

# The 11th International Conference on INTELLIGENT ENVIRONMENTS

# IE 2015

PRAGUE  
Czech Republic

THE **1ST**  
IMMERSIVE  
LEARNING  
RESEARCH  
NETWORK  
CONFERENCE  
(ILRN'15)

SYMPOSIUM  
ON FUTURE  
INTELLIGENT  
EDUCATIONAL  
ENVIRONMENTS  
AND LEARNING  
2015  
(SOFIEE'15)

Conference  
15-17 July  
2015

Workshops  
13-14 July  
2015

THE **4TH**  
INTERNATIONAL  
WORKSHOP  
ON THE RELIABILITY  
OF INTELLIGENT  
ENVIRONMENTS  
(WORIE'15)

THE **4TH**  
INTERNATIONAL  
WORKSHOP  
ON SMART  
OFFICES  
AND OTHER  
WORKPLACES  
(SOOW'15)



# IE'15 BEST PAPER AWARD

## Nominated papers

### Full papers:

SmartWalker: Towards an intelligent robotic walker for the elderly  
SparkXS: Efficient Access Control for Intelligent and Large-Scale Streaming Data Applications  
Assessing Real World Imagery in Virtual Environments for People with Cognitive Disabilities

### Short papers:

Optimization of Decision-Making in Artificial Life Model Based on Fuzzy Cognitive Maps  
Developing Navigational Services for People with Down's Syndrome

### Work in Progress:

Multi-Label Learning for Activity Recognition  
Mobile Augmented Reality as an Orientation Aid: A Scavenger Hunt Prototype



## IE 2015 on Mobile

CONFERENCE PROGRAMME

USEFUL INFORMATION

UPDATES

# INTELLIGENT ENVIRONMENTS 2015

The 11th Intelligent Environments conference (IE'15) is held at the beautiful and historic city of Prague (Czech Republic) and organized by the Faculty of Informatics and Management, University of Hradec Kralove (UHK). It is the eleventh edition in a series of highly successful conferences that were organized in Colchester (United Kingdom), Athens (Greece), Ulm (Germany), Seattle (USA), Barcelona (Spain), Kuala Lumpur (Malaysia), Nottingham (United Kingdom), Guanajuato, (Mexico) and Shanghai (China) in the past ten years.

The concept of Intelligent Environment has matured into a vision of a technological ecosystem adaptive to human needs and active along human intentions. Every year research endeavour advances towards this vision. The IE'15 provides an open platform for interactive discussion, sharing expertise and scientific socialization.

This year the program of presentations spans over two full days which includes regular full and short papers as well as work in progress, position, demo, and video papers. The papers accepted in the conference programme deal with a broad range of research topics spanning various disciplines.

We welcome the strong participation of architects and social scientists. The blending of seemingly different disciplines and the dialogue between scientists from varying backgrounds make this conference a unique forum for the fruitful exchange of ideas.

Co-located with the conference there is a strong workshops program featuring a variety of important topics which include Affective Computing in Intelligent Environments, Artificial Intelligence Techniques for Ambient Intelligence, Intelligent Educational Environments and Learning, Immersive Learning, Smart Offices and Other Workplaces and Reliability of Intelligent Environments. The Intelligent Environments workshops have proved to be a source of much vitality to the conference providing an opportunity to discuss earlier research that may open up new ways to advance the area of Intelligent Environments. All papers accepted in the Workshops program are published in printed form as a volume of the Ambient Intelligence and Smart Environments Series of IOS Press and electronically available through ACM Digital Library with many workshops being connected with external journals that lead to more further publishing opportunities for the authors.

We are very grateful to the organizing committee and, especially the local organizing committee at UHK who supported this event so effectively. A special mention for the direct role in the selection of content for the proceedings goes to the program committee and the external reviewers who devoted time from their busy agendas to provide feedback on the submissions.

Also, we need to say a special word of thanks to our sponsors: University of Hradec Králové, IEEE Systems, Man & Cybernetics Society, Taylor & Francis Group, IOS Press, and the Association for the Advancement of Artificial Intelligence.

Finally, we want to make explicit our deep gratitude to all the researchers, who are the soul of this event and whose inspired research provides our conference with the latest advances of this fascinating area; your presence makes the IE conferences the very special experience it is. We welcome you all to IE'15 and hope you enjoy the conference and venue.

## Programme Chairs

**Michael Weber and Wolfgang Minker**, Ulm University (Germany)

## Workshops Chair

**Davy Preuveneers**, KU Leuven (Belgium)

## General Chairs

**Peter Mikuleký and Pavel Čech**, University of Hradec Kralove (Czech Republic)

# VENUE

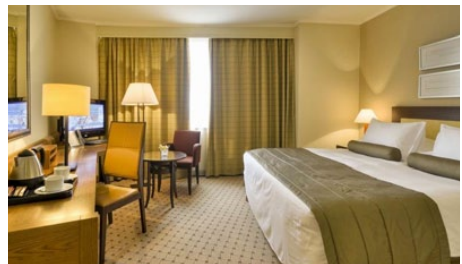
## About Prague

Prague is the city with an extensive historic centre which has been included in the UNESCO list of World Heritage Sites. It is known as the magical city of bridges, cathedrals, gold-tipped towers and church domes. Prague belongs to Europe's most charming and beautiful cities and has become a popular travel destination in Central Europe. Prague is also a modern and vibrant city full of energy, music, cultural art, fine dining and special events. More about Prague.



