Elements of Next-Generation, Non-WIMP User Interfaces

Robert J.K. Jacob
MIT Media Laboratory
and
Department of Electrical Engineering and Computer Science
Tufts University

I will survey some of the qualities I see as likely to characterize the next generation of emerging "non-WIMP" user interfaces. Rather than trying to predict specific future user interfaces, I am seeking to abstract across a range of these interfaces to find general properties that they will share, particularly those likely to affect how we build user interface software in the future—specifically: continuous input and output, merged with discrete interaction; parallel interaction across multiple modes; natural or "reality-based" interaction, particularly including virtual reality and tangible media; natural interaction augmented by artificial extensions; and lightweight, non-command, passive interactions, gleaning inputs from context and from physiological or behavioral measures. I will also describe my experimental work on new interaction techniques for eye movement-based interaction, lightweight techniques for browsing in a digital library, and tangible user interfaces, as examples of some of these characteristics. Finally, while new, more powerful interaction techniques and modes can make interfaces easier to learn and use, they are becoming more difficult to describe and build. I will discuss my work on developing new software models and abstractions for specifying and implementing non-WIMP interfaces, aimed at the problems raised by continuous and parallel interaction.

Biography

Robert Jacob is an Associate Professor of Electrical Engineering and Computer Science at Tufts University, where his research interests are user interface software and new interaction media and techniques. He is also currently a visiting professor at the MIT Media Laboratory, in the Tangible Media Group. Before coming to Tufts, he was in the Human-Computer Interaction Lab at the Naval Research Laboratory. He received his Ph.D. from Johns Hopkins University, and he is member of the editorial board of ACM Transactions on Computer-Human Interaction, former Vice-Chair of ACM SIGCHI, and Papers Co-Chair of the CHI 2001 conference.