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Don Harris (Ed.)

# Engineering Psychology and Cognitive Ergonomics

15th International Conference, EPCE 2018  
Held as Part of HCI International 2018  
Las Vegas, NV, USA, July 15–20, 2018  
Proceedings

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# Foreword

The 20th International Conference on Human-Computer Interaction, HCI International 2018, was held in Las Vegas, NV, USA, during July 15–20, 2018. The event incorporated the 14 conferences/thematic areas listed on the following page.

A total of 4,373 individuals from academia, research institutes, industry, and governmental agencies from 76 countries submitted contributions, and 1,170 papers and 195 posters have been included in the proceedings. These contributions address the latest research and development efforts and highlight the human aspects of design and use of computing systems. The contributions 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 set of the conference proceedings are listed in the following pages.

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 2018 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.

July 2018

Constantine Stephanidis

# **HCI International 2018 Thematic Areas and Affiliated Conferences**

Thematic areas:

- Human-Computer Interaction (HCI 2018)
- Human Interface and the Management of Information (HIMI 2018)

Affiliated conferences:

- 15th International Conference on Engineering Psychology and Cognitive Ergonomics (EPCE 2018)
- 12th International Conference on Universal Access in Human-Computer Interaction (UAHCI 2018)
- 10th International Conference on Virtual, Augmented, and Mixed Reality (VAMR 2018)
- 10th International Conference on Cross-Cultural Design (CCD 2018)
- 10th International Conference on Social Computing and Social Media (SCSM 2018)
- 12th International Conference on Augmented Cognition (AC 2018)
- 9th International Conference on Digital Human Modeling and Applications in Health, Safety, Ergonomics, and Risk Management (DHM 2018)
- 7th International Conference on Design, User Experience, and Usability (DUXU 2018)
- 6th International Conference on Distributed, Ambient, and Pervasive Interactions (DAPI 2018)
- 5th International Conference on HCI in Business, Government, and Organizations (HCIBGO)
- 5th International Conference on Learning and Collaboration Technologies (LCT 2018)
- 4th International Conference on Human Aspects of IT for the Aged Population (ITAP 2018)

## Conference Proceedings Volumes Full List

1. LNCS 10901, Human-Computer Interaction: Theories, Methods, and Human Issues (Part I), edited by Masaaki Kurosu
2. LNCS 10902, Human-Computer Interaction: Interaction in Context (Part II), edited by Masaaki Kurosu
3. LNCS 10903, Human-Computer Interaction: Interaction Technologies (Part III), edited by Masaaki Kurosu
4. LNCS 10904, Human Interface and the Management of Information: Interaction, Visualization, and Analytics (Part I), edited by Sakae Yamamoto and Hirohiko Mori
5. LNCS 10905, Human Interface and the Management of Information: Information in Applications and Services (Part II), edited by Sakae Yamamoto and Hirohiko Mori
6. LNAI 10906, Engineering Psychology and Cognitive Ergonomics, edited by Don Harris
7. LNCS 10907, Universal Access in Human-Computer Interaction: Methods, Technologies, and Users (Part I), edited by Margherita Antona and Constantine Stephanidis
8. LNCS 10908, Universal Access in Human-Computer Interaction: Virtual, Augmented, and Intelligent Environments (Part II), edited by Margherita Antona and Constantine Stephanidis
9. LNCS 10909, Virtual, Augmented and Mixed Reality: Interaction, Navigation, Visualization, Embodiment, and Simulation (Part I), edited by Jessie Y. C. Chen and Gino Fragomeni
10. LNCS 10910, Virtual, Augmented and Mixed Reality: Applications in Health, Cultural Heritage, and Industry (Part II), edited by Jessie Y. C. Chen and Gino Fragomeni
11. LNCS 10911, Cross-Cultural Design: Methods, Tools, and Users (Part I), edited by Pei-Luen Patrick Rau
12. LNCS 10912, Cross-Cultural Design: Applications in Cultural Heritage, Creativity, and Social Development (Part II), edited by Pei-Luen Patrick Rau
13. LNCS 10913, Social Computing and Social Media: User Experience and Behavior (Part I), edited by Gabriele Meiselwitz
14. LNCS 10914, Social Computing and Social Media: Technologies and Analytics (Part II), edited by Gabriele Meiselwitz
15. LNAI 10915, Augmented Cognition: Intelligent Technologies (Part I), edited by Dylan D. Schmorow and Cali M. Fidopiastis
16. LNAI 10916, Augmented Cognition: Users and Contexts (Part II), edited by Dylan D. Schmorow and Cali M. Fidopiastis
17. LNCS 10917, Digital Human Modeling and Applications in Health, Safety, Ergonomics, and Risk Management, edited by Vincent G. Duffy
18. LNCS 10918, Design, User Experience, and Usability: Theory and Practice (Part I), edited by Aaron Marcus and Wentao Wang