## Location

The hotel has its own driveway connected to the main highway which leads to Prague, Brno, Vienna and divides the city of Prague (North/South). It's direct access to one of the underground stations makes it easier to commute within other transportation hubs, like the main train station Hlavní nádraží which is only 3 stops away and 4 stops divides us from the main bus station Florenc.



## Corinthia Hotel Prague \*\*\*\*

Corinthia Hotel Prague offers luxurious event spaces that create a stylish platform for any conference gathering. From state-of-the-art connectivity and bespoke web pages for delegates, to mouth-watering catering and elegant venues, you can rest assured that every detail has been taken care of with the upmost professionalism, dedication and care.

## Address

Kongresova 1  
Prague 4, 140 69  
Czech Republic

# KEYNOTE SPEAKERS

## Dr. Roy Want

Research Scientist, Google, USA

### THE WEB OF THINGS

In a world of billions of Internet connected smart devices, preferentially discovering things nearby and allowing easy user interaction, creates a powerful filter for users to overcome the scale and complexity of this global system. Merging the virtual World Wide Web with nearby physical devices that are part of the Internet of Things (IoT), will allow anyone with a mobile device (such as a smartphone), to walk up, and with the appropriate authorization, monitor or control anything.

Roy Want received his doctorate from Cambridge University, England in 1988, and is currently a Research Scientist at Google. Previous positions include Sr. Principal Engineer at Intel Corporation, and a Principal Scientist at Xerox PARC. He holds the grade of both ACM and IEEE Fellow. His research interests include mobile and ubiquitous computing, distributed systems, context-aware applications, and electronic identification. He has more than 25 years' experience working in the field of mobile computing. He served as the Editor-in-chief for IEEE Pervasive Computing from 2006-2009, and he is currently a member of the ACM SIGMOBILE executive committee in the role of Past Chair. To date, he has authored or co-authored more than 75 publications, with 80 issued patents in this area. For more information about Dr. Want's academic and industrial achievements see <http://www.roywant.com/cs/>



## Prof. Dr. Elisabeth André

Professor of Computer Science, Augsburg University, Germany

### Towards the Creation of Empathic Experiences in Intelligent Environments

Societal challenges, such as assisted living for elderly people, create a high demand for intelligent environments that dynamically adapt to the users' needs and preferences. Traditionally, the users' situative context and activities have been analyzed to create appropriate system responses. In my talk, I will outline the vision of empathic environments that also consider more subtle cues, such as head movements or body postures, to infer information on the users' emotional and attentive state and respond to them accordingly. I will show how recent advances in the recognition, modelling and generation of human behavioral cues may be exploited for the creation of empathic experiences in intelligent environments. The talk will be illustrated by a number of applications developed in various national and international projects. In the CARE project, we are exploring the idea of a sentient context-aware recommender system that is supposed to stimulate and activate users during their daily life. In the GLASSISTANT project, we make use of Augmented Reality techniques to create an empathic environment for elderly people and help them cope with negative emotional states, such as anxiety and stress.



Professor Elisabeth André is a Full Professor of Computer

Science at Augsburg University, and Chair of the Research Unit Human-Centered Multimedia. She received her Diploma and Doctoral Degrees in Computer Science from Saarland University. Elisabeth André has a long track record in multimodal human-machine interaction, embodied conversational agents, affective computing and social signal processing. She is on the editorial board of various renowned international journals, such as Journal of Autonomous Agents and Multi-Agent Systems (JAAMAS), IEEE Transactions on Affective Computing (TAC), ACM Transactions on Intelligent Interactive Systems (TIIS), and AI Communications. In 2007 Elisabeth André was nominated Fellow of the Alcatel-Lucent Foundation for Communications Research. In 2010, she was elected a member of the prestigious German Academy of Sciences Leopoldina, the Academy of Europe and AcademiaNet. She is also an ECCAI Fellow (European Coordinating Committee for Artificial Intelligence).

