

**IJHCS Special Issue for
Reality-Based Interaction Evaluation Methods and Challenges**

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Call for Papers

Reality Based Interaction (RBI) is an umbrella term that was proposed to include new interaction styles, such as virtual reality, augmented reality, ubiquitous, pervasive and handheld interaction, tangible user interfaces, lightweight, tacit, or passive interaction, perceptual interfaces, affective computing, context-aware interfaces, and speech and multi-modal interfaces. RBI proposes that the new interaction styles share underlying interaction principles that leverage and take advantage of human knowledge, based on interactions with the outside world. It is a framework that identifies the common principles, and a first step towards making comparisons between the new methods of interaction. But it does not suggest that all the interactions between the user and the computer must be similar to interactions with the real world. This would be very limiting on what one could do, especially when through the use of a computer, a user may perform actions that would never be possible in a real world setting, such as flying, or having X-ray vision. Thus, the real world is only used for grounding the interactions that occur on familiar concepts, but wherever possible the action used in the real world is also used in the interface. Because we could claim that the mouse and keyboard are today as much a part of the real world as anything else, RBI limits the use of “real world” to aspects of the physical, non-digital world: “In particular, the framework focuses specifically on four themes from the real world: Naïve Physics: people have common sense knowledge about the physical world. Body Awareness & Skills: people have an awareness of their own physical bodies and possess skills for controlling and coordinating their bodies. Environment Awareness & Skills: people have a sense of their surroundings and possess skills for negotiating, manipulating, and navigating within their environment. Social Awareness & Skills: people are generally aware of others in their environment and have skills for interacting with them.” (Jacob et al., 2008)

For example, tangible computing is intuitive by conforming to common sense knowledge about the physical world; in virtual reality (VR) environments, interaction can be natural when it is designed to meet expectations, for interaction with technology and virtual agents; and for augmented reality, interactions with the environment may be designed to overcome ordinarily difficult manual or cognitive tasks, to make reality more intuitive. Also, interactions that would never occur in the real world, such as giving the user the ability to fly in a VR environment, can be based on a familiar concept, such as that of superman, holding one hand clenched in a fist raised upwards and leaning to the front a bit, to simulate the action of flying.

The evaluation of interfaces built using RBIs creates a unique set of problems that are rarely examined in mainstream usability research, such as the evaluation of continuous actions other than pointing, parallel actions, and the completion-time evaluation of body movements, again, other than pointing. Whilst RBI seeks to categorize and explain why and how these new interaction styles are similar, there has not been an effort to establish evaluation methods that will provide comparative metrics, design and evaluation principles, for and across interaction styles. In fact, researchers create their own evaluation methods and metrics when they create a new interactive system to evaluate its interactive performance, because of this lack of agreed evaluation methods for these new interaction styles. However, this leads to several questions about the reliability, reproducibility and validity of the obtained results for a particular interaction, and no means to compare interaction across styles. Also, researchers have only sought to establish design and evaluation principles for a particular interaction style, leaving the challenging design decision regarding what is the most appropriate interaction style for a particular interaction. Again, this is because researchers, who work only in one interaction style, do not come to contact with solutions that come from work in other interaction styles.

The special issue seeks submissions that include, but may not be limited to:

- Evaluation methods that have been created and designed specifically for RBIs.
- Case studies of successful and unsuccessful evaluations of RBIs, how those were performed, and why they were successful (or why they failed).
- Discussions of frameworks that enable the evaluation of RBIs, through objective and subjective measures
- Descriptions and evaluations of tools that support decisions regarding which interaction style would be appropriate for a specific task, environment and goal.
- Other articles of interest to the???? (incomplete sentence)

Articles must be based on original research, and to the standards of the International Journal of Human Computer Studies (IJHCS). Complete articles must be submitted by the deadline of 15th of January. Papers will be subject to the full review process of the IJHCS.

Instructions for Authors

Submissions must be limited to 18 pages in length, and must be submitted online. Illustrations should be provided in separate files in either .jpg or .gif format, and APA style references (not ACM or IEEE style). The guide for authors and online submission can be found at:

http://www.elsevier.com/wps/find/journaldescription.cws_home/622846/authorinstructions

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For information about the International Journal of Human Computer Studies see
<http://www.sciencedirect.com/science/journal/10715819>

References

Jacob, R. J. K., Girouard, A., Hirshfield, L. M., Horn, M. S., Shaer, O., Solovey, E. T., et al. (2008). Reality-Based Interaction: A Framework for Post-WIMP Interfaces. Paper presented at the CHI 08 Conference on Human Factors in Computing Systems, Florence, Italy.