

HCI challenges for the new millenium

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introduction

The millennium has seen several initiatives that aim to frame the future of HCI, ranging from special issues on the future of HCI in the TOCHI and HCI journals, a CHI workshop that produced a research agenda for Universal, Useful and Usable technology, and the HCI workshop within CPHC (Conference of Professors and Heads in Computer Science) initiative to define the research agenda for computer science. This panel takes these debates forward from the viewpoint of five people who have been involved in one or more of these initiatives. A selection of the issues they will discuss are set out below.

Theory and technology transfer

How do we develop a basis in theory (or theories) that can be successfully applied in design practice. We have made substantial advances but the means of transferring theory-grounded knowledge is still uncertain. It may be through education, bridging models, exemplar products, or new forms of representing HCI knowledge. We need to investigate new ways of learning and improving usable and utility within the context of practice- both systematic engineering and creative design.

A force in software engineering

HCI needs to compete more effectively in software engineering and interactive system design, indeed, it should become the dominant force in those disciplines. One strategy is to research how we reuse knowledge and designed components, to go beyond the patterns debate, to understand and produce libraries of theoretically sound, usable and useful components. By implication we need to recast and revolutionise the systems development process with more effective design for, and design by reuse.

Ubiquitous yet accessible- to-all technology

This will involve HCI solving problems of adaptability and collaborative computing that are on the current research agenda but we need integrate with and improve artificial intelligence and software engineering approaches to the same problems. HCI is a fundamental part of all computer science from hardware interfaces to computer mediate communities. In the future we should be at the core of a ubiquitous discipline of design.

Long term inclusive research

Strategy drivers are mostly pushing research in the same direction. EPSRC are being pressured to produce longer term research (7-15 years), while EU funding is also looking further ahead than before (4-7 years). Political and social drivers require user interfaces for all users, that is simple task-specific information appliances, usable by 100% of the population instead of the 10% who use computers, or the 40% who use the web. We must ensure that UK HCI research still addresses the design and evaluation of both information appliances and utilities to ensure they are sufficiently simple or adaptable to be used by the whole population. To do this we must develop the required interface technologies and methods for establishing usability requirements, informing design decisions, and evaluating systems of users, information appliances and utilities.

Social motivation

The future of HCI will be determined more by our social motivations than by technological innovation. **Life...** Technological literacy will continue to affect personal income and economic prosperity. If we can design devices that are "easier to use" and therefore reduce the burdens of technological literacy then we may both widen access to individual rewards and improve our economic competitiveness. On the other hand, it seems unrealistic to expect that access to technology through improved interface design will really reduce the social and economic distinctions that exist in Western society. In a more cynical view, improved interface design will reinforce existing economic and social distinctions. We can already see clear signs of this. Access to the Internet is no longer restricted to a technological elite but is widely available to those who can afford the associated costs. **Liberty...** Many people have focussed on the threats that context aware devices and electronic monitoring tools pose for civil liberties. However, much of this previous work under-emphasises the important trade-off that exists between expected utility and the associated technological threats. For example, the cost savings that can be obtained over the web have convinced many consumers to accept the risks associated with disclosing personal information, such as credit card details and records of previous purchases, over the Internet. HCI plays an interesting

role in all of this. By reducing the technological barriers to the exploitation and use of information technology, we may actually be making people more likely to accept the risks imposed by modern surveillance techniques. Arguably, we are helping people to obtain the benefits of information technology without necessarily educating them about the associated risks.**and the pursuit of happiness** HCI has had relatively little to say about this most fundamental of human motivations. However, this is changing. For instance, there is an annual workshop series on "Computers and Fun". I believe that this research illustrates one possible future for HCI. It is design-driven and pragmatic in nature. It is not primarily informed by the lab based studies of empirical enquiry, although it occasionally makes use of these techniques to answer limited questions. It makes use of social and contextual observations but often ignores many of the interpretative processes and guards that are stressed by ethnography and anthropology. In particular, this work looks beyond the task-based focus of previous work to consider the role of affect in human computer interaction.

FORMAT FOr panel

The audience are encouraged to come along with their own research agenda.