

Lecture Notes in Artificial Intelligence 5639

Edited by R. Goebel, J. Siekmann, and W. Wahlster

Subseries of Lecture Notes in Computer Science

Don Harris (Ed.)

Engineering Psychology and Cognitive Ergonomics

8th International Conference, EPCE 2009
Held as Part of HCI International 2009
San Diego, CA, USA, July 19-24, 2009
Proceedings

Series Editors

Randy Goebel, University of Alberta, Edmonton, Canada

Jörg Siekmann, University of Saarland, Saarbrücken, Germany

Wolfgang Wahlster, DFKI and University of Saarland, Saarbrücken, Germany

Volume Editor

Don Harris

Cranfield University, School of Engineering

Department of Systems Engineering and Human Factors

Cranfield, Bedford MK43 0AL, UK

E-mail: d.harris@cranfield.ac.uk

Library of Congress Control Number: 2009928834

CR Subject Classification (1998): I.2.0, I.2, H.5, H.1.2, H.3, H.4.2, I.6, J.2-3

LNCS Sublibrary: SL 7 – Artificial Intelligence

ISSN 0302-9743

ISBN-10 3-642-02727-X Springer Berlin Heidelberg New York

ISBN-13 978-3-642-02727-7 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

springer.com

© Springer-Verlag Berlin Heidelberg 2009

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper SPIN: 12706648 06/3180 5 4 3 2 1 0

Foreword

The 13th International Conference on Human–Computer Interaction, HCI International 2009, was held in San Diego, California, USA, July 19–24, 2009, jointly with the Symposium on Human Interface (Japan) 2009, the 8th International Conference on Engineering Psychology and Cognitive Ergonomics, the 5th International Conference on Universal Access in Human–Computer Interaction, the Third International Conference on Virtual and Mixed Reality, the Third International Conference on Internationalization, Design and Global Development, the Third International Conference on Online Communities and Social Computing, the 5th International Conference on Augmented Cognition, the Second International Conference on Digital Human Modeling, and the First International Conference on Human Centered Design.

A total of 4,348 individuals from academia, research institutes, industry and governmental agencies from 73 countries submitted contributions, and 1,397 papers that were judged to be of high scientific quality were included in the program. These papers address the latest research and development efforts and highlight the human aspects of the design and use of computing systems. The papers accepted for presentation 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.

This volume, edited by Don Harris, contains papers in the thematic area of Engineering Psychology and Cognitive Ergonomics, addressing the following major topics:

- Cognitive Approaches in HCI Design
- Interaction and Cognition
- Driving Safety and Support
- Aviation and Transport

The remaining volumes of the HCI International 2009 proceedings are:

- Volume 1, LNCS 5610, Human–Computer Interaction—New Trends (Part I), edited by Julie A. Jacko
- Volume 2, LNCS 5611, Human–Computer Interaction—Novel Interaction Methods and Techniques (Part II), edited by Julie A. Jacko
- Volume 3, LNCS 5612, Human–Computer Interaction—Ambient, Ubiquitous and Intelligent Interaction (Part III), edited by Julie A. Jacko
- Volume 4, LNCS 5613, Human–Computer Interaction—Interacting in Various Application Domains (Part IV), edited by Julie A. Jacko
- Volume 5, LNCS 5614, Universal Access in Human–Computer Interaction—Addressing Diversity (Part I), edited by Constantine Stephanidis
- Volume 6, LNCS 5615, Universal Access in Human–Computer Interaction—Intelligent and Ubiquitous Interaction Environments (Part II), edited by Constantine Stephanidis

