Creating immersive experiences is getting easier everyday, but doing them well so people learn effectively is much harder. People engaged in the production of high quality immersive learning experiences, thus, must be a specialist in one or more disciplines with the ability to appreciate and work effectively from the lens of other specialties. There's a call for immersive learning professionals to be "versatilists".

As such, this conference is focused on providing opportunities for individuals from a wide variety of areas to share their information across the fields involved with the research, development, implementation and practical experiences, and business of immersive learning. The conference format was designed to gather submissions to the main track focusing on the conference theme, while the six special tracks, workshops,

and two publication outlets were planned to draw more interest from diverse communities of scholars and practitioners based on discipline, methodology, or technology type. Two stimulating keynotes and six invited Featured Speakers from academia and research-sponsored industry complement the technical program. We showcase and discuss all of this scholarly and embodied experience through our podcast, *The Versatelist*, with our host and 2016 iLRN general co-chair, Dr. Patrick O'Shea. The podcast is one great way for us to explore the scope and depth of this exciting emerging interdisciplinary field.

Like the inaugural conference, iLRN 2016 is an important forum for immersive learning research. The call for papers resulted in a total of 45 submissions from around the world. Every submission has undergone a rigorous review by at least two members of the program committee to keep high scientific and quality standards. The editorial board decided based on the reviewers' comments to accept 16 full papers for the Springer Proceedings, which is an acceptance rate of 36 percent. The full papers are arranged into two parts of the proceedings, the main track and the special tracks. The accepted papers' authors are from: Austria, Australia, England, Portugal, Scotland, Germany, U.S.A. (California, Illinois, Massachusetts, Montana, Oregon, North Carolina).

We would like to thank all who contributed to the success of this conference, in particular the members of the iLRN committee (and the additional reviewers) for carefully reviewing the contributions and selecting a high quality program. Our general co-chairs Christian Gütl and Patrick O'Shea did a perfect job in organizing and coordinating the conference details. Colin Allison and Leonel Morgado did an incredible job as PC co-chairs, handling the development of a wonderful program, and Johanna Pirker for doing the same for the special tracks. Dennis Beck and Amal Shehadeh took over the tedious job to prepare this volume. And of course, we would like to especially thank Jonathon Richter, iLRN executive director, for taking care of the local arrangements and many other aspects in the organization of the conference.

The following people performed admirably in their roles as special track co-chairs:

- Dennis Beck and Yvonne Earnshaw – K-12 and School Tech
- Giuliana Dettori – Self-regulated learning in immersive environments
- Vic Callaghan, Michael Gardner, Jonathon Richter – Future Education Special Track.
- Markos Mentzelopoulos, Daphne Economou, Vassiliki Bouki, Aristidis Protopsaltis, Ioannis Doumanis – Cognitive Serious Gaming Special Track
- Kirstin Miller, Marsha Goldberg, Steven R Poe, and Kevin Shrapnell – EcoCities Special Track
- Johanna Pirker, Foaad Khosmood, Britte H. Cheng, Maroof Fakhri, Zoë J. Wood – Immersive and Engaging Educational Experiences Special Track.

We hope that you enjoy reading the content of these proceedings. Browse the papers, reflect on the interdisciplinary connections and applications, contact the authors to continue discussions, and continue to advance iLRN's immersive learning agenda by becoming a versatelist - able to apply a depth of skill to a progressively widening scope

of immersive learning situations and experiences, equally at ease with technical issues as with disciplinary strategies and content.

June 2016

Jonathon Richter
Christian Gütl
Patrick O'Shea
Dennis Beck
Amal Shehadeh

iLRN 2016 Main Conference Preface

ILRN 2016 is the second annual international conference of the Immersive Learning Network. It follows on from the inaugural conference held in Prague in July 2015. The topic is becoming increasingly relevant as the power and affordability of suitable computers, mobile devices, network connectivity and interface technologies has made virtual and augmented reality environments more accessible than ever before. ILRN's mission is to stimulate the use of, and share knowledge about, these exciting technologies as they are applied effectively in education and learning scenarios. This requires both fundamental and applied research. ILRN aims to develop a comprehensive research and outreach agenda that encompasses the breadth and scope of all the learning potentialities, affordances and challenges of immersive learning environments. To achieve this, the ILRN has invited scientists, practitioners, organizations, and innovators across all disciplines to report on their research in the ILRN 2016 international conference. Twenty-three papers were received for this event and after a rigorous reviewing process eight were selected as full papers for this Springer publication (35% acceptance rate). The authors of these papers hail from Austria, Australia, England, Germany, Portugal, Scotland, and in the United States, North Carolina and Oregon.

