# PREFACE

## TO THE

# Workshops Proceedings

## of the 6th Int. Conf. on Intelligent Environments

### Kuala Lumpur - Malaysia

### for 18th and 19th of July - 2010

We are witnessing an historic technological revolution as computing reaches maturity to become immersed in our daily life to an extent that some decades ago was considered science fiction.

Advances in the engineering of sensing and acting capabilities distributed in wide range of specialized devices is providing at last an opportunity for the fundamental advances that computer science achieved in the past few decades to make an impact in our daily lives.

This technical confluence is matched by a unique historical context where users are better informed (and more aware of the benefits that technology can provide) and production of more complex systems is becoming more affordable. Sensors/actuators deployed in an environment (in this context it can be any physical space like a house, an office, a classroom, a car, a street, etc.) facilitate a link between an automated decision making system connected to that technologically enriched space. This computing empowered environment enables the provision of an intelligent environment, i.e., "a digital environment that proactively, but sensibly, supports people in their daily lives". This is a very active area of research which is attracting an increasing number of professionals (both in academy and industry) worldwide.

The prestigious 6th International Conference on Intelligent Environments (IE'10) is focused in the development of advanced Intelligent Environments and stimulates the discussion on several specific topics which are crucial to the future of the area. As part of that effort to stimulate developing in critically important areas five workshops were supported as part of IE'10. This volume is the combined proceedings of those five workshops:

The *1st International Workshop on Human-Centric Interfaces for Ambient Intelligence (HCIAmI'10)* serves as a forum to exchange recent results in modeling, design, and computing methods for human-centric interfaces in Ambient Intelligence applications. The papers presented at the workshop offer perspectives to technologies and methods which offer unobtrusive, intuitive, and adaptive interfaces. These technologies offer the potential of making Ambient Intelligence systems easier to use by more people. The goal is to replace the classical paradigm of Human-Computer Interaction (HCI) in which users have to adapt themselves to computers by learning how to use them, by a new one (where the same acronym refers to Human-Centric Interfaces) in which computers adapt to users and learn how to interact with them in the most natural way. This is consistent with an increasing interest in human-centric comput-

ing, which aims to offer rich user experiences in comfort, safety and well-being applications. Topics covered range from ubiquitous interfaces and multimodal dialog systems for different applications to implications of connecting users with impairments in social networks.

The *Workshop on Artificial Intelligence Techniques for Ambient Intelligence (AITAmI10)* aims at stimulating the development of human-like effectiveness within the artificial systems that provides support to humans. The event is not focused on a specific application area, although it welcomes reports on applications given the value to inform the community with regards to solutions for specific cases and to extrapolate strategies across areas. The overall emphasis is providing a forum where to analyze the possibilities that Artificial Intelligence has to make smart environments smarter. Learning, reasoning, adaptation, user preferences and needs discovery, sensible interaction with users, and many other topics form the regular agenda of this event. The content of this section includes the abstract of one keynote speaker, and papers accepted for oral and poster presentations. All these contributions come from recognized professionals in the area which are reporting on their latest reflections and achievements in the problem of improving the decision making capabilities of intelligent environments. This edition includes papers from a special session with and emphasis on healthcare applications from the 2nd International Workshop on Intelligent Environments Supporting Healthcare and Well-being (WISHWell'10) event.

The *SHASPA Intelligent Shared Spaces Workshop* explores the potential of immersive technologies such as serious games, virtual worlds and social networks to create Smart Shared Spaces in which the rapidly developing artificial intelligence and interface attributes of virtual spaces are applied to physical spaces to create highly personalised and persistent environments. The workshop demonstrate how these attributes are shaping future physical and virtual spaces in a diverse range of applications including education, energy management, urban planning and emergency services.

The *Creative Science 2010 Workshop (CS'10)* is the first in a series of workshops that is exploring the use of science fiction to motivate and direct research into new technologies and consumer products. In particular, CS'10 applies a methodology we call Science-Fiction Prototyping (SF Prototyping) which employs stories to serve as prototypes to explore a wide variety of futures. In these proceedings we present two invited contributions from Brian David Johnson who coined the term SF Prototyping and defined the methodology. In the first contribution, SF Prototyping, Brian describes the history of SF Prototyping and introduces the methodology. His second contribution is a SF Prototype called 'Brain Machines', that illustrates the principles involved. The workshop proceedings then present a number of SF Prototypes drawn from the "Intelligent Environments" research community. Interestingly, in this first edition of the workshop many of these stories fall into what might be classed as explorations of mixed reality technology. In "Tales from a Pod" virtual reality is applied to the provision intelligent personalised teaching environments whereas in the second, "Mdi" a story of an extraordinary portable gadget that produces holograms and can recognise gestures is described. In the third story "We All Wear Dark Glasses Now" a rather darker application of augmented reality is presented, where the high-tech glasses mislead the wearer that his world is much nicer that it really is. The forth story, "Voices From The Interface", is a voyage to an imaginative world where brain computer interfaces become almost indistinguishable

from paranormal phenomena. Paranormal phenomena sometimes features in folklore and the fifth story, "Were-Tigers of Belum", elegantly mixes a mystical tale with the latest high-tech sensory networks to provide an engaging story that bridges the past and present. The sixth paper, "Knowing Yourself" explores the more spiritual aspects of people by taking an "out of the box" journey into the metaphysical, in which physical objects, events, words, sounds or thoughts can be seen as a bundles of energy, a view which could have significant consequences for medical technology. Finally, the seventh paper, takes us full circle and back to the reality of ourselves by examining some of our most basic understanding of being human, consciousness and free-will, though the eyes of a discussion on the design of future reception robots. We hope you will agree, that this first workshop on Creative Science has produced some stimulating ideas that have the potential to challenge and push science. If you have enjoyed reading this first set of science fiction prototypes, why not write one yourself and join us at our next Creative Science event (see creative-science.org for details).

As a result of the content focus of those events described above, this volume offers you a glance of the latest developments in key areas of the development of Intelligent Environments. It compiles the latest research done by active researchers in the area working to push ahead the boundaries of science and focused on achieving the deployment of intelligent environments in the real world. The effort of this professionals will influence the way we leave tomorrow's world. We hope you enjoy as a reader the content of this volume as much as the attendees of these workshops enjoy the live presentation of the papers and the thought provoking discussions emanating from them.

The co-editors of this volume want to thank all the people that facilitated the realization of each one of these events: the remaining co-chairs of the workshops, the members of their Program Committees, which facilitated the review of papers, the external reviewers which also contributed to that task, and the conference organizers which provided a supportive environment for the realization of these events.

July 2010

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Ramón López-Cózar, Hamid Aghajan
HCIAmI'10

Juan Carlos Augusto, Diane Cook, and John O'Donoghue
AITAmI'09

David Wortley, Oliver Goh, Chung-Won Cho
(SHASPA'10)

Victor Callaghan, Simon Egerton, Brian David Johnson
(CS'10)

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