- Volume 7, LNCS 5616, Universal Access in Human–Computer Interaction—Applications and Services (Part III), edited by Constantine Stephanidis
- Volume 8, LNCS 5617, Human Interface and the Management of Information—Designing Information Environments (Part I), edited by Michael J. Smith and Gavriel Salvendy
- Volume 9, LNCS 5618, Human Interface and the Management of Information—Information and Interaction (Part II), edited by Gavriel Salvendy and Michael J. Smith
- Volume 10, LNCS 5619, Human Centered Design, edited by Masaaki Kurosu
- Volume 11, LNCS 5620, Digital Human Modeling, edited by Vincent G. Duffy
- Volume 12, LNCS 5621, Online Communities and Social Computing, edited by A. Ant Ozok and Panayiotis Zaphiris
- Volume 13, LNCS 5622, Virtual and Mixed Reality, edited by Randall Shumaker
- Volume 14, LNCS 5623, Internationalization, Design and Global Development, edited by Nuray Aykin
- Volume 15, LNCS 5624, Ergonomics and Health Aspects of Work with Computers, edited by Ben-Tzion Karsh
- Volume 16, LNAI 5638, The Foundations of Augmented Cognition: Neuroergonomics and Operational Neuroscience, edited by Dylan Schmorrow, Ivy Estabrooke and Marc Grootjen

I would like to thank the Program Chairs and the members of the Program Boards of all thematic areas, listed below, for their contribution to the highest scientific quality and the overall success of HCI International 2009.

Ergonomics and Health Aspects of Work with Computers

Program Chair: Ben-Tzion Karsh

Arne Aarås, Norway
 Pascale Carayon, USA
 Barbara G.F. Cohen, USA
 Wolfgang Friesdorf, Germany
 John Gosbee, USA
 Martin Helander, Singapore
 Ed Israelski, USA
 Waldemar Karwowski, USA
 Peter Kern, Germany
 Danuta Koradecka, Poland
 Kari Lindström, Finland

Holger Luczak, Germany
 Aura C. Matias, Philippines
 Kyung (Ken) Park, Korea
 Michelle M. Robertson, USA
 Michelle L. Rogers, USA
 Steven L. Sauter, USA
 Dominique L. Scapin, France
 Naomi Swanson, USA
 Peter Vink, The Netherlands
 John Wilson, UK
 Teresa Zayas-Cabán, USA

Human Interface and the Management of Information

Program Chair: Michael J. Smith

Gunilla Bradley, Sweden
 Hans-Jörg Bullinger, Germany
 Alan Chan, Hong Kong
 Klaus-Peter Fährnrich, Germany
 Michitaka Hirose, Japan
 Jhilmil Jain, USA
 Yasufumi Kume, Japan
 Mark Lehto, USA
 Fiona Fui-Hoon Nah, USA
 Shogo Nishida, Japan
 Robert Proctor, USA
 Youngho Rhee, Korea

Anxo Cereijo Roibás, UK
 Katsunori Shimohara, Japan
 Dieter Spath, Germany
 Tsutomu Tabe, Japan
 Alvaro D. Taveira, USA
 Kim-Phuong L. Vu, USA
 Tomio Watanabe, Japan
 Sakae Yamamoto, Japan
 Hidekazu Yoshikawa, Japan
 Li Zheng, P.R. China
 Bernhard Zimolong, Germany

Human-Computer Interaction

Program Chair: Julie A. Jacko

Sebastiano Bagnara, Italy
 Sherry Y. Chen, UK
 Marvin J. Dainoff, USA
 Jianming Dong, USA
 John Eklund, Australia
 Xiaowen Fang, USA
 Ayse Gurses, USA
 Vicki L. Hanson, UK
 Sheue-Ling Hwang, Taiwan
 Wonil Hwang, Korea
 Yong Gu Ji, Korea
 Steven Landry, USA

Gitte Lindgaard, Canada
 Chen Ling, USA
 Yan Liu, USA
 Chang S. Nam, USA
 Celestine A. Ntuen, USA
 Philippe Palanque, France
 P.L. Patrick Rau, P.R. China
 Ling Rothrock, USA
 Guangfeng Song, USA
 Steffen Staab, Germany
 Wan Chul Yoon, Korea
 Wenli Zhu, P.R. China

Engineering Psychology and Cognitive Ergonomics

Program Chair: Don Harris

Guy A. Boy, USA
 John Huddleston, UK
 Kenji Itoh, Japan
 Hung-Sying Jing, Taiwan
 Ron Laughery, USA
 Wen-Chin Li, Taiwan
 James T. Luxhøj, USA