# WORKSHOPS PROGRAMME

**MONDAY**  
13 JULY

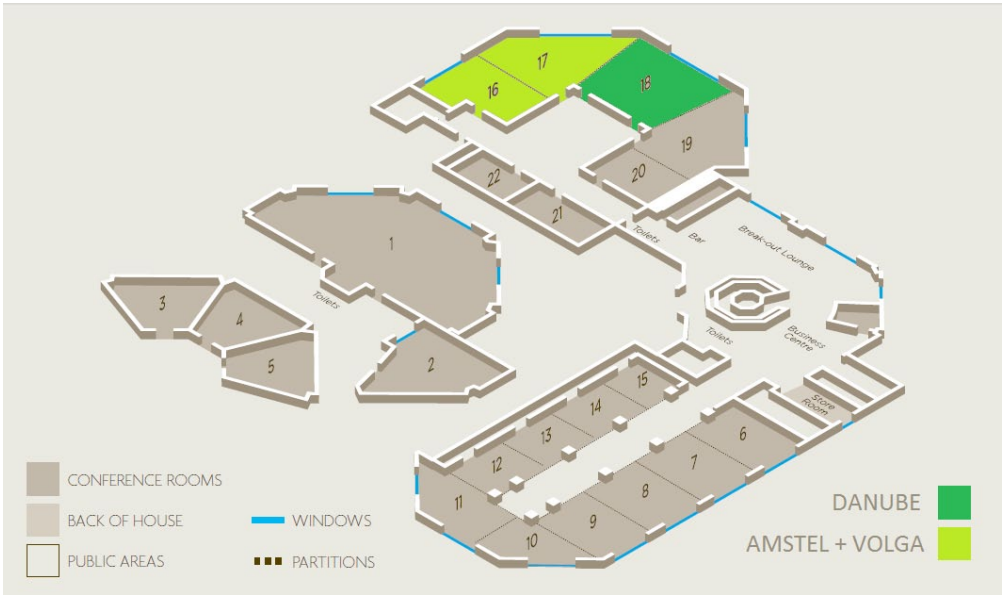
**TUESDAY**  
14 JULY

8:00	REGISTRATION			
	Danube	Amstel + Volga	Danube	Amstel + Volga
9:00	iLRN	SOFIEE	iLRN	WoRIE
10:00	COFFEE BREAK			
10:30	iLRN	SOFIEE	iLRN	WoRIE
12:00	LUNCH			
13:30	iLRN	SOFIEE	iLRN	iLRN
15:00	COFFEE BREAK			
15:30	iLRN	SOFIEE	iLRN	SOOW
17:00	iLRN	iLRN		
18:00				
19:30	iLRN Conference Dinner			



Workshops Proceedings Online

# CONFERENCE FACILITIES





# The 1st Immersive Learning Research Network Conference (iLRN)

WORKSHOP PROGRAMME

## Conference Organization

### Michael Gardner

University of Essex, UK (General Chair)

### Christian Gütl

Graz University of Technology, Austria (Program Co-Chairs)

### Jennifer Elliott

University of North Carolina, USA (Program Co-Chairs)

### Carlos Delgado Kloos

Universidad Carlos III de Madrid, Spain (Special Sessions Co-Chairs)

### Johanna Pirker

Graz University of Technology, Austria (Special Sessions Co-Chairs)

### Anasol Pena-Rios

Engineering, University of Essex, UK (Publicity & Public Relations)



## Special Track Organizers

Fridolin Wild, Ralf Klamma and Ilona Buchem, Wearable-Technology Enhanced Learning (WELL)

Alexander Nussbaumer, Cudrun Wesiak and Milos Kravcik, Self-Regulation and Personalization in Immersive Learning Environments (SPILE)

Daphne Economou, Ioannis Doumanis and Markos Mentzelopoulos  
Cognitive Serious Games (CSG)

## Publications of the Inaugural Immersive Learning Research Network Conference (iLRN 2015 Prague)

### Full Papers

D. Preuveneers (Ed.): Workshop Proceedings of the 11th International Conference on Intelligent Environments. IOS Press, Volume 19.

ISBN: 978-1-61499-529-6 (print)

ISBN: 978-1-61499-530-2 (online)

<http://www.iospress.nl/book/workshop-proceedings-of-the-11th-international-conference-on-intelligent-environments/>

### Short Papers, Workshops and Poster Abstracts

M. Gardner, C. Gütl, J. Pirker, and J. Richter (Eds.): Workshop, Short Paper and Poster Proceedings from the inaugural Immersive Learning Research Network Conference (iLRN 2015 Prague)

ISBN (e-book) 978-3-85125-412-9

DOI 10.3217/978-3-85125-412-9



Room: Danube

08:00 **Registration**

09:00 **Opening** by Michael Gardner and Christian Gütl

09:15 **Keynote**

**Let's Build Immersive Learning Research Capacity**

by Jonathon Richter, Head of iLRN, University of Oregon.

10:00 **Track: iLRN (full papers)**

Chair: Pasi Mattila

**"Another View of the Empire – Camera Control for Heritage Applications"**

by Alexander McRoberts, Daniel Livingstone and Daisy Abbott

**"Assessment of Task Engagement using Brain Computer Interface Technology"**

by Paul McCullagh, Gaye Lightbody, Chris Brennan, Leo Galway and David Trainor

**"Collaboration in 3D Virtual Worlds: designing a case study"**

by Armando Cruz, Hugo Paredes, Benjamim Fonseca, Paulo Martins and Leonel Morgado

**"Towards Measuring Learning Effectiveness considering Presence, Engagement and Immersion in a Mixed and Augmented Reality Learning Environment"**

by Ahmed Alzahrani, Michael Gardner, Vic Callaghan and Malek Alrashidi

12:00 **LUNCH BREAK**

13:30 **Special Track 1: Wearable-Technology Enhanced Learning (WELL) (full papers)**