19. LNCS 10919, Design, User Experience, and Usability: Designing Interactions (Part II), edited by Aaron Marcus and Wentao Wang
20. LNCS 10920, Design, User Experience, and Usability: Users, Contexts, and Case Studies (Part III), edited by Aaron Marcus and Wentao Wang
21. LNCS 10921, Distributed, Ambient, and Pervasive Interactions: Understanding Humans (Part I), edited by Norbert Streitz and Shin'ichi Konomi
22. LNCS 10922, Distributed, Ambient, and Pervasive Interactions: Technologies and Contexts (Part II), edited by Norbert Streitz and Shin'ichi Konomi
23. LNCS 10923, HCI in Business, Government, and Organizations, edited by Fiona Fui-Hoon Nah and Bo Sophia Xiao
24. LNCS 10924, Learning and Collaboration Technologies: Design, Development and Technological Innovation (Part I), edited by Panayiotis Zaphiris and Andri Ioannou
25. LNCS 10925, Learning and Collaboration Technologies: Learning and Teaching (Part II), edited by Panayiotis Zaphiris and Andri Ioannou
26. LNCS 10926, Human Aspects of IT for the Aged Population: Acceptance, Communication, and Participation (Part I), edited by Jia Zhou and Gavriel Salvendy
27. LNCS 10927, Human Aspects of IT for the Aged Population: Applications in Health, Assistance, and Entertainment (Part II), edited by Jia Zhou and Gavriel Salvendy
28. CCIS 850, HCI International 2018 Posters Extended Abstracts (Part I), edited by Constantine Stephanidis
29. CCIS 851, HCI International 2018 Posters Extended Abstracts (Part II), edited by Constantine Stephanidis
30. CCIS 852, HCI International 2018 Posters Extended Abstracts (Part III), edited by Constantine Stephanidis

**<http://2018.hci.international/proceedings>**





# Engineering Psychology and Cognitive Ergonomics

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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/board-members-2018.php>



## **HCI International 2019**

The 21st International Conference on Human-Computer Interaction, HCI International 2019, will be held jointly with the affiliated conferences in Orlando, FL, USA, at Walt Disney World Swan and Dolphin Resort, July 26–31, 2019. 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://2019.hci.international/>.

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**<http://2019.hci.international/>**