Nicolas Marmaras, Greece
 Sundaram Narayanan, USA
 Mark A. Neerincx, The Netherlands
 Jan M. Noyes, UK
 Kjell Ohlsson, Sweden
 Axel Schulte, Germany
 Sarah C. Sharples, UK

Neville A. Stanton, UK
Xianghong Sun, P.R. China
Andrew Thatcher, South Africa

Matthew J.W. Thomas, Australia
Mark Young, UK

Universal Access in Human–Computer Interaction

Program Chair: Constantine Stephanidis

Julio Abascal, Spain
Ray Adams, UK
Elisabeth André, Germany
Margherita Antona, Greece
Chieko Asakawa, Japan
Christian Bühler, Germany
Noelle Carbonell, France
Jerzy Charytonowicz, Poland
Pier Luigi Emiliani, Italy
Michael Fairhurst, UK
Dimitris Grammenos, Greece
Andreas Holzinger, Austria
Arthur I. Karshmer, USA
Simeon Keates, Denmark
Georgios Kouroupetroglou, Greece
Sri Kurniawan, USA

Patrick M. Langdon, UK
Seongil Lee, Korea
Zhengjie Liu, P.R. China
Klaus Miesenberger, Austria
Helen Petrie, UK
Michael Pieper, Germany
Anthony Savidis, Greece
Andrew Sears, USA
Christian Stary, Austria
Hirotada Ueda, Japan
Jean Vanderdonckt, Belgium
Gregg C. Vanderheiden, USA
Gerhard Weber, Germany
Harald Weber, Germany
Toshiki Yamaoka, Japan
Panayiotis Zaphiris, UK

Virtual and Mixed Reality

Program Chair: Randall Shumaker

Pat Banerjee, USA
Mark Billinghurst, New Zealand
Charles E. Hughes, USA
David Kaber, USA
Hirokazu Kato, Japan
Robert S. Kennedy, USA
Young J. Kim, Korea
Ben Lawson, USA

Gordon M. Mair, UK
Miguel A. Otaduy, Switzerland
David Pratt, UK
Albert “Skip” Rizzo, USA
Lawrence Rosenblum, USA
Dieter Schmalstieg, Austria
Dylan Schmorrow, USA
Mark Wiederhold, USA

Internationalization, Design and Global Development

Program Chair: Nuray Aykin

Michael L. Best, USA
Ram Bishu, USA
Alan Chan, Hong Kong
Andy M. Dearden, UK

Susan M. Dray, USA
Vanessa Evers, The Netherlands
Paul Fu, USA
Emilie Gould, USA

Sung H. Han, Korea
 Veikko Ikonen, Finland
 Esin Kiris, USA
 Masaaki Kurosu, Japan
 Apala Lahiri Chavan, USA
 James R. Lewis, USA
 Ann Light, UK
 James J.W. Lin, USA
 Rungtai Lin, Taiwan
 Zhengjie Liu, P.R. China
 Aaron Marcus, USA
 Allen E. Milewski, USA

Elizabeth D. Mynatt, USA
 Oguzhan Ozcan, Turkey
 Girish Prabhu, India
 Kerstin Röse, Germany
 Eunice Ratna Sari, Indonesia
 Supriya Singh, Australia
 Christian Sturm, Spain
 Adi Tedjasaputra, Singapore
 Kentaro Toyama, India
 Alvin W. Yeo, Malaysia
 Chen Zhao, P.R. China
 Wei Zhou, P.R. China

Online Communities and Social Computing

Program Chairs: A. Ant Ozok, Panayiotis Zaphiris

Chadia N. Abras, USA
 Chee Siang Ang, UK
 Amy Bruckman, USA
 Peter Day, UK
 Fiorella De Cindio, Italy
 Michael Gurstein, Canada
 Tom Horan, USA
 Anita Komlodi, USA
 Piet A.M. Kommers, The Netherlands
 Jonathan Lazar, USA
 Stefanie Lindstaedt, Austria

Gabriele Meiselwitz, USA
 Hideyuki Nakanishi, Japan
 Anthony F. Norcio, USA
 Jennifer Preece, USA
 Elaine M. Raybourn, USA
 Douglas Schuler, USA
 Gilson Schwartz, Brazil
 Sergei Stafeev, Russia
 Charalambos Vrasidas, Cyprus
 Cheng-Yen Wang, Taiwan