Chair: Fridolin Wild, Ralf Klamma and Ilona Buchem

**"Inauguration of Special Interest Group on Wearable-Enhanced Learning (SIG WELL)"**

by Fridolin Wild, Ralf Klamma, and Ilona Buchem

**"The GhostHands UX: telementoring with hands-on augmented reality instruction"**

by Giuseppe Scavo, Fridolin Wild and Peter Scott

**"Smart Ambient Learning with Physical Artifacts Using Wearable Technologies"**

by István Koren and Ralf Klamma

**"Designing for User Engagement in Wearable-technology Enhanced Learning for Healthy Ageing"**

by Ilona Buchem, Agathe Merceron, Kreutel Jörn, Haesner Marten and Anika Steinert

**"An Overview of Capturing Live Experience with Virtual and Augmented Reality"**

by Mikhail Fominykh, Fridolin Wild, Carl Smith, Victor Alvarez and Mikhail Morozov

15:00 COFFEE BREAK + POSTER PRESENTATION

15:30 **Special Track 1 (cont.): Wearable-Technology Enhanced Learning (WELL) (full papers)**

Chair: Fridolin Wild, Ralf Klamma and Ilona Buchem

**"gPhysics: Using Google Glass as Experimental Tool for Wearable-Technology Enhanced Learning in Physics"**

by Jochen Kuhn, Paul Lukowicz, Michael Hirth and Jens Weppner

**"Tweedback goes Smart Watch - Why Classroom Response Systems Need Smart Watch User Interfaces"**

by Clemens Cap, Christian Delfs and Jonas Vetterick

**Special Track 2: Self-Regulation and Personalisation in Immersive Learning Environments (SPILE) (full papers)**

Chair: Alexander Nussbaumer, Gudrun Wesiak and Milos Kravcik

**"Self-Regulated Learning in Virtual Worlds - An Exploratory Study in OpenSim"**

by Colin Allison and Indika Perera.

**"Advancing Physics Learning Through Traversing a Multi-Modal Experimentation Space"**

by Jochen Kuhn, Alexander Nussbaumer, Johanna Pirker, Dimosthenis Karatzas, Alain Pagani, Owen Conlan, Martin Memmel, Christina M. Steiner, Christian Gütl, Dietrich Albert and Andreas Dengel

17:00 BREAK

17:10 **Workshop 1**

Room: Danube

**"MERLOT - Multimedia Educational Resource for Learning and Online Teaching"**

by Jonathon Richter

**Workshop 2**

Room: Amstel + Volga

**"RealXtend Meshmoon Web-based Virtual Learning and Training Environment - Meet Virtually *Face-to-Face*"**

by Pasi Mattila

19:30 **iLRN CONFERENCE DINNER**

at Corinthia Hotel Prague

Room: Danube

8:00 REGISTRATION

9:00 **Keynote**

**The Immersive Web: Fact, Fiction or Future?** by Colin Allison , University of St Andrews.

10:00 COFFEE BREAK

10:30 **Special Track 3: Cognitive Serious Gaming (CSG) (full papers)**

Chair: Daphne Economou, Ioannis Doumanis and Markos Mentzelopoulos

**“ An Expert Review of REVERIE and its potential for game-based learning ”**

by Ioannis Doumanis , Stuart Porter, Daphne Economou and Serengul Smith

**“ Evaluation of a dynamic role-playing platform for simulations based on Octalysis gamification framework ”**

by Daphne Economou, Ioannis Doumanis, Frands Pedersen, Paresh Kathrani, Markos Mentzelopoulos, and Vassiliki Bouki

**“ EdCCDroid: An Education Pilot Prototype for Introducing Code-Combat using LUA ”**

by Conor Wood, Markos Mentzelopoulos and Aristidis Protopsaltis

**“ Using Serious Games in Higher Education: Reclaiming the Learning Time ”**

by Vassilki Bouki and Daphne Economou

12:00 LUNCH BREAK

13:30 **Track: iLRN (full papers)**

Room: Danube

Chair: Leonel Morgado

**“OSCase: A data scheme for transfer of Web based Virtual Patients to OpenSim”**

by Panagiotis Antoniou, Lazaros Ioannidis and Panagiotis Bamidis

**“ What characteristics of the gamers' profile should be taken into account in playercentred usability design?”**

by Christothea Herodotou, Maria Kambouri and Niall Winters

**“ Virtual Worlds for 3D Visualizations ”**

by Johanna Pirker and Christian Gütl

**“ Blended Learning and the Flipped Classroom: The affordances of located, cloud based and virtual world environments to support student learning ”**

by Janette Grenfell

**Track: iLRN (short papers)**

Room: Amstel + Volga

Chair: Jonathon Richter

**“Games and museums: Case study of the creation of a new multimedia exhibit for the Glenlee Tall Ship Museum ”**

by Theo Wheatley and Daniel Livingstone

**“ t Takes a Virtual Village: Influencing Teen Health Behaviors through Mixed-reality Strategy ”**

by Béatrice Moissinac, Kimmy Hescoock and Jon Dorbolo

**“Experiences of Collaborating and Learning through Collab3DWorld ”**

by Martha Kamvisi, Styliani Kleanthous and Louis Nisiotis

**“Preliminary Results from a Study of the Effectiveness of Active Learning Techniques and Virtual Environments on Course Delivery ”**

by Warren Sheaffer

**“Observing, Coaching and Reflecting: A Multi-modal Natural Language-based Dialogue System in a Learning Context”**

by Joy van Helvert, Peter van Rosmalen, Dirk Boerner, Volha Petukhova and Jan Alexandersson

