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Global Thoughts, Local Designs

INTERACT 2017 IFIP TC 13 Workshops
Mumbai, India, September 25–27, 2017
Revised Selected Papers

Springer

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Foreword

This volume presents a series of revised papers selected from workshops organized by the IFIP TC 13 Working Groups during the 16th IFIP TC13 International Conference on Human–Computer Interaction, INTERACT 2017, which was held in September 2017 in Mumbai, India. INTERACT 2017 was hosted by the Industrial Design Centre (IDC) on the beautiful campus of the Indian Institute of Technology, Bombay (IIT Bombay). The conference was co-sponsored by the HCI Professionals Association of India and the Computer Society of India. It was held in cooperation with ACM and ACM SIGCHI.

The contents of this volume follows the main theme of INTERACT 2017: "Global Thoughts, Local Designs." In this new age of global connectivity, designers are often required to design products for users who are beyond their borders and belonging to distinctly different cultures. The process of designing products is becoming more multi disciplinary by the day. Solutions are now designed with a global perspective in mind, however local the solution might be. For those in the field of human–computer interaction (HCI), the phenomenon of global thoughts, local designs would have a direct impact. It encompasses the areas of HCI in the industries of emerging economies, HCI contributions in socio-economic development, HCI for products and services in emerging markets, including mobile systems, HCI and designs for low-literacy users, HCI and designs for bottom-of-the-pyramid users, and HCI for remote contexts, including issues related to international outsourcing/global software development. The IFIP TC 13 working groups reflect and develop on the spirit and theme of the IFIP INTERACT conferences and more generally of the TC 13 itself.

This volume presents the outcome of a thorough and competitive selection process, which started with the selection of workshops for INTERACT 2017. The IFIP TC13 working groups were challenged to propose workshops that match the main topics of the INTERACT conference. We welcomed workshops in diverse formats, including: (a) paper presentations followed by forum discussions with participants, (b) interactive events where participants work together on experimenting with or evaluating an artifact, (c) a design workshop focused on the construction of artifacts, and having as outcome a gallery/showroom exhibition during the conference, and, (d) any other innovative format that could have a scientific focus. The selection process of workshops was juried by workshop co-chairs and members of the international Program Committee of INTERACT 2017.

Workshops preceded the main conference, running from September 25–27, 2017. Only participants who submitted contributions were allowed to attend workshops. However, a dedicated session called "Workshops Summary" was held during the last day of INTERACT so that workshop organizers and contributors could report the outcomes of each workshop, receive comments, and interact with participants of the main conference.

Accepted workshops were allowed to establish their own reviewing process. However, to ensure the scientific quality of these proceedings, we asked that papers selected for this volume be peer reviewed by an international committee. After the workshop, authors were asked to revise their contributions including the comments and remarks they received during the event. Extended versions were then scrutinized again by the editors of the present volume.

The selected papers show advances in the field of HCI and they demonstrate the maturity of the work performed by the IFIP TC13 working groups. We selected 15 papers that are organized in four sections corresponding to IFIP TC13 workshops at INTERACT 2017. This is the very first time that workshops organized by IFIP TC13 working groups are compiled in a single proceedings volume. While contributions are connected to a particular workshop, they contribute globally to the IFIP TC13 aims in the development the HCI field.

It is important to mention that IFIP TC13 working groups are open to welcoming new members. The full list of IFIP TC13 working groups is available at http://ifip-tc13.org/working-groups/ and we invite interested readers to contact the officers for further information on how to enrol in working group activities such as the workshops organized at the INTERACT conference.

April 2018

<div align="right">

Torkil Clemmensen
Venkatesh Rajamanickam
Peter Dannenmann
Helen Petrie
Marco Winckler

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IFIP TC13 - http://ifip-tc13.org/

Established in 1989, the International Federation for Information Processing Technical Committee on Human–Computer Interaction (IFIP TC 13) is an international committee of 35 member national societies and 10 Working Groups, representing specialists of the various disciplines contributing to the field of human–computer interaction (HCI). This includes (among others) human factors, ergonomics, cognitive science, computer science, and design. INTERACT is the flagship conference of IFIP TC 13, staged biennially in different countries in the world. The first INTERACT conference was held in 1984 running triennially and became a biennial event in 1993.