Augmented Cognition

Program Chair: Dylan D. Schmorrow

Andy Bellenkes, USA
 Andrew Belyavin, UK
 Joseph Cohn, USA
 Martha E. Crosby, USA
 Tjerk de Greef, The Netherlands
 Blair Dickson, UK
 Traci Downs, USA
 Julie Drexler, USA
 Ivy Estabrooke, USA
 Cali Fidopiastis, USA
 Chris Forsythe, USA
 Wai Tat Fu, USA
 Henry Girolamo, USA

Marc Grootjen, The Netherlands
 Taro Kanno, Japan
 Wilhelm E. Kincses, Germany
 David Kobus, USA
 Santosh Mathan, USA
 Rob Matthews, Australia
 Dennis McBride, USA
 Robert McCann, USA
 Jeff Morrison, USA
 Eric Muth, USA
 Mark A. Neerincx, The Netherlands
 Denise Nicholson, USA
 Glenn Osga, USA

Dennis Proffitt, USA
Leah Reeves, USA
Mike Russo, USA
Kay Stanney, USA
Roy Stripling, USA
Mike Swetnam, USA
Rob Taylor, UK

Maria L. Thomas, USA
Peter-Paul van Maanen, The Netherlands
Karl van Orden, USA
Roman Vilimek, Germany
Glenn Wilson, USA
Thorsten Zander, Germany

Digital Human Modeling

Program Chair: Vincent G. Duffy

Karim Abdel-Malek, USA
Thomas J. Armstrong, USA
Norm Badler, USA
Kathryn Cormican, Ireland
Afzal Godil, USA
Ravindra Goonetilleke, Hong Kong
Anand Gramopadhye, USA
Sung H. Han, Korea
Lars Hanson, Sweden
Pheng Ann Heng, Hong Kong
Tianzi Jiang, P.R. China

Kang Li, USA
Zhizhong Li, P.R. China
Timo J. Määttä, Finland
Woojin Park, USA
Matthew Parkinson, USA
Jim Potvin, Canada
Rajesh Subramanian, USA
Xuguang Wang, France
John F. Wiechel, USA
Jingzhou (James) Yang, USA
Xiu-gan Yuan, P.R. China

Human Centered Design

Program Chair: Masaaki Kurosu

Gerhard Fischer, USA
Tom Gross, Germany
Naotake Hirasawa, Japan
Yasuhiro Horibe, Japan
Minna Isomursu, Finland
Mitsuhiko Karashima, Japan
Tadashi Kobayashi, Japan

Kun-Pyo Lee, Korea
Loïc Martínez-Normand, Spain
Dominique L. Scapin, France
Haruhiko Urokohara, Japan
Gerrit C. van der Veer, The Netherlands
Kazuhiko Yamazaki, Japan

In addition to the members of the Program Boards above, I also wish to thank the following volunteer external reviewers: Gavin Lew from the USA, Daniel Su from the UK, and Ilia Adami, Ioannis Basdekis, Yannis Georgalis, Panagiotis Karampelas, Iosif Klironomos, Alexandros Mourouzis, and Stavroula Ntoa from Greece.

This conference could not have been possible without the continuous support and advice of the Conference Scientific Advisor, Prof. Gavriel Salvendy, as well as the dedicated work and outstanding efforts of the Communications Chair and Editor of HCI International News, Abbas Moallem.

I would also like to thank for their contribution toward the organization of the HCI International 2009 conference the members of the Human–Computer Interaction Laboratory of ICS-FORTH, and in particular Margherita Antona, George Paparoulis, Maria Pitsoulaki, Stavroula Ntoa, and Maria Bouhli.