**“Structured Learning Activities in Embedded Computing Using a Pedagogical Virtual Machine (PVM)”**

by Malek Alrashidi, Michael Gardner, Victor Callaghan and Jennifer Elliott

**“Reflections on the Design, Development and Deployment of Augmented Reality-Based Learning Environments”**

by María Blanca Ibáñez, Diego Villarán and Carlos Delgado Kloos

15:30 **COFFEE BREAK**

16:00 **Plenary Panel**

**Chair: Kimmy Hescock**

Panelists: Colin Allison, Pasi Mattila, Warren Sheaffer, and Jonathon Richter

17:00 **Closing**

by Michael Gardner, Christian Gütl and Jonathon Richter

## iLRN SOCIAL PROGRAMME

### iLRN Conference Dinner

**July 13 2015 19:30**

Corinthia Hotel Prague  
Bellevue Hall, 24th Floor

Dress Code: **Smart Casual**

Evening will be cheered by traditional  
Czech dance performance.



# Symposium on Future Intelligent Educational Environments and Learning 2015 (SOFIEE)

WORKSHOP PROGRAMME

**MONDAY**  
13 JULY

Room: AMSTEL+VOLGA

## MORNING SESSIONS

**09:00** **Welcome and Introduction by SOFIEE chairs**

Juan Carlos Augusto, Minjuan Wang

**09:15** **Welcome by the Advisory Board**

Sun Xinwei, Director of Human resources, Shanghai International Studies University (SISU)

**09:30** **Using Science Fiction Prototyping to Decrease the Decline of Interest in STEM Topics at the High School Level**

Mary de Lepe, William Olmstead, Connor Russell, Lizbeth Cazarez and Lloyd Austin

**9:50** **CALCULENG**

**Towards an Intelligent Environment for the Teaching and Learning of Calculus:**

Mastaneh Davis, Jeraze Dhanbhoora, Gordon Hunter and Wioleta Wiesyk

**10:10** **COFFEE BREAK**

**10:30** **Designing Free-range Assignments**

Berlin Fang, Jennifer Shewmaker and Scott Self

**10:50** **A Social Knowledge Network-Based Intelligent Framework for Finding Right Persons in OKCs**

Pengfei Wu and Shengquan Yu (Beijing Normal University)

**11:10** **Motivational Influences in a Transnational Music Virtual Studio  
A Qualitative Case Study**

Gemma Fiocchetta and Michele Della Ventura

**11:30** **Evaluation of Curriculum Developed From a NSF-Supported Teacher Workshop**

Minjuan Wang, Trevore Humphrey and Patricia Samora (SDSU-SISU)

**12:00** **LUNCH BREAK**

## AFTERNOON SESSIONS (SOFIEE-X and Virtual Presentations)

- 13:30 **A Pilot Study of Using Mobile Platforms (WeChat and WeLearn) in College English Curriculum:**  
Min Guo, Minjuan Wang and Hong Sun (SISU, Oriental Scholar Team)
- 13:50 **How to Conduct Effective Cross-Cultural Training  
An exemplary case study for Qualcomm**  
Zhang Yun (SDSU)
- 14:10 **An Analysis of the Influence Factors of Mobile learners' academic help-seeking behavior**  
Yang, Xiaojuan, ShanDong (Normal University)
- 14:30 **A Needs Analysis Survey for Open EAP Courses for Chinese Graduates on Overseas Exchange Programs**  
**Virtual Presentation**  
Jia Chen and Wenzheng Zhang (Oriental scholar team, SISU)
- 14:50 **A Study on a Solution of Education Inequity in Chinese Rural Schools through Live Broadcast Classroom**  
**Virtual Presentation**  
Yuxia Zhou, Ying Xiong, Peida Zhu, Minjuan Wang and Jie Liu
- 15:00 **COFFEE BREAK**
- 15:30 **Novel Machine Learning Methods for Educational Data Mining**  
Mr. Arora Hargobind
- 15:50 **Recordings**
- Error Analysis Expert System Based on the Takagi-Sugeno Model**  
**Virtual Presentation**  
NuHua Cheng, Wei Lv, YuHua Ni, Mei Li and Yong Cai
- Does the Mobile Social Software Promote the Learning of English Speaking Learning?**  
**Virtual Presentation**  
ChenRui Zhou, Zhong Sun and HaiJiao Shen