IFIP TC 13 aims to develop the science, technology, and societal aspects of HCI by encouraging empirical research, promoting the use of knowledge and methods from the human sciences in design and evaluation of computer systems; promoting better understanding of the relation between formal design methods and system usability and acceptability; developing guidelines, models and methods by which designers may provide better human-oriented computer systems; and, cooperating with other groups, inside and outside IFIP, to promote user-orientation and humanization in system design. Thus, TC 13 seeks to improve interactions between people and computers, to encourage the growth of HCI research and its practice in industry, and to disseminate these benefits worldwide.

The main focus is to place the users at the center of the development process. Areas of study include: the problems people face when interacting with computers; the impact of technology deployment on people in individual and organizational contexts; the determinants of utility, usability, acceptability, and user experience; the appropriate allocation of tasks between computers and users especially in the case of automation; modelling the user, their tasks, and the interactive system to aid better system design; and harmonizing the computer to user characteristics and needs.

While the scope is thus set wide, with a tendency toward general principles rather than particular systems, it is recognized that progress will only be achieved through both general studies to advance theoretical understanding and specific studies on practical issues (e.g., interface design standards, software system resilience, documentation, training material, appropriateness of alternative interaction technologies, guidelines, the problems of integrating multimedia systems to match system needs and organizational practices, etc.).

In 2015, TC 13 approved the creation of a Steering Committee (SC) for the INTERACT conference. The SC is responsible for:

- Promoting and maintaining the INTERACT conference as the premie venue for researchers and practitioners interested in the topics of the conference (this requires a refinement of the aforementioned topics)
- Ensuring the highest quality for the contents of the event

- Setting up the bidding process to handle the future INTERACT conferences (decision is made up at TC 13 level)
- Providing advice to the current and future chairs and organizers of the INTERACT conference
- Providing data, tools, and documents about previous conferences to the future conference organizers
- Selecting the reviewing system to be used throughout the conference (as this impacts the entire set of reviewers)
- Resolving general issues involved with the INTERACT conference
- Capitalizing history (good and bad practices)

In 1999, TC 13 initiated a special IFIP Award, the Brian Shackel Award, for the most outstanding contribution in the form of a refereed paper submitted to and delivered at each INTERACT. The award draws attention to the need for a comprehensive human-centered approach in the design and use of information technology in which the human and social implications have been taken into account. In 2007, IFIP TC 13 also launched an accessibility award to recognize an outstanding contribution in HCI with international impact dedicated to the field of accessibility for disabled users. In 2013, IFIP TC 13 launched the Interaction Design for International Development (IDID) Award that recognizes the most outstanding contribution to the application of interactive systems for social and economic development of people in developing countries. Since the process to decide the award takes place after papers are sent to the publisher for publication, the awards are not identified in the proceedings.

IFIP TC 13 also recognizes pioneers in the area of HCI. An IFIP TC 13 pioneer is one who, through active participation in IFIP Technical Committees or related IFIP groups, has made outstanding contributions to the educational, theoretical, technical, commercial, or professional aspects of analysis, design, construction, evaluation, and use of interactive systems. IFIP TC 13 pioneers are appointed annually and awards are handed over at the INTERACT conference.

IFIP TC 13 stimulates working events and activities through its working groups (WGs). WGs consist of HCI experts from many countries, who seek to expand knowledge and find solutions to HCI issues and concerns within their domains. New WGs are formed as areas of significance in HCI arise.

Further information is available from the IFIP TC13 website: http://ifip-tc13.org/

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                               Human-Computer Interaction, Swedish Computer
                               Society

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                               (SUP'COM)

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Ghassan Al-Qaimari   UAE Computer Society

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Ivan Burmistrov, Russia   Fernando Loizides, UK/Cyprus
Peter Forbrig, Germany   Dan Orwa, Kenya
Dorian Gorgan, Romania   Eunice Sari, Australia/Indonesia

IFIP TC13 Working Groups

WG 13.1 – Education in HCI and HCI Curricula

Working Group 13.1 aims to improve HCI education at all levels of higher education, to coordinate and unite efforts to develop HCI curricula, and to promote HCI teaching.