Constantine Stephanidis

Table of Contents

Part I: Cognitive Approaches in HCI Design

Towards Cognitive-Aware Multimodal Presentation: The Modality Effects in High-Load HCI	3
<i>Yujia Cao, Mariët Theune, and Anton Nijholt</i>	
Supporting Situation Awareness in Demanding Operating Environments through Wearable User Interfaces	13
<i>Jari Laarni, Juhani Heinilä, Jukka Häkkinen, Virpi Kalakoski, Kari Kallinen, Kristian Lukander, Paula Löppönen, Tapio Palomäki, Niklas Ravaja, Paula Savioja, and Antti Väättänen</i>	
Development of a Technique for Predicting the Human Response to an Emergency Situation	22
<i>Glyn Lawson, Sarah Sharples, David Clarke, and Sue Cobb</i>	
A Dynamic Task Representation Method for a Virtual Reality Application	32
<i>Maria Chiara Leva, Alison Margaret Kay, Fabio Mattei, Tom Kontogiannis, Massimiliano De Ambroggi, and Sam Cromie</i>	
An Investigation of Function Based Design Considering Affordances in Conceptual Design of Mechanical Movement	43
<i>Ying-Chieh Liu and Su-Ju Lu</i>	
CWE: Assistance Environment for the Evaluation Operating a Set of Variations of the Cognitive Walkthrough Ergonomic Inspection Method	52
<i>Thomas Mahatody, Christophe Kolski, and Mouldi Sagar</i>	
The Use of Multimodal Representation in Icon Interpretation	62
<i>Siné McDougall, Alexandra Forsythe, Sarah Isherwood, Agnes Petocz, Irene Reppa, and Catherine Stevens</i>	
Beyond Emoticons: Combining Affect and Cognition in Icon Design	71
<i>Siné McDougall, Irene Reppa, Gary Smith, and David Playfoot</i>	
Agency Attribution in Human-Computer Interaction	81
<i>John E. McEneaney</i>	
Human-UAV Co-operation Based on Artificial Cognition	91
<i>Claudia Meitinger and Axel Schulte</i>	

Development of an Evaluation Method for Office Work Productivity	101
<i>Kazune Miyagi, Hiroshi Shimoda, Hirotake Ishii, Kenji Enomoto, Mikio Iwakawa, and Masaaki Terano</i>	
Supporting Cognitive Collage Creation for Pedestrian Navigation	111
<i>Augustinus H.J. Oomes, Miroslav Bojic, and Gideon Bazen</i>	
Development of a Novel Platform for Greater Situational Awareness in the Urban Military Terrain	120
<i>Stephen D. Prior, Siu-Tsen Shen, Anthony S. White, Siddharth Odedra, Mehmet Karamanoglu, Mehmet Ali Erbil, and Tom Foran</i>	
The User Knows: Considering the Cognitive Contribution of the User in the Design of Auditory Warnings	126
<i>Catherine Stevens and Agnes Petocz</i>	

Part II: Interaction and Cognition

The Influence of Gender and Age on the Visual Codes Working Memory and the Display Duration – A Case Study of Fencers	139
<i>Chih-Lin Chang, Kai-Way Li, Yung-Tsan Jou, Hsu-Chang Pan, and Tai-Yen Hsu</i>	
Comparison of Mobile Device Navigation Information Display Alternatives from the Cognitive Load Perspective	149
<i>Murat Can Cobanoglu, Ahmet Alp Kindiroglu, and Selim Balcisoy</i>	
Visual Complexity: Is That All There Is?	158
<i>Alexandra Forsythe</i>	
Operational Decision Making in Aluminium Smelters	167
<i>Yashuang Gao, Mark P. Taylor, John J.J. Chen, and Michael J. Hautus</i>	
Designers of Different Cognitive Styles Editing E-Learning Materials Studied by Monitoring Physiological and Other Data Simultaneously	179
<i>Károly Hercegi, Olga Csillik, Éva Bodnár, Judit Sass, and Lajos Izsó</i>	
Analyzing Control-Display Movement Compatibility: A Neuroimaging Study	187
<i>S.M. Hadi Hosseini, Maryam Rostami, Makoto Takahashi, Naoki Miura, Motoaki Sugiura, and Ryuta Kawashima</i>	
Graphics and Semantics: The Relationship between What Is Seen and What Is Meant in Icon Design	197
<i>Sarah Isherwood</i>	

