

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 Mikulecký and Pavel Čech, University of Hradec Kralove (Czech Republic)

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 multi-modal 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 PROGRAMME

	WEDNESDAY 15 JULY	THURSDAY 16 JULY	FRIDAY 17 JULY
8:30	DANUBE Registration	DANUBE	DANUBE
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)
12:30		LUNCH BREAK	
14:00	DANUBE Session 2 Smart and Virtual Environments	AMSTEL + VOLGA Session 7 Context and Mobility (short papers)	DANUBE Session 10 Videos and Demos / Coffee
15:30		COFFEE BREAK	
16:00	DANUBE Session 3 Context and Mobility	Sightseeing	
17:30			
19:30	IE SC Meeting	Conference Dinner	
			KEYNOTE 2 Towards the Creation of Empathic Experiences in Intelligent Environments
			Conclusions and closing

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 Gully, 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 Salic

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, Dolores 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 Virdi, 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 Cech

- 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



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



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