# The 4th International Workshop on Smart Offices and Other Workplaces (SOOW'15)

**TUESDAY**  
14 JULY

## WORKSHOP PROGRAMME

Room: AMSTEL+VOLGA

- 15:30 **Welcome and Introduction by SOOW chairs**
- 15:45 **Dealing with Agents' Behaviour in the Decision-Making Process**  
Diogo Martinho, João Carneiroa, Goreti Marreiros and Paulo Novais
- 15:50 **Progress Towards a Smarter Office via a Novel Intelligent System for Message Organisation by Unifying E-Mails & Phone Calls**  
Gordon Hunter, James Denholm-Price, Thomas Michel, John Yardley and David Fox
- 16:10 **Intelligent Environments Approaches Applied in Water Management**  
Peter Mikulecký

# The 4th International Workshop on the Reliability of Intelligent Environments (WoRIE'15)

**TUESDAY**  
14 JULY

## WORKSHOPS PROGRAMME

Room: AMSTEL+VOLGA

- 9:00 **Opening**
- 9:10 **Keynote talk + Questions**
- 10:00 **COFFEE BREAK**
- 10:30 **Poster presentation, demo and/or video projection**
- 11:15 **Group discussion**
- 11:45 **Presentation of results**
- 11:55 **Conclusions and closing**
- 12:00 **LUNCH BREAK**



# CONFERENCE PROGRAMME

**WEDNESDAY –**  
15 JULY

**THURSDAY —**  
16 JULY

**FRIDAY —**  
17 JULY

	DANUBE	DANUBE	AMSTEL + VOLGA	DANUBE
8:30	Registration			
9:00	Opening		Session 4 Development of Intelligent Environments	Session 6 Assisting Daily Life (short papers)
9:30	KEYNOTE 1 The Web of Things		Session 8 Activity Recognition and Imaging (WiP)	
10:30			COFFEE BREAK	
11:00	Session 1 Smart Homes	Session 5 Management of Intelligent Environments	Session 9 Miscellaneous Topics (WiP)	KEYNOTE 2 Towards the Creation of Empathic Experiences in Intelligent Environments
12:30	LUNCH BREAK			
	DANUBE	AMSTEL + VOLGA	DANUBE	
14:00	Session 2 Smart and Virtual Environments	Session 7 Context and Mobility (short papers)	Session 10 Videos and Demos / Coffee	Conclusions and closing
15:30	COFFEE BREAK			
	DANUBE			
16:00	Session 3 Context and Mobility	Sightseeing		
17:30				
19:30	IE SC Meeting	Conference Dinner		

**9:00 Opening**

Chair: Juan Carlos Augusto

**9:30 Keynote 1: The Web of Things**

Dr. Roy Want, Research Scientist, Google, USA

**10:30 COFFEE BREAK**

**Session 1:  
Smart Homes**

Chair: Jeannette Chin

**11:00 Designing New Experiences in the Smart Home: Multi-camera Person Localization Framework to Document Predefined Situations**

Klaus-Peter Engelbrecht, Sebastian Schmiedeke, Michael Quade, and Sebastian Möller

**11:30 SmartWalker: Towards an Intelligent Robotic Walker for the Elderly**

Jiwon Shin, David Itten, Andrey Rusakov, and Bertrand Meyer

**12:00 To Do and Not to Do: Constrained Scenarios for Safe Smart House**

Thibaut Le Guilly, Jacob H. Smedegård, Thomas Pedersen, and Arne Skou

**12:30 LUNCH BREAK**

**Session 2:  
Smart and Virtual Environments**

Chair: Hans W. Guesgen

**14:00 Activity Support Framework for People with Dementia Based on Markov Decision Process**

Tomi Sarni and Petri Pulli

**14:30 A Comparison of Predictive Algorithms for Failure Prevention in Smart Environment Applications**

Ehsan Ullah Warriach, Tanir Ozcelebi, and Johan J. Lukkien

**15:30 Assessing Real World Imagery in Virtual Environments for People with Cognitive Disabilities**

Alexandra Covaci, Dean Kramer, Juan Carlos Augusto, Silvia Rus, and Andreas Braun

**15:30 COFFEE BREAK**

**Session 3:  
Context and Mobility**

Chair: Klaus-Peter Engelbrecht

**16:00 An Android-Based Mobile 6LoWPAN Network Architecture for Pervasive Healthcare**

Kevin I-Kai Wang, Shivank Dubey, Ashwin Rajamohan, and Zoran Salcic

**16:30 A Generic Approach for Energy Efficient Context Recognition Using Smart Phones**

Muhammad Umer Iqbal, Marcus Handte, and Pedro José Marrón

**17:00 GPS Trace Mining for Discovering behaviour Patterns**

Weijun Qiu and Ayomi Bandara

**Session 7:  
Technology and Models (Short Papers)**

Chair: Michael Weber

**14:00 Optimization of Decision-Making in Artificial Life Model Based on Fuzzy Cognitive Maps**

Tomáš Nacházal

**14:20 Towards Smart Farming and Sustainable Agriculture with Drones**

Paolo Tripicchio, Massimo Satler, Giacomo Dabisias, Emanuele Ruffaldi, and Carlo Alberto Avizzano