The Effect of Object Features on Multiple Object Tracking and Identification	206
<i>Tianwei Liu, Wenfeng Chen, Yuming Xuan, and Xiaolan Fu</i>	
Organizing Smart Networks and Humans into Augmented Teams	213
<i>Martijn Neef, Martin van Rijn, Danielle Keus, and Jan-Willem Marck</i>	
Quantitative Evaluation of Mental Workload by Using Model of Involuntary Eye Movement	223
<i>Goro Obinata, Satoru Tokuda, Katsuyuki Fukuda, and Hiroto Hamada</i>	
Spatial Tasks on a Large, High-Resolution Tiled Display: Females Mentally Rotate Large Objects Faster Than Men	233
<i>Bernt Ivar Olsen, Bruno Laeng, Kari-Ann Kristiansen, and Gunnar Hartvigsen</i>	
Neurocognitive Workload Assessment Using the Virtual Reality Cognitive Performance Assessment Test	243
<i>Thomas D. Parsons, Louise Cosand, Christopher Courtney, Arvind Iyer, and Albert A. Rizzo</i>	
Sensing Directionality in Tangential Haptic Stimulation	253
<i>Greg Placencia, Mansour Rahimi, and Behrokh Khoshnevis</i>	
Effects of Design Elements in Magazine Advertisements	262
<i>Young Sam Ryu, Taewon Suh, and Sean Dozier</i>	
The Influence of Shared-Representation on Shared Mental Models in Virtual Teams	269
<i>Rose Saikayasit and Sarah Sharples</i>	
Harnessing the Power of Multiple Tools to Predict and Mitigate Mental Overload	279
<i>Charneta Samms, David Jones, Kelly Hale, and Diane Mitchell</i>	
Acceptance of E-Invoicing in SMEs	289
<i>Karl W. Sandberg, Olof Wahlberg, and Yan Pan</i>	
Mental Models in Process Visualization - Could They Indicate the Effectiveness of an Operator's Training?	297
<i>Karin Schweizer, Denise Gramß, Susi Mühlhausen, and Birgit Vogel-Heuser</i>	
Effects of Report Order on Identification on Multidimensional Stimulus: Color and Shape	307
<i>I-Hsuan Shen and Kong-King Shieh</i>	

Confidence Bias in Situation Awareness	317
<i>Ketut Sulistyawati and Yoon Ping Chui</i>	
Tactical Reconnaissance Using Groups of Partly Autonomous UGVs....	326
<i>Peter Svenmarck, Dennis Andersson, Björn Lindahl, Johan Hedström, and Patrik Lif</i>	

Part III: Driving Safety and Support

Use of High-Fidelity Simulation to Evaluate Driver Performance with Vehicle Automation Systems	339
<i>Timothy Brown, Jane Moeckli, and Dawn Marshall</i>	
Applying the “Team Player” Approach on Car Design	349
<i>Staffan Davidsson and Håkan Alm</i>	
New HMI Concept for Motorcycles–The Saferider Approach	358
<i>J.P. Frederik Diederichs, Marco Fontana, Giacomo Bencini, Stella Nikolaou, Roberto Montanari, Andrea Spadoni, Harald Widlroither, and Niccolò Baldanzini</i>	
Night Vision - Reduced Driver Distraction, Improved Safety and Satisfaction	367
<i>Klaus Fuchs, Bettina Abendroth, and Ralph Bruder</i>	
Measurement of Depth Attention of Driver in Frontal Scene	376
<i>Mamiko Fukuoka, Shun'ichi Doi, Takahiko Kimura, and Toshiaki Miura</i>	
Understanding the Opinion Forming Processes of Experts and Customers During Evaluations of Automotive Sounds	386
<i>Louise Humphreys, Sebastiano Giudice, Paul Jennings, Rebecca Cain, Garry Dunne, and Mark Allman-Ward</i>	
HR Changes in Driving Scenes with Danger and Difficulties Using Driving Simulator	396
<i>Yukiyo Kuriyagawa, Mieko Ohsuga, and Ichiro Kageyama</i>	
Driver Measurement: Methods and Applications	404
<i>Shane McLaughlin, Jonathan Hankey, and Thomas Dingus</i>	
The Assessment of Driver's Arousal States from the Classification of Eye-Blink Patterns	414
<i>Yoshihiro Noguchi, Keiji Shimada, Mieko Ohsuga, Yoshiyuki Kamakura, and Yumiko Inoue</i>	
Guiding a Driver's Visual Attention Using Graphical and Auditory Animations	424
<i>Tony Poitschke, Florian Laquai, and Gerhard Rigoll</i>	

