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Human Factors in Computing and Informatics

First International Conference, SouthCHI 2013
Maribor, Slovenia, July 1-3, 2013
Proceedings



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Preface

The field of Human–Computer Interaction (HCI) has been extremely successful for the last 30 years, especially when it comes to changing computing to the benefit of end users. Advanced mobile, ubiquitous, and pervasive computing have dramatically changed the way we *interact with information*, which turns “human factors” into an essential part of computer science and informatics in all areas of our daily life. SouthCHI – the International Conference on Human Factors in Computing & Informatics (formerly USAB), is dedicated to this field and particularly wants to build a bridge between experts from Southern Europe with the world.

SouthCHI is the successor of the well-established USAB Conference series, which was born in 2005 at Vienna University of Technology, Austria, when it took place as the “First USABility Symposium” with Ben Shneiderman as the first keynote speaker. Whereas the USAB series always focused on a certain topic, e.g., on Information Quality in e-Health in 2011, the SouthCHI conference series promotes all aspects of HCI and usability engineering – which was a big wish from the participants of the USAB series and took shape during USAB 2010 at the Alpen-Adria-Universität Klagenfurt, where the idea arose of organizing such a conference particularly to connect experts from the southern countries of Europe with the whole world.

This first event was organized in Maribor, Slovenia, the European Capital of Culture 2012. The conference was organized by the University of Maribor and supported by the world’s largest computing organizations: IEEE and ACM.

HCI is important in all application domains, including medical and life sciences, automotive industry, social media, Web 2.0 etc., which are rapidly increasing in popularity and importance, particularly in South and South-Eastern European countries and thus are bringing about fundamental changes in the area of user-friendly computer-supported tools. With their multi- and interdisciplinary approach and research, solutions are becoming essential in modern human work and life.

HCI is an interdisciplinary profession/field and requires the ability to communicate with professionals from other disciplines and the willingness to accept and incorporate also their points of view. Consequently, SouthCHI 2013 was organized so as to promote a close collaboration between scientists, engineers, industrial and business representatives, and experts from the regions of Alpe-Adria, South and South-East Europe as well as Mediterranean countries with the “rest of the world.” This was a unique opportunity to meet experts from around the world for networking and discussing business opportunities, in order to gain new connections, knowledge, and possibilities of exchanging expertise. The main mission of this conference, therefore, is to build this bridge between people from Central and Southern Europe and other countries.

SouthCHI 2013 received a total of 169 submissions. We followed a careful and rigorous two-level, double-blind review scheme, assigning each paper to a minimum of three and maximum of six reviewers from our international scientific board. On the basis of the reviews, only 38 full papers were accepted (resulting in an acceptance rate of approx. 22 %). Additionally, 12 short papers, four posters, and three doctoral thesis papers were accepted; i.e. 57 regular papers plus 2 keynote lectures from 30 countries: Austria, Belgium, Canada, China, Croatia, Cyprus, Czech Republic, Denmark, Finland, Germany, Greece, India, Ireland, Italy, Japan, The Netherlands, Norway, Poland, Portugal, Romania, Saudi Arabia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Tunisia, Turkey, UK, and USA.

The organizers see SouthCHI as a bridge within the scientific community, between various technological disciplines as well as social sciences that meets end users' needs and brings them benefits and values. The people who gathered together to work for this conference showed great enthusiasm and dedication.

We cordially thank each and every person who contributed toward making SouthCHI 2013 a success, for their participation and commitment: the authors, reviewers, partners, organizations, supporters, the team of the Institute of Media Communication from University of Maribor, Slovenia, the team from the Research Unit Human–Computer Interaction for Medicine and Health Care (HCI4MED) of the Institute of Medical Informatics, Statistics and Documentation of the Medical University Graz, Austria, the team at the Alpen-Adria-Universität Klagenfurt, Austria and all the volunteers; without their help, this bridge would never have been built.

July 2013

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Keynote Speaker 1: Prof. Dr. Helwig Hauser

Biographical Note

Helwig Hauser is professor at the University of Bergen in Norway, where he leads a research group on visualization in the Department of Informatics since 2007. Before that, he was the scientific director of the VRVis Research Center in Vienna, Austria, where he cared about many projects in collaboration of science and industry. Helwig Hauser graduated in 1998 from Vienna University of Technology, Austria, with a PhD thesis on the visualization of dynamical systems. He then worked at the Institute of Computer Graphics and Algorithms (TU Wien) as assistant, first, and then as assistant professor, before he changed to the newly founded VRVis Research Center in 2000. In 2004, he finished his habilitation at TU Wien with a thesis entitled “Generalizing Focus+Context Visualization” – in 2006 this work was awarded with the Heinz-Zemanek Preis from OCG (given every two years for exceptional works in computer science or a related area). Prof. Hauser is a visualization researcher and teacher since the mid-1990s with a focus on scientific visualization, information visualization, visual analytics, etc., and he enjoys exercising his research in the context of several different application domains (including medicine, geosciences, engineering, biology, climatology, etc.). He was/is member of the Editorial Boards of the major visualization journals, including IEEE Transactions on Visualization and Computer Graphics and Computer Graphics Forum by Eurographics. Prof. Hauser is also member of several Steering Boards, including the EuroVis Steering Committee. Frequently, he is invited to talk about his research (in particular about interactive visual analysis), repeatedly also as keynote speaker. Regularly, Helwig Hauser chaired/chairs central visualization events, e.g., TopoInVis 2011, EuroVis 2011, PacificVis 2012, and IEEE InfoVis 2013, more recently.