Papers in the main conference report on the use of immersive learning environments to address a variety of educational challenges. Self-regulated learning is the subject of study by Pedros et al., who recommend best practices for supporting students who are transitioning into advanced learning scenarios where they must become more independent and self-reflective. Gutl et al. describe a multi-user virtual world based on Open Wonderland used to support a pedagogical model, which combines immersive collaboration with an exploratory teaching approach for the archaeological domain. Fabola and Miller report on experiences using a variety of novel user interfaces which allow school children to access a sophisticated OpenSim-based immersive model of a 14th century cathedral. Moissinac et al. describe an immersive environment – Rippleville - for teaching teenagers how to avoid obesity. O'Shea and Elliot explore the capabilities of augmented reality apps for iOS and Android devices and assess them in terms of educational usability and value. The user experience (UX) in a VLE is the focus of research by Janssen et al. who used the widely used Minecraft platform for their experiments. Bakri and Allison investigate the evolving support for accessing immersive environments via standard web browsers and address the question of the likelihood of the 3D Web and virtual worlds converging. Efferre et al. review features of a learning analytics tool that is part of an e-learning multimodal dialogue system, which, in turn, is part of an immersive environment to support different learning scenarios.

We hope you will find this collection of papers informative and engaging. We encourage you to join ILRN and participate in future events.

June 2016

Colin Allison
Leonel Morgado

iLRN 2016 Special Tracks Preface

The field of immersive digital learning environments has been an extremely successful and emerging topic of interest. One of the grand challenges of this complex and growing research field is its interdisciplinary and broad nature. Immersive learning consists of a wide range of research interests and fields and enables collaboration between researchers and practitioners from different disciplines. Continuing on our successful experience at iLRN 2015, we have introduced special tracks as forum for quality scientific research in focused areas. The mission of these focused tracks is to bring together specialists from diverse areas to enable an interdisciplinary collaboration and exchange of knowledge.

Thus, we invited specialists from different research fields to submit focused special tracks to this conference to highlight various areas of immersive learning. iLRN 2016 features four special tracks covering topics:

- The special track “K-12 and School Tech” is chaired by Dennis Beck and Yvonne Earnshaw. The goal of this track is to discuss current, relevant, and situated immersive learning research in the primary and secondary classroom.
- The track “The Future of Education” explores visions of possible ways how immersive-reality technologies might change future education. The track is chaired by Vic Callaghan, Michael Gardner, and Jonathon Richter.
- In the track “Cognitive Serious Gaming” the track chairs Markos Mentzelopoulos, Daphne Economou, Vassiliki Bouki, Aristidis Protopsaltis, and Ioannis Doumanis explore how cognitive principles can be applied to improve the training effectiveness in serious games.
- In the track “Immersive and Engaging Educational Experiences” the track chairs Johanna Pirker, Foaad Khosmood, Britte H. Cheng, Maroof Fakhri, and Zoë J. Wood discuss how educational environments can be designed, developed, and analyzed with focus on immersion and engagement.

Twenty-two submissions were received by the Special Tracks and six were chosen as full papers to be published in the Springer proceedings for an overall acceptance rate of 28%. Authors submitted contributions from England, Ireland, and in the United States – Arkansas, California, Illinois, Montana, and Ohio.

We would like to express our gratitude to all chairs and reviewers of the special tracks and their engagement and commitment to make the tracks an integral part of the main conference by providing a broad variety of high-quality presentations with an in-depth overview of different research topics related to immersive learning. We cordially thank each and every person who contributed toward making the special tracks to such an integral and successful part of the main conference.



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