Fundamental Study for Relationship between Cognitive Task and Brain Activity During Car Driving	434
<i>Shunji Shimizu, Nobuhide Hirai, Fumikazu Miwakeichi, Senichiro Kikuchi, Yasuhito Yoshizawa, Masanao Sato, Hiroshi Murata, Eiju Watanabe, and Satoshi Kato</i>	
A Study on a Method to Call Drivers' Attention to Hazard	441
<i>Hiroshi Takahashi</i>	
An Analysis of Saccadic Eye Movements and Facial Images for Assessing Vigilance Levels During Simulated Driving	451
<i>Akinori Ueno, Shoyo Tei, Tomohide Nonomura, and Yuichi Inoue</i>	
Implementing Human Factors within the Design Process of Advanced Driver Assistance Systems (ADAS)	461
<i>Boris van Waterschoot and Mascha van der Voort</i>	
A Survey Study of Chinese Drivers' Inconsistent Risk Perception	471
<i>Pei Wang, Pei-Luen Patrick Rau, and Gavriel Salvendy</i>	
Design for Smart Driving: A Tale of Two Interfaces	477
<i>Mark S. Young, Stewart A. Birrell, and Neville A. Stanton</i>	

Part IV: Aviation and Transport

Supervision of Autonomous Vehicles: Mutual Modeling and Interaction Management	489
<i>Gilles Coppin, François Legras, and Sylvie Saget</i>	
Conflicts in Human Operator – Unmanned Vehicles Interactions	498
<i>Frédéric Dehais, Stephane Mercier, and Catherine Tessier</i>	
Ergonomic Analysis of Different Computer Tools to Support the German Air Traffic Controllers	508
<i>Muriel Didier, Margeritta von Wilamowitz-Moellendorff, and Ralph Bruder</i>	
Behavior Model Based Recognition of Critical Pilot Workload as Trigger for Cognitive Operator Assistance	518
<i>Diana Donath and Axel Schulte</i>	
A Design and Training Agenda for the Next Generation of Commercial Aircraft Flight Deck	529
<i>Don Harris</i>	
Future Ability Requirements for Human Operators in Aviation	537
<i>Catrin Hasse, Carmen Bruder, Dietrich Grasshoff, and Hinnerk Eißfeldt</i>	

The Application of Human Error Template (HET) for Redesigning Standard Operational Procedures in Aviation Operations	547
<i>Wen-Chin Li, Don Harris, Yueh-Ling Hsu, and Lon-Wen Li</i>	
Effect of Aircraft Datablock Complexity and Exposure Time on Performance of Change Detection Task	554
<i>Chen Ling and Lesheng Hua</i>	
A Regulatory-Based Approach to Safety Analysis of Unmanned Aircraft Systems	564
<i>James T. Luxhøj and Ahmet Öztekin</i>	
Using Acoustic Sensor Technologies to Create a More Terrain Capable Unmanned Ground Vehicle	574
<i>Siddharth Odedra, Stephen D. Prior, Mehmet Karamanoglu, Mehmet Ali Erbil, and Siu-Tsen Shen</i>	
Critical Interaction Analysis in the Flight Deck	580
<i>Chiara Santamaria Maurizio, Patrizia Marti, and Simone Pozzi</i>	
Understanding the Impact of Rail Automation	590
<i>Sarah Sharples, Nora Balfe, David Golightly, and Laura Millen</i>	
Cognitive Workload as a Predictor of Student Pilot Performance	600
<i>Nathan F. Tilton and Ronald Mellado Miller</i>	
Direct Perception Displays for Military Radar-Based Air Surveillance . . .	606
<i>Oliver Witt, Morten Grandt, and Heinz Küttelwesch</i>	
A Selection of Human Factors Tools: Measuring HCI Aspects of Flight Deck Technologies	616
<i>Rolf Zon and Henk van Dijk</i>	
Author Index	625