http://dx.doi.org/10.14236/ewic/HCI2016.67

Human-Centred Design for Intelligent Environments

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Preface to the proceedings of the workshop "Human Centred Design for Intelligent Environments" organised in conjunction with the 2016 BCS British HCI Conference held at Bournemouth University, July 11th -15th 2016.

1. INTRODUCTION

Intelligent environments (IEs) are smart spaces that are equipped with seamless computing technologies to empower the occupants/users of those spaces for completing the activities of daily living in an efficient way, while insuring security, safety and optimal usage of resources. Naturally, IEs cover a number of settings going from offices, hospitals, schools, factories to cities. While IEs technology may be used for comfort, its relevance for a number of applications such as medical and healthcare monitoring, energy management and education is prevailing. The impact of IEs for the quality of life for different categories of people is significant.

IEs should be designed to benefit people of all ages, genders, capacities, cultural and educational backgrounds. This requires the introduction of related technologies in IEs has to be sensible to the users rather than overwhelming them. Current issues surrounding human factors and user acceptance such as usability accessibility privacy as well as reliability and transparency are posing challenges in adopting IEs. It becomes clear that Human Centred Design (HCD) is the most appealing methodology to address these concerns. HCD offers methods and tools for eliciting the requirements of the IEs from users in addition to co-designing and evaluating intelligent environment systems.

However, HCD itself also faces challenges due to the nature of user involvement. Therefore, HCD methods and tools should be adapted for an effective exploitation in the domain of IEs and consequently for enhancing the acceptability of IEs by potentially considering the current developments in multimodal interactions i.e. modes involved in five human senses to develop intuitive input modalities. The user-centredness in the context of systems development as a multidimensional concept composed of user focus, work-centredness, user involvement and system personalisation requires the development of multimodal interactions for intelligent environments. The user-centred systems development methods such as goal directed interaction design, contextual design, scenario-based design and human centred systems development life cycle, as applied in the context of IEs, will help bridge the gap between Human Computer Interaction (HCI) and Intelligent Systems communities.

This workshop addresses the recent advances in the both areas of HCD and IEs. It particularly discusses ways of applying HCD to develop user-centred and transparent IEs. It serves as a forum for bringing together researchers from both communities of HCD and IEs to overview the opportunities for bridging the two areas and to draw a roadmap for future avenues to enhance the serviceability and usability of IEs.

2. TECHNICAL PROGRAMME

The workshop covers different topics related to Technologies, (Wearable technologies, Sensing technologies, Assistive technologies, Internet of Things, Ubiquitous and Pervasive Computing, Networking and Communication, Visual and interactive analytics), Interactions across ubiquitous and pervasive technologies (Mobile devices, Virtual reality, Augmented reality), Human Centred Design approaches (Context of use and user requirements, Design solutions and evaluations, Participatory design, Inclusive design, Design for all, Universal design, Multimodal interactions, Acceptability

studies, Reliability studies, Privacy and security studies), Applications areas (Smart systems, Ambient Assisted Living, Telecare, Telehealth, Mobility, Social robotics, Industrial case studies).

In all undergo rigorous review by the PC members and 6 papers have been retained for presentation that are sought to foster interesting discussion, provide inspiration and solutions. The proceedings do not only represent the effort of the authors, but also the reviewers who provided detailed reviews and insightful suggestions to make sure authors get the most out of this workshop. The workshop is organised as a series of talks followed by discussion session. It is also enhanced by a guest lecture by Dr Gordon Hunter on *Designing an "intelligent beehive" to promote the well-being of honeybees.*

3. ACKNOWLEDGEMENTS

This workshop would not have been possible without the hard work and dedication of our programme committee and external reviewers who, despite managing a slew of other commitments, still managed to find time to provide timely, high quality reviews to the paper authors. We are also grateful to the paper authors for contributing their work and participating in the workshop programme itself. Finally, we would like to thank the organisers of British HCI 2016 for hosting us.

4. PROGRAMME COMMITTEE

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