

GUEST EDITORIAL PREFACE

Special Issue on Human Computer Interaction: A Systems Approach

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ABSTRACT

This special issue includes selected one of the best papers of the International Conference Human-Computer Interaction (INTERACCIÓN 2014), held in its fifteenth edition in Puerto de la Cruz, Tenerife, Canary Islands (Spain) 10-12 September, 2014. This international congress is sponsored by the Association Computer of Human Computer Interaction (AIPO), closely related with the Iberoamerican Human Computer Interaction community. So, the Latin American Human Computer Interaction community has participated actively for the success of this special issue. So, relevant research groups from Chile, Mexico, Argentina and Colombia were invited to participate in this publication. Thus, this publication includes seven papers (two invited papers, one paper selected from the best papers of INTERACCIÓN 2014, and four selected by the Editorial Board of IJITSA. All of them have been reviewed on a double-blind, peer review basis.

Keywords: HCI, Adaptive Systems, Software Engineering, Human Factors, Modelling

Currently, human-computer interaction is present in any software and technological device and interface design has become a critical aspect in the development, because it is one of the main factors that influence the success and competitiveness of software applications. We can say that an interactive system is not only judged by its ability to conduct operations, but also for its ability to properly communicate to the user.

The evolution of interfaces and interaction styles (Preece et al., 1994) have led to different interactive paradigms throughout the history of computing, where the most known are desktop computer, virtual reality, augmented reality

and ubiquitous computing. Technological advances led to a new generation of interactive systems, such as multimedia or virtual reality environments. The effect of leading interaction “beyond the desktop” brings new questions and challenges involved and makes us consider new phenomena and issues. From the last ten years, the interfaces became mobile, cooperative, collaborative and social, tangible and tactile, gestured (multimodal), hybrid, augmented and controlled by the brain (brain computing). At present, computers are designed to be “embedded” within the environment and therefore, it is necessary to rethink the interaction between the

person and the computer in this context (Lytras, García-Peñalvo, & Ordóñez de Pablos, 2013). The new user interface and new interaction paradigms have created new styles of communication and interaction with the user, and present new challenges for researchers and designers of interactive systems to improve user experience and communicability with the system.

Moreover, while field of human-computer interaction (HCI) is growing maturing, emergent engineering approaches become more important (Sutcliffe, 2005). In HCI, systems approaches are extensive, remarking different areas of interest, such as structured methodologies for interactive system design (Fischer, 2012) and evaluation and methods, processes, languages, models and tools to improve interactive systems (Jacko, 2012; Memmel, 2008). Thus, this special issue aims to bring together research, relevant experiences and contributions to the area of human-computer interaction. Moreover, this special edition aims to promote and disseminate the recent advances in the field of HCI, both at academic and industry level, from the software engineering perspective (Seffah, Gulliksen, & Desmarais, 2005). In particular the objective is to contribute to the topic studied from a System Approach or an Interdisciplinary Research Approach, by identifying possible solutions to the challenges on development of interactive systems.

This special issue was elaborated from the best papers selected of the International Conference Human-Computer Interaction INTERACCIÓN 2014, held in its fifteenth edition in Puerto de la Cruz, Tenerife, Canary Islands (Spain) 10-12 September, 2014 (González, Ordóñez, & Fardoun, 2014). This international congress is sponsored by the Association Computer of HCI (AIPO), closely related with the Iberoamerican HCI community, where relevant HCI research groups from Chile, Mexico, Argentina and Colombia participated. Consequently, this special issue reports the view from the Latin American HCI research community. Six papers (two invited papers from guest editors, and four papers selected from the INTERACCIÓN 2014 Conference) are included in this special issue.

All of them have been reviewed on a double-blind, peer review basis.

In the first invited paper entitled *Usability and User Experience: What Should We Care About?*, Cristian Rusu at the Pontificia Universidad Católica de Valparaíso, Chile, Virginica Ruso at the Universidad de Playa Ancha, Chile, Silvana Roncagliolo at the Pontificia Universidad Católica de Valparaíso, Chile, and Carina González at the University of La Laguna, Spain, analyze the Usability and User Experience (UX) and the lack of generally agreed formal definitions of HCI/usability/UX. This lack of agreed concepts may have consequences on the development and recognition among Computer Science communities, especially in regions where HCI is poorly developed, as Latin America. Moreover, they claim the gap between HCI/usability/UX research and practice may be reduced by applied research, problem-oriented, or at least based on real case studies.

In the second invited paper entitled *An Interactive Ecosystem of Digital Literacy Oriented to Reduce the Digital Divide*, José Guzmán, Jaime Muñoz and Angel Muñoz, at the Universidad Autónoma de Aguascalientes, México, and René Santaolaya Salgado, Centro Nacional de Investigación y Desarrollo Tecnológico, México, describe and propose an interactive ecosystem of digital literacy. This system aims to set a new educational paradigm approach to reduce digital divide. Moreover, the authors describe a case study of the implementation of the ecosystem through an architectural model in the state of Aguascalientes, México.

In the third paper (selected from Interaction 2014 Conference), María R. Romagnano, Silvana V. Aciar at the Universidad Nacional de San Juan, Argentina, and Martín G. Marchetta at Universidad Nacional de Cuyo, Argentina, present some challenges in the retrieval information systems, remarking some problems to solve such as: heterogeneity, availability, distribution, quantity of information not relevant, quality, etc. To solve these research problems, the authors propose a method to retrieve and group web information sources, depending on the services they offer; allowing the user to

get accurate answers; reducing the time and complexity in the search.

In the fourth paper entitled *An Empirical Evaluation of a Vocal User Interface for Programming by Voice*, Amber Wagner and Jeff Gray at the University of Alabama, USA, describe an empirical evaluation of a vocal user interface for programming by voice. The authors present the problem that although Graphical User Interfaces (GUIs) often improve usability, individuals with physical disabilities may be unable to use a mouse and keyboard to navigate through a GUI-based application. So, in such situations, a Vocal User Interface (VUI) may be a viable alternative. This paper discusses about the challenges observed while mapping a GUI to a VUI, into a programming environment.

In the fifth paper entitled *Agile Software Development Process applied to the Serious Games Development for Children from 7 to 10 years old*, Sandra Cano at Universidad del Cauca, Colombia, Carina González at University of La Laguna, Spain, César Collazos at Universidad del Cauca, Colombia, Jaime Muñoz at the Universidad Autónoma de Aguascalientes, México, and Sergio Zapata at the Universidad Nacional de San Juan, Argentina, propose an agile software game development process methodology applied to serious games, taking into account the usability and human factors. Moreover, the authors describe the development and evaluation of an educational serious game applying the proposed methodology.

In the last sixth paper entitled *Component Based Model Driven Development – An Approach for Creating Mobile Web Applications from Design Models*, Pablo Vera at National University of La Matanza, Argentina, describes a methodological approach for creating mobile web applications from design models based on the component based model driven development. The author analyzes the main related MDD methodologies, and their problems, suggesting a new MDD method for mobile systems.

Hence, guest editors consider that this special issue contributes to the specific research stream on HCI for the Software Engineering, Systems Engineering and Information Tech-

nology disciplines. We also consider that this special issue helps to the international research community with the presentation of the HCI research perspective from Latin American region where research papers from most relevant Latin economies (Mexico, Colombia, Chile, and Argentina (except Brazil)) are presented. Additionally, a paper from researchers in USA country is also reported.

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