Chair

Konrad Baumann   FH Joanneum University of Applied Sciences, Austria

Vice-chairs

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Carlo Giovannella   University of Rome Tor Vergata, Italy

Secretary

Konrad Baumann   FH Joanneum, Austria

WG 13.2 – Methodologies for User-Centered System Design

The Working Group 13.2 provides an umbrella for academic researchers, students, and industry practitioners, who have an interest in the fundamental theory, practices, and technology related to the user-centered design philosophy.

Chair

Marco Winckler   Université Nice Sophia Antipolis (Polytech), France

Vice-chairs

Marta Kristin Larusdottir   Reykjavik University, Iceland
Cristian Bogdan   KTH, Sweden

Secretary

Kati Kuusinen   University of Southern Denmark, Denmark

WG 13.3 – Human–Computer Interaction and Disability

Working Group 13.3 aims to make designers of information and communications technologies and complementary tools aware of the needs of these groups in order to encourage the development of more appropriate tools for accessibility and usability. As a result, systems will become more universally accessible, and the market for them will increase.

Chair

Helen Petrie   University of York, Department of Computer Science, UK

Vice-chair

Gerhard Weber   Technical University Dresden, Institute for Applied Computer Science, Germany

Secretary

David Sloan   University of Dundee, Digital Media Access Group, Scotland, UK

WG 13.4/2.7 – User Interface Engineering

Working Group 2.7/13.4 encompasses activities of the Technical Committees on Human–Computer Interaction (TC13) and Software: Theory and Practice (TC2). It aims to investigate the nature, concepts, and construction of interactive systems. Another aim is to advance the state of the art in user interface engineering and science through meetings and collaborations between researchers who are experts in the system and user aspects of the engineering design of interactive systems. Engineering emphasizes the application of scientific knowledge and rigorous structured design methods to predictably and reliably improve the consistency, usability, scalability, economy, and dependability of practical problem solutions.

Chair

José Creissac Campos   Departamento de Informática, Escola de Engenharia, Universidade do Minho, Portugal

Vice-chair

Gaëlle Calvary   Laboratoire d'Informatique de Grenoble, France

Secretary

Judy Bowen   University of Waikato, New Zealand

WG 13.5 – Resilience, Reliability, Safety, and Human Error in System Development

Working Group 13.5 aims to support practitioners, regulators, and researchers to develop leading-edge techniques in hazard analysis and the safety engineering of computer-based systems.

Chair

Christopher Johnson   Department of Computer Science, University
                              of Glasgow, UK

Vice-chairs

Michael Feary   NASA, Ames Research Center, USA
Asaf Degani   General Motors R&D, Israel

Secretary

Philippe Palanque   ICS-IRIT – Paul Sabatier University, France

WG13.6 – Human–Work Interaction Design (HWID)

Working Group 13.6 aims to encourage empirical studies and conceptualizations of the interaction among humans, their variegated social contexts and the technology they use both within and across these contexts. It also aims to promote the use of knowledge, concepts, methods, and techniques that enables user studies to procure a better apprehension of the complex interplay between individual, social, and organizational contexts and thereby a better understanding of how and why people work in the ways they do.

Chair

Barbara Rita Barricelli   Department of Computer Science, Università degli
                              Studi di Milano, Italy

Vice-chairs

Pedro Campos   University of Madeira, Portugal
Torkil Clemmensen   Department of IT Management, Copenhagen Business
                              School, Denmark

José Abdelnour-Nocera	University of West London, UK
Arminda Guerra Lopes	Polytechnic Institute of Castelo Branco, Portugal
Dinesh Katre	Centre for Development of Advanced Computing, India

Secretary

| Frederica Gonçalves | University of Madeira, Portugal |

WG 13.7 – Human–Computer Interaction and Visualization (HCIV)

Working Group 13.7 aims to provide a creative work environment for performing innovative research at the interface between human–computer interaction and visualization.