**14:40 Ubiquitous Approach to Body Hydration Testing**

Jeannette Chin and Alin Tisan

**Session 4:**  
**Development of Intelligent Environments**

Chair: Davy Preuveneers

- 9:00 **Automating the Generation of Privacy Policies for Context-Sharing Applications**  
Wolfgang Apolinarski, Marcus Handte, and Pedro José Marrón
- 9:30 **Evaluating a Future Remote Control Environment with an Experience-Driven Science Fiction Prototype**  
Tiina Kymäläinen, Piia Perälä, Jaakko Hakulinen, Tomi Heimonen, Jobin James, and Juha Perä
- 10:00 **An Approach for the Design of Smart Tools and Environments Based on Networked Experiences**  
Simge Esin Orhun

10:30 **COFFEE BREAK**

**Session 5:**  
**Management of Intelligent Environments**

Chair: Kevin I-Kai Wang

- 11:00 **SparkXS: Efficient Access Control for Intelligent and Large-Scale Streaming Data Applications**  
Davy Preuveneers and Wouter Joosen
- 11:30 **OIoT: a Platform to Manage Opportunistic IoT Communities**  
David Andres López Nuevo, Dolors Royo Valles, Esunly Medina Medina, and Roc Meseguer Pallares
- 12:00 **Bridging the Gap between Virtual and Physical Classrooms to Enhance Distance Learning Experience**  
Christos Goumopoulos, Nikos Kokkos, Christophoros Karachristos, and Achilles Kameas

12:30 **LUNCH BREAK**

**Session 8:**  
**Activity Recognition and Imaging**  
*(Work in Progress Papers)*

Chair: Gordon Hunter

- 9:00 **Towards a Theory of Space for Activity Recognition in Smart Environments Based on Rough Sets**  
Hans W. Guesgen
- 9:20 **Multi-label Learning for Activity Recognition**  
Rahul Kumar, Imroj Qamar, Jaskaran Singh Viridi, and Narayanan Chatapuram Krishnan
- 9:40 **Smart Homes Design for People with Dementia**  
Mohsen Amiribesheli and Abdelhamid Bouchachia
- 10:00 **Development of an Intelligent Fisheye Camera**  
Marie Bassford and Birgit Painter

**Session 9:**  
**Miscellaneous Topics** *(Work in Progress Papers)*

Chair: Pavel Čech

- 11:00 **Keeping Your Threads Untangled: An Intelligent System for Semi-automatically Organising Corporate Messages by Content**  
Gordon Hunter, James Denholm-Price, Thomas Michel, John Yardley, and David Fox
- 11:20 **The La Trobe E-Sanctuary: Building a Cross-Reality Wildlife Sanctuary**  
Seng W. Loke, Ba Son Thai, Torab Torabi, Ka Chan, Dennis Deng, Wenny Rahayu, and Andrew Stocker
- 11:40 **Mobile Augmented Reality as an Orientation Aid: A Scavenger Hunt Prototype**  
Katja Rogers, Julian Frommel, Larissa Breier, Sinan Celik, Harry Kramer, Stefan Kreidel, Julia Brich, Valentin Riemer, and Claudia Schrader
- 12:00 **Towards the Separation of Rigid and Non-rigid Motions for Facial Expression Analysis**  
Georg Layher, Stephan Tschechne, Robert Niese, Ayoub Al-Hamadi, and Heiko Neumann

## Session 10: Videos and Demos

Chair: Peter Mikulecký

### **SiAM - Situation-Adaptive Multimodal Interaction for Innovative Mobility Concepts of the Future (video)**

Monika Mitrevska, Mohammad Mehdi Moniri, Robert Neßelrath, Tim Schwartz, Michael Feld, Yannick Körber, Matthieu Deru, and Christian Müller

### **14:00 - A Framework for Intelligent Service Environments Based on Middleware and General Purpose Task Planner (video)**

Wenshan Wang, Qixin Cao, Xiaoxiao Zhu, and Shuang Liang

15:30

### **Mobile Augmented Reality as an Orientation Aid: a Scavenger Hunt Prototype (demo)**

Katja Rogers, Julian Frommel, Larissa Breier, Sinan Celik, Harry Kramer, Stefan Kreidel, Julia Brich, Valentin Riemer, and Claudia Schrader

### **To Do and Not To Do: Constrained Scenarios for Safe Smart House (demo)**

Thibaut Le Guilly, Jacob Smedegård, Thomas Pedersen, and Arne Skou

15:30 **COFFEE BREAK**

**FRIDAY**  
**17 JULY**

## Session 6: Assisting Daily Life

Chair: Wolfgang Minker

### **9:00 Activity Recognition Based on Streaming Sensor Data for Assisted Living in Smart Homes**

Beichen Chen, Zhong Fan, and Fengming Cao

### **9:20 Developing Navigational Services for People with Down's Syndrome**

Dean Kramer, Alexandra Covaci, and Juan Carlos Augusto

### **9:40 Automatic Detection of Perceived Stress in Campus Students Using Smartphones**

Martin Gjoreski, Hristijan Gjoreski, Mitja Luštrek, and Matjaž Gams

### **10:00 Intelligent Management System for the Conservation of Energy (work in progress paper)**

Guillermo Méndez, Miguel Angel Casillas, Rosario Baltazar, Carlos Lino, Luis Mancilla, and Sandra Lopez

