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Margherita Antona · Constantine Stephanidis (Eds.)

Universal Access in Human-Computer Interaction

Interaction Techniques and Environments

10th International Conference, UAHCI 2016
Held as Part of HCI International 2016
Toronto, ON, Canada, July 17–22, 2016
Proceedings, Part II

Springer

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Foreword

The 18th International Conference on Human-Computer Interaction, HCI International 2016, was held in Toronto, Canada, during July 17–22, 2016. The event incorporated the 15 conferences/thematic areas listed on the following page.

A total of 4,354 individuals from academia, research institutes, industry, and governmental agencies from 74 countries submitted contributions, and 1,287 papers and 186 posters have been included in the proceedings. These papers address the latest research and development efforts and highlight the human aspects of the design and use of computing systems. The papers thoroughly cover the entire field of human-computer interaction, addressing major advances in knowledge and effective use of computers in a variety of application areas. The volumes constituting the full 27-volume set of the conference proceedings are listed on pages IX and X.

I would like to thank the program board chairs and the members of the program boards of all thematic areas and affiliated conferences for their contribution to the highest scientific quality and the overall success of the HCI International 2016 conference.

This conference would not have been possible without the continuous and unwavering support and advice of the founder, Conference General Chair Emeritus and Conference Scientific Advisor Prof. Gavriel Salvendy. For his outstanding efforts, I would like to express my appreciation to the communications chair and editor of *HCI International News*, Dr. Abbas Moallem.

April 2016 Constantine Stephanidis

HCI International 2016 Thematic Areas and Affiliated Conferences

Thematic areas:

- Human-Computer Interaction (HCI 2016)
- Human Interface and the Management of Information (HIMI 2016)

Affiliated conferences:

- 13th International Conference on Engineering Psychology and Cognitive Ergonomics (EPCE 2016)
- 10th International Conference on Universal Access in Human-Computer Interaction (UAHCI 2016)
- 8th International Conference on Virtual, Augmented and Mixed Reality (VAMR 2016)
- 8th International Conference on Cross-Cultural Design (CCD 2016)
- 8th International Conference on Social Computing and Social Media (SCSM 2016)
- 10th International Conference on Augmented Cognition (AC 2016)
- 7th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management (DHM 2016)
- 5th International Conference on Design, User Experience and Usability (DUXU 2016)
- 4th International Conference on Distributed, Ambient and Pervasive Interactions (DAPI 2016)
- 4th International Conference on Human Aspects of Information Security, Privacy and Trust (HAS 2016)
- Third International Conference on HCI in Business, Government, and Organizations (HCIBGO 2016)
- Third International Conference on Learning and Collaboration Technologies (LCT 2016)
- Second International Conference on Human Aspects of IT for the Aged Population (ITAP 2016)

Conference Proceedings Volumes Full List

1. LNCS 9731, Human-Computer Interaction: Theory, Design, Development and Practice (Part I), edited by Masaaki Kurosu
2. LNCS 9732, Human-Computer Interaction: Interaction Platforms and Techniques (Part II), edited by Masaaki Kurosu
3. LNCS 9733, Human-Computer Interaction: Novel User Experiences (Part III), edited by Masaaki Kurosu
4. LNCS 9734, Human Interface and the Management of Information: Information, Design and Interaction (Part I), edited by Sakae Yamamoto
5. LNCS 9735, Human Interface and the Management of Information: Applications and Services (Part II), edited by Sakae Yamamoto
6. LNAI 9736, Engineering Psychology and Cognitive Ergonomics, edited by Don Harris
7. LNCS 9737, Universal Access in Human-Computer Interaction: Methods, Techniques, and Best Practices (Part I), edited by Margherita Antona and Constantine Stephanidis
8. LNCS 9738, Universal Access in Human-Computer Interaction: Interaction Techniques and Environments (Part II), edited by Margherita Antona and Constantine Stephanidis
9. LNCS 9739, Universal Access in Human-Computer Interaction: Users and Context Diversity (Part III), edited by Margherita Antona and Constantine Stephanidis
10. LNCS 9740, Virtual, Augmented and Mixed Reality, edited by Stephanie Lackey and Randall Shumaker
11. LNCS 9741, Cross-Cultural Design, edited by Pei-Luen Patrick Rau
12. LNCS 9742, Social Computing and Social Media, edited by Gabriele Meiselwitz
13. LNAI 9743, Foundations of Augmented Cognition: Neuroergonomics and Operational Neuroscience (Part I), edited by Dylan D. Schmorrow and Cali M. Fidopiastis
14. LNAI 9744, Foundations of Augmented Cognition: Neuroergonomics and Operational Neuroscience (Part II), edited by Dylan D. Schmorrow and Cali M. Fidopiastis
15. LNCS 9745, Digital Human Modeling and Applications in Health, Safety, Ergonomics and Risk Management, edited by Vincent G. Duffy
16. LNCS 9746, Design, User Experience, and Usability: Design Thinking and Methods (Part I), edited by Aaron Marcus
17. LNCS 9747, Design, User Experience, and Usability: Novel User Experiences (Part II), edited by Aaron Marcus
18. LNCS 9748, Design, User Experience, and Usability: Technological Contexts (Part III), edited by Aaron Marcus
19. LNCS 9749, Distributed, Ambient and Pervasive Interactions, edited by Norbert Streitz and Panos Markopoulos
20. LNCS 9750, Human Aspects of Information Security, Privacy and Trust, edited by Theo Tryfonas

21. LNCS 9751, HCI in Business, Government, and Organizations: eCommerce and Innovation (Part I), edited by Fiona Fui-Hoon Nah and Chuan-Hoo Tan
22. LNCS 9752, HCI in Business, Government, and Organizations: Information Systems (Part II), edited by Fiona Fui-Hoon Nah and Chuan-Hoo Tan
23. LNCS 9753, Learning and Collaboration Technologies, edited by Panayiotis Zaphiris and Andri Ioannou
24. LNCS 9754, Human Aspects of IT for the Aged Population: Design for Aging (Part I), edited by Jia Zhou and Gavriel Salvendy
25. LNCS 9755, Human Aspects of IT for the Aged Population: Healthy and Active Aging (Part II), edited by Jia Zhou and Gavriel Salvendy
26. CCIS 617, HCI International 2016 Posters Proceedings (Part I), edited by Constantine Stephanidis
27. CCIS 618, HCI International 2016 Posters Proceedings (Part II), edited by Constantine Stephanidis

Universal Access in Human–Computer Interaction

Program Board Chairs: **Margherita Antona, Greece, and Constantine Stephanidis, Greece**

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The full list with the program board chairs and the members of the program boards of all thematic areas and affiliated conferences is available online at:

http://www.hci.international/2016/

HCI International 2017

The 19th International Conference on Human-Computer Interaction, HCI International 2017, will be held jointly with the affiliated conferences in Vancouver, Canada, at the Vancouver Convention Centre, July 9–14, 2017. It will cover a broad spectrum of themes related to human-computer interaction, including theoretical issues, methods, tools, processes, and case studies in HCI design, as well as novel interaction techniques, interfaces, and applications. The proceedings will be published by Springer. More information will be available on the conference website: http://2017.hci.international/.

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http://2017.hci.international/

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Intelligent and Assistive Environments