Chair

| Peter Dannenmann | RheinMain University of Applied Sciences, Germany |

Vice-chairs

| Gerrit van der Veer | Association for Computing Machinery (ACM) |
| Nahum Gershon | The MITRE Corporation, USA |

Secretary

| Achim Ebert | University of Kaiserslautern, Germany |

WG 13.8 – Interaction Design and International Development

The aim of Working Group 13.8 is to support and develop the research, practice, and education capabilities of HCI in institutions and organizations based around the world, taking into account their diverse local needs and cultural perspectives.

Chair

| José Abdelnour Nocera | University of West London, School of Computing and Technology, UK |

Vice-chairs

| Andy Dearden | Sheffield Hallam University, Communication and Computing Research Centre, UK |
| Torkil Clemmensen | Copenhagen Business School, Department of IT Management, Denmark |

Christian Sturm   Hamm-Lippstadt, University of Applied Sciences,
                                 Germany

Secretary

Anirudha Joshi   IIT Bombay, India

WG 13.9 – Interaction Design and Children

This working group aims to support practitioners, regulators, and researchers to develop the study of interaction design and children across international contexts.

Chair

Janet Read   University of Central Lancashire, UK

Vice-chair

Panos Markopoulos   Eindhoven University of Technology, The Netherlands

Secretary

Matthew Horton   University of Central Lancashire, Computing
                                 and Technology Building, UK

WG 13.10 – Human-Centered Technology for Sustainability

Working Group 13.10 aims to promote research, design, development, evaluation, and deployment of human-centered technology to encourage the sustainable use of resources in various domains. These technologies include interaction techniques, interfaces, and visualizations for applications, tools, games, services, and devices.

Chair

Masood Masoodian   Aalto University, Finland

Vice-chairs

Elisabeth André   Augsburg University, Germany
Nuno J. Nunes   University of Madeira, Portugal

Secretary

Thomas Rist   University of Applied Sciences Augsburg, Germany

Workshops Organized by IFIP TC13 Working Groups at INTERACT 2017

Workshop Jointly Organized by Working Group 13.2 and Working Group 13.5

Workshop on Dealing with Conflicting User Interface Properties in User-Centered Development Processes

Organizers

Marco Winckler	Université Nice Sophia Antipolis (Polytech), France
Marta Larusdottir	Reykjavik University, Iceland
Cristian Bogdan	KTH Royal Institute of Technology, Stockholm, Sweden
Kati Kuusinen	University of Southern Denmark, Denmark
Philippe Palanque	Université Paul Sabatier, France

Website: http://ifip-tc13.org/wg-13-213-5-workshop-interact17-mumbai/

Workshop Organized by Working Group 13.3

Cross-Cultural Differences in Designing for Accessibility and Universal Design

Organizers

Helen Petrie	University of York, UK
Gerhard Weber	Technische Universität Dresden, Germany
Jenny Darzentas	University of York, UK
Charudatta Jadhav	Accessibility Center of Excellence at Tata Consultancy Services, Mumbai Area, India

Website: https://ifipwg133.wordpress.com/interact-2017-workshop-cross-cultural-differences-in-designing-for-accessibility-and-universal-design/

Workshop Organized by Working Group 13.6

Human–Work Interaction Design Meets International Development

Organizers

Pedro Campos	Madeira Interactive Technologies Institute (M-iti), Portugal
Torkil Clemmensen	Copenhagen Business School, Denmark
Barbara Rita Barricelli	Università degli Studi di Milano, Italy
José Abdelnour-Nocera	University of West London, UK
Arminda Lopes	Madeira Interactive Technologies Institute (M-iti), Portugal
Frederica Gonçalves	Madeira Interactive Technologies Institute (M-iti), Portugal

| Dineshkumar Singh | TCS Research and Innovation, Mumbai, Tata Consultancy Services Ltd., India |
| Veerendra Veer Singh | ICAR – Central Marine Fisheries Research Institute, Mumbai Research Center |

Website: http://hwid.m-iti.org/?p=155

Workshop Organized by Working Group 13.7

Beyond Computers: Wearables, Humans, and Things - WHAT!

Organizers

Nahum Gershon	The MITRE Corporation, USA
Achim Ebert	University of Kaiserslautern, Germany
Gerrit van der Veer	Association for Computing Machinery (ACM)
Peter Dannenmann	RheinMain University of Applied Sciences, Germany

Website: http://hciv.de/what17/

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