# Contents

## Mental Workload and Human Error

Design and Evaluation of a Workload-Adaptive Associate System for Cockpit Crews. . . . .	3
<i>Yannick Brand and Axel Schulte</i>	
The Influence of Culture on Vigilance Performance and Subjective Experience . . . . .	19
<i>Qin Gao, Man Wu, and Bin Zhu</i>	
The Impact of Metacognitive Monitoring Feedback on Mental Workload and Situational Awareness . . . . .	32
<i>Jung Hyup Kim</i>	
A Heterarchical Urgency-Based Design Pattern for Human Automation Interaction . . . . .	42
<i>Axel Schulte, Diana Donath, Douglas S. Lange, and Robert S. Gutzwiller</i>	
A Multidimensional Workload Assessment Method for Power Grid Dispatcher . . . . .	55
<i>Bingbing Song, Zhen Wang, Yanyu Lu, Xiaobi Teng, Xinyi Chen, Yi Zhou, Hai Ye, and Shan Fu</i>	
Task-Load Evaluation Method for Maintenance Personnel Based on the JACK Simulation. . . . .	69
<i>Ruishan Sun, Yuting Zhang, Zhen Liu, and Kang Li</i>	
The Identification of Human Errors in the Power Dispatching Based on the TRACEr Method. . . . .	80
<i>Xiaobi Teng, Yanyu Lu, Zhen Wang, Bingbing Song, Hai Ye, Yi Zhou, and Shan Fu</i>	
Ergonomic Evaluation Study of Occupant Function Allocation for Riot Vehicle Based on Task Load . . . . .	90
<i>Qun Wang, Fang Xie, Runing Lin, Xiaoping Jin, and Xue Shi</i>	
Effect of Fatigue and Nervousness of Tower Controller on the Control Efficiency. . . . .	100
<i>Xingjian Zhang, Peng Bai, Xinglong Wang, and Yifei Zhao</i>	

**Situation Awareness, Training and Team Working**

Dynamic Prediction Model of Situation Awareness in Flight Simulation . . . .	115
<i>Chuanyan Feng, Xiaoru Wanyan, Shuang Liu, Damin Zhuang, and Xu Wu</i>	
The Effect of Thirty-Six Hour Total Sleep Deprivation on Spatial Cognition and Alertness. . . . .	127
<i>Wenjuan Feng, Ruishan Sun, and Kai Zhang</i>	
Human-Centered Design of Flight Mode Annunciation for Instantaneous Mode Awareness . . . . .	137
<i>Andreas Horn, Wen-Chin Li, and Graham Braithwaite</i>	
Inter-sector Backup Behaviors in Parallel Approach ATC: The Effect of Job Satisfaction. . . . .	147
<i>Yazhe Li, Xiaotian E, Han Qiao, Xiangying Zou, Chunhui Lv, Lin Xiong, Xianghong Sun, and Jingyu Zhang</i>	
Quantitative Study of Alertness During Continuous Wakefulness Under the Effect of Nervous Activity . . . . .	158
<i>Kang Li, Ruishan Sun, Jingqiang Li, and Yu-Ting Zhang</i>	
Tracking Provenance in Decision Making Between the Human and Autonomy . . . . .	171
<i>Crisrael Lucero, Braulio Coronado, Eric Gustafson, and Douglas S. Lange</i>	
Cyber Officer Profiles and Performance Factors . . . . .	181
<i>Ricardo G. Lugo and Stefan Sütterlin</i>	
Displaced Interactions in Human-Automation Relationships: Transparency over Time. . . . .	191
<i>Christopher A. Miller</i>	
Using Perceptual and Cognitive Explanations for Enhanced Human-Agent Team Performance . . . . .	204
<i>Mark A. Neerincx, Jasper van der Waa, Frank Kaptein, and Jurriaan van Diggelen</i>	
Crew Resource Management for Automated Teammates (CRM-A) . . . . .	215
<i>Robert J. Shively, Joel Lachter, Robert Koteskey, and Summer L. Brandt</i>	
An Integrated After Action Review (IAAR) Approach: Conducting AARs for Scenario-Based Training Across Multiple and Distinct Skill Areas . . . . .	230
<i>Lisa Townsend, Joan Johnston, William A. Ross, Laura Milham, Dawn Riddle, and Henry Phillips</i>	