10:30 **COFFEE BREAK**

### **11:00 Keynote 2: Towards the Creation of Empathic Experiences in Intelligent Environments**

Chair: Juan Carlos Augusto

\*Prof. Dr. Elisabeth André, Professor of Computer Science, Augsburg University, Germany

12:00 **LUNCH BREAK**

14:00 **Conclusions and closing**

IE'15

# SOCIAL PROGRAMME



## IE'15 Welcome Drink

July 14 2015, 20:00

Corinthia Hotel Prague

Cocktail Lounge, 24th Floor

Dress Code: **Smart Casual**

## IE'15 Conference Dinner

July 16 2015, 19:30

Konírna Kampa

Evening will be cheered by Czech folklore songs performed live using the traditional music instruments.

Dress Code: **Smart Casual**

Maltézské nám. 10, 118 00  
Praha 1

[www.konirna.eu](http://www.konirna.eu)



## Sightseeing

July 16 2015, 16:00

Meeting point: **Corinthia Hotel Lobby**

Museum, Wenceslas Square, Lucerna Palace, Františkánské Gardens, Church of Our Lady of the Snows, National Theatre, Kampa



# ADDITIONAL PROGRAMME

## Saturday - July, 18th, 2015

**1st part** - The Royal Road (cca 2-3 hours): Černín palace, Loreta, Hradčany, City Hall, Arcibishop palace, Schwarzenberg palace, Prague Castle and St Vitus Cathedral, Neruda Street - Price 500 Kč / 20 EUR (tram ticket included)

**1st and 2nd part** - The Royal Road (cca 4-5 hours): 1st part + St. Nicholas Church, Malostranská square, the Houses of Parliament, Baby Jesus of Prague, Lichtenstein Palace, Charles Bridge - Price 1000 Kč / 40 EUR (tram ticket, admission to St. Nicholas Church and Lunch included)

**1st, 2nd and 3rd** - The Royal Road (all inclusive – cca 6-7 hours): 1st, 2nd and Lennon Wall, Kampa Island, Prague floods, Prague Boats- Sight Seeing cruise, Karlova Street, Old Town Square - Astronomical clock and the view top of the Tower, Pařížská Street, Jewish Quarter - Price 1500 Kč / 60 EUR (tram ticket, admission to St. Nicholas Church, lunch included, Boat voyage included, admission to the Old Town Square Tower included)

For more information, please, contact the staff at the conference reception desk.





# MUST SEE IN PRAGUE

## Vysehrad

The city's oldest castle, the 10th century Vysehrad, is within a ten-minute walk of conference venue hotel. Vyšehrad (Czech for 'upper castle') is a historical fort located in the city of Prague, Czech Republic. It was probably built in the 10th century, on a hill over the Vltava River. Situated within the castle is the Basilica of St Peter and St Paul.



## Charles Bridge

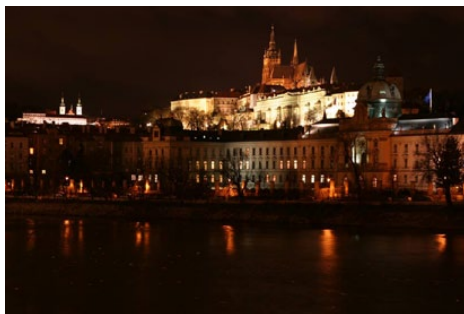
The Charles Bridge (Czech: Karlův most) is a famous historic bridge that crosses the Vltava river in Prague, Czech Republic. Its construction started in 1357 under the auspices of King Charles IV, and finished in the beginning of the 15th century. The bridge is decorated by a continuous alley of 30 statues and statuaries, most of them baroque-style, originally erected around 1700 but now all replaced by replicas.

## Prague orloj

The Prague astronomical clock, or Prague orloj (Czech: Pražský orloj), is a medieval astronomical clock located in Prague, the capital of the Czech Republic. The clock was first installed in 1410, making it the third-oldest astronomical clock in the world and the oldest one still working. The Orloj is mounted on the southern wall of Old Town City Hall in the Old Town Square. The clock mechanism itself is composed of three main components: the astronomical dial, representing the position of the Sun and Moon in the sky and displaying various astronomical details; 'The Walk of the Apostles', a clockwork hourly show of figures of the Apostles and other moving sculptures—notably a figure of Death (represented by a skeleton) striking the time; and a calendar dial with medallions representing the months.



## Prague Castle



Prague Castle (Czech: Pražský hrad) is a castle complex in Prague, Czech Republic, dating from the 9th century. The castle has been a seat of power for kings of Bohemia, Holy Roman emperors, and presidents of Czechoslovakia and is the official residence and office of the President. The Bohemian Crown Jewels are kept within a hidden room inside it. The Guinness Book of Records lists Prague Castle as the largest ancient castle in the world.[1] It occupies an area of almost 70,000 m<sup>2</sup>, at about 570 meters in length and an average of about 130 meters wide.

Source: Wikipedia



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