

Human values key to the development of new technologies

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Emerging computer technologies will change our lives for the better by 2020. But we need to retain control to ensure that these developments do not impact negatively on basic human values, according to a new report co-edited by a University of Nottingham academic.

Advances in interfaces — the physical way we react with computers — and other techniques of controlling computers will supplement the role of the traditional keyboard and mouse. Technologies in development include surfaces that allow fingertip control of on-screen objects and devices that sense — and react to — movement.

But we should assess human-computer interaction (HCI) to ensure that we retain control of key decision-making processes, *Being human: human-computer interaction in the year 2020* suggests. The report details the findings of a Microsoft-hosted conference held in March 2007, which brought together HCI experts from across the world.

Display technologies will soon allow us to embed screens of all sizes in a variety of fabrics. In 2020 we will still be reading paper books and magazines; but we'll also be using paper-like digital screens to distribute content. For example, “paper” used in books and magazines may be digitised on foldable screens we can put in our pockets; and our clothing may be capable of performing health diagnostics.

Cheap and easily-accessed digital storage allows consumers to electronically record and store more aspects of our lives — allowing us

to share information and interact with people across the globe. This hyperconnectivity liberates us from fixed telephone lines, desks and offices, while advances in robotics develop the computer's ability to learn and make decisions.

“New computing technology is tremendously exciting,” said Tom Rodden, Professor of Interactive Systems at The University of Nottingham. “But the interaction between humans and computers is evolving into a complex ecosystem where small changes can have far-reaching consequences. While new interfaces and hyperconnectivity mean we are increasingly mobile, we can see that they are blurring the line between work and personal space.

“Huge storage capabilities raise fundamental privacy issues around what we should be recording and what we should not. The potential of machine learning might well result in computers increasingly making decisions on our behalf. It is imperative that we combine technological innovations with an understanding of their impact on people.”

The report argues that without proper monitoring and assessment it is possible that we — both individually and collectively — may no longer be in control of ourselves or the world around us. This potentially places the computer on a collision course with basic human values and concepts such as personal space, society, identity, independence, perception, intelligence and privacy.

The report gives recommendations for the HCI community to adopt to ensure that human values inform future development. These include educating young people so that they understand HCI and the impact of computer advances early on; to engage with governments, policy-makers and society as a whole to provide counsel and give advance warning of the emerging implications of new computing ecosystems; to set the boundaries of HCI's remit and recognise when specialists from other

disciplines (eg, psychology, sociology and the arts) offer more insightful perspectives; and to recognise the need for other disciplines to be part of the research community inventing these systems.

“Computers have shaped so many aspects of the modern world that we wanted to explore how today’s emerging technologies might shape our lives in 2020,” said Abigail Sellen, senior researcher at Microsoft Corp and one of the editors of the report. “Computing has the potential to enhance the lives of billions of people around the world. We believe that if technology is to truly bring benefit to humanity, then human values and the impact of technology must be considered at the earliest possible opportunity in the technology design process.

“This report makes important recommendations that will help us to decide collectively when, how, why and where technology impacts upon humanity, rather than reacting to unforeseen change. The final recommendation is something towards which we should all aspire: by 2020 HCI will be able to design for and support differences in human value, irrespective of the economic means of those seeking those values. In this way, the future can be different and diverse because people want it to be.”

Source: University of Nottingham

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