How Shared Screen Affected Team Collaboration Task, A Case Study of Ergonomics Experiment on Team Situation Awareness . . . . .	241
<i>Xu Wu, Chuanyan Feng, Xiaoru Wanyan, Shuang Liu, Lin Ding, Chongchong Miao, Yuhui Wang, and Xueli He</i>	
Effect of Different Information Push Mechanism on Driver's Situation Awareness . . . . .	250
<i>Bowen Zheng, Xiaoping Jin, Zhenghe Song, Yeqing Pei, and Xuechao Ma</i>	
<b>Psychophysiological Measures and Assessment</b>	
Mental Workload Estimation from EEG Signals Using Machine Learning Algorithms . . . . .	265
<i>Baljeet Singh Cheema, Shabnam Samima, Monalisa Sarma, and Debasis Samanta</i>	
Psycho-Physiological Evaluation of the Pilot: A Study Conducted with Pilots of the French Air Force . . . . .	285
<i>Vincent Ferrari, Jean-François Gagnon, Cyril Camachon, and Maëlle Kopf</i>	
Variation in Pupil Diameter by Day and Time of Day . . . . .	296
<i>Shannon R. Flynn, Jacob S. Quartuccio, Ciara Sibley, and Joseph T. Coyne</i>	
Computer-Based Neuropsychological Assessment: A Validation of Structured Examination of Executive Functions and Emotion . . . . .	306
<i>Gilberto Galindo-Aldana, Victoria Meza-Kubo, Gustavo Castillo-Medina, Israel Ledesma-Amaya, Javier Galarza-Del-Angel, Alfredo Padilla-López, and Alberto L. Morán</i>	
The Mapping Between Hand Motion States Induced by Arm Operation and Surface Electromyography . . . . .	317
<i>Tingting Hou, Chen Qian, Yanyu Lu, and Shan Fu</i>	
Short Paper: Damage Mechanism and Risk Control on Kid's Sunglasses . . . .	330
<i>Xia Liu, Bisong Liu, Bao Liu, Youyu Xiao, and Yongnan Li</i>	
Affective Recognition Using EEG Signal in Human-Robot Interaction. . . . .	336
<i>Chen Qian, Tingting Hou, Yanyu Lu, and Shan Fu</i>	
Research on Test of Anti-G Suits Airbag Pressure . . . . .	352
<i>Ding Yi, Zhaowei Zhu, Wang Yandong, Zhang Zhongji, Song Kaiyuan, and Ding Li</i>	

**Interaction, Cognition and Emotion**

The Effects of Risk and Role on Users' Anticipated Emotions in Safety-Critical Systems . . . . .	369
<i>Yusuf Albayram, Mohammad Maifi Hasan Khan, Theodore Jensen, Ross Buck, and Emil Coman</i>	
Comparison of Intellectus Statistics and Statistical Package for the Social Sciences: Differences in User Performance Based on Presentation of Statistical Data . . . . .	389
<i>Allen C. Chen, Sabrina Moran, Yuting Sun, and Kim-Phuong L. Vu</i>	
Comparative Study of Laptops and Touch-Screen PCs for Searching on the Web . . . . .	403
<i>Nicolas Debue, Cécile van de Leemput, Anish Pradhan, and Robert Atkinson</i>	
A Pilot Study on Gaze-Based Control of a Virtual Camera Using 360°-Video Data . . . . .	419
<i>Jutta Hild, Edmund Klaus, Jan-Hendrik Hammer, Manuel Martin, Michael Voit, Elisabeth Peinsipp-Byma, and Jürgen Beyerer</i>	
Efficiency and User Experience of Gaze Interaction in an Automotive Environment . . . . .	429
<i>Benedikt Lux, Daniel Schmidl, Maximilian Eibl, Bastian Hinterleitner, Patricia Böhm, and Daniel Isemann</i>	
Investigation of Factors Affecting the Usability Evaluation of an Adaptive Cruise Control System. . . . .	445
<i>Akihiro Maehigashi, Kazuhisa Miwa, Hirofumi Aoki, and Tatsuya Suzuki</i>	
Accent and Gender Bias in Perceptions of Interactive Voice Systems . . . . .	457
<i>Sabrina Moran, Ezekiel Skovron, Matthew Nare, and Kim-Phuong L. Vu</i>	
Tangible User Interface . . . . .	471
<i>Elias Shamilov, Nirit Gavish, Hagit Krisher, and Eran Horesh</i>	
Population Stereotypes for Color Associations . . . . .	480
<i>Yuting Sun and Kim-Phuong L. Vu</i>	
Presentation of Personal Health Information for Consumers: An Experimental Comparison of Four Visualization Formats . . . . .	490
<i>Da Tao, Juan Yuan, Xingda Qu, Tieyan Wang, and Xingyu Chen</i>	