Lecture: Integrating Interactive and Computational Analysis in Visualization

In our emerging information age it becomes important that we can exploit the wealth of available data for the sake of learning, decision making and other tasks. A promising approach – not at the least targeted by the new concept of visual analytics in visualization research – is to cleverly integrate the strengths of computers (fast computation, efficient handling of large datasets, comparably low costs, etc.) with the strengths of the users (outstanding perceptual and cognitive capabilities, domain knowledge, etc.). In this talk, we look at one possible solution, originating in visualization research within computer science, i.e., the concept of interactive visual analysis, and describe it as an iterative pro-

cess, enabling the integration of computational and interactive means for data exploration and analysis. Thinking of interactive visual analysis as an iterative process enables that each step is performed on the basis of a toolbox with computational and interactive visual solutions. In order to substantiate the conceptual aspects of this solution, we also look at several examples that document the successful application of interactive visual analysis.

Keynote Speaker 2: Dr. rer. nat. Dr. phil. Norbert A. Streitz

Biographical Note

Dr. Dr. Norbert Streitz (Ph.D. in physics, Ph.D. in psychology) is a Senior Scientist and Strategic Advisor with more than 30 years of experience in information and communication technology. He is the founder and scientific director of the Smart Future Initiative (SFI) which was launched in January 2009. From 1987 - 2008, he was at the Fraunhofer Institute IPSI in Darmstadt, Germany, where he held different positions as Division Manager and Deputy Director. Prominent examples of his activities are the user-centered design and development of cooperative hypermedia systems, local and distributed electronic meeting rooms, ubiquitous computing, ambient intelligence, and smart environments. Roomware® - the integration of furniture, walls, doors, etc. with information technology became much cited pioneering work in these areas. He also taught at the Department of Computer Science of the Technical University Darmstadt for more than 15 years. Before joining IPSI in Darmstadt, he was an Assistant Professor at the Technical University Aachen (RWTH), Germany, teaching and doing research in cognitive science and human-computer interaction and founding the ACCEPT-Group (AaChen Cognitive Ergonomics Project). This was preceded by his work in elementary particle physics and general relativity theory at the University of Kiel, Germany. Furthermore, he was a post-doc research fellow at the University of California, Berkeley, USA, a visiting scholar at Xerox PARC, USA, and at the Intelligent Systems Lab of MITI, Tsukuba Science City, Japan. He is regularly asked to present keynote speeches and tutorials at scientific as well as commercial events in Europe, USA, South America, Middle East (Qatar), Malaysia, Singapore, Hongkong, China, Korea and Japan.

Lecture: Smart Cities as New Challenges for Human-Centered Design

Having entered what is being called the Urban Age, where more than half of the world population is living in cities, economic prosperity and quality of life will largely depend on the abilities of cities to reach their full potential. One important dimension is the information technology perspective deploying appropriate infrastructures and providing ambient intelligence-based support for smart urban living. Real urban spaces become increasingly interactive spaces reflecting social networks created in the virtual world now also again in the real world. Since the origin and initial meaning of social networks derive from real world encounters one could label this “a return trip to the real world”. At the same time,

it shows the importance of real human beings living in a real world. Combining these information and experience spaces with ubiquitous and ambient computing in urban contexts constitutes what we are calling a “smart hybrid city”.

This keynote talk addresses issues and challenges for designing ambient intelligence environments in urban contexts, especially from a human-environment interaction perspective. This includes the shift from information design to experience design, spreading social communication behavior from virtual worlds back into real spaces, and the relevance of hybrid symmetric interaction. We are arguing for a people-oriented, empowering smartness where smart spaces make people smarter by keeping the human in the loop. The implications of sensor-enriched – one could also call them “sensor-polluted” - smart environments will be discussed (e.g., availability and use of location-based services), because they reach a new dimension, especially with respect to privacy. Privacy is endangered to become a commodity people have to pay for and thus a privilege. Privacy issues constitute an important part of a new research agenda that will be presented. It consists of 12 research lines that were developed on the basis of an umbrella scenario on “Urban life management”. Needing a vision for reconciling humans and technology in the Urban Age, we argue for a human-centered design approach resulting in a Humane Smart Hybrid City where people can exploit their creative potential and lead a self-determined life.

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