Micro and Macro Predictions: Using SGOMS to Predict Phone App Game Playing and Emergency Operations Centre Responses . . . . .	501
<i>Robert West, Lawrence Ward, Kate Dudzik, Nathan Nagy, and Fraydon Karimi</i>	
Natural Interaction in Video Image Investigation and Its Evaluation . . . . .	520
<i>Yan Zheng and Guozhen Zhao</i>	
An Experiment Study on the Cognitive Schema of Trajectory in Dynamic Visualization . . . . .	533
<i>Xiaozhou Zhou, Chengqi Xue, Congzhe Chen, and Haiyan Wang</i>	
<b>Cognition in Aviation and Space</b>	
Playbook for UAS: UX of Goal-Oriented Planning and Execution. . . . .	545
<i>Jack Gale, John Karasinski, and Steve Hillenius</i>	
Augmented Reality in a Remote Tower Environment Based on VS/IR Fusion and Optical Tracking. . . . .	558
<i>Maria Hagl, Maik Friedrich, Anne Papenfuss, Norbert Scherer-Negenborn, Jörn Jakobi, Tim Rambau, and Markus Schmidt</i>	
Network Re-analysis of Boeing 737 Accident at Kegworth Using Different Potential Crewing Configurations for a Single Pilot Commercial Aircraft . . . .	572
<i>Don Harris</i>	
Human Performance Assessment of Multiple Remote Tower Operations Simultaneous Take-Off and Landing at Two Airports . . . . .	583
<i>Peter Kearney, Wen-Chin Li, and Graham Braithwaite</i>	
CONTACT: A Human Centered Approach of Multimodal Flight Deck Design and Evaluation. . . . .	593
<i>Anne-Claire Large, Cedric Bach, and Guillaume Calvet</i>	
A System for Evaluating Pilot Performance Based on Flight Data . . . . .	605
<i>Sha Liu, Youxue Zhang, and Jintao Chen</i>	
Pilot Performance Assessment in Simulators: Exploring Alternative Assessment Methods . . . . .	615
<i>Pete McCarthy and Arnar Agnarsson</i>	
Now You See It, Now You Don't: A Change Blindness Assessment of Flight Display Complexity and Pilot Performance . . . . .	637
<i>Claire McDermott Ealding and Alex Stedmon</i>	
Experimental Evaluation of a Scalable Mixed-Initiative Planning Associate for Future Military Helicopter Missions . . . . .	649
<i>Fabian Schmitt and Axel Schulte</i>	

Flight Safety: ESL Flight Crew Member Use of Crew Alerting and Information Systems. . . . .	664
<i>Dujuan Sevillian</i>	
The Preliminary Application of Observer XT(12.0) in a Pilot-Behavior Study. . . . .	686
<i>Ruishan Sun, Guanchao Zhang, and Zhibo Yuan</i>	
Tablet-Based Information System for Commercial Aircraft: Onboard Context-Sensitive Information System (OCSIS). . . . .	701
<i>Wei Tan and Guy A. Boy</i>	
Modeling and Simulating Astronaut's Performance in a Three-Level Architecture. . . . .	713
<i>Chunhui Wang, Shanguang Chen, Yuqing Liu, Dongmei Wang, Shoupeng Huang, and Yu Tian</i>	
Risk Cognition Variables and Flight Exceedance Behaviors of Airline Transport Pilots . . . . .	725
<i>Lei Wang, Jingyi Zhang, Hui Sun, and Yong Ren</i>	
<b>Author Index . . . . .</b>	<b>739</b>