

## Contents – Part II

### Communication, Collaboration and Decision-Making Support

Collaborative Modes on Collaborative Problem Solving . . . . .	3
<i>Yu-Hung Chien, Kuen-Yi Lin, Kuang-Chao Yu, Hsien-Sheng Hsiao, Yu-Shan Chang, and Yih-Hsien Chu</i>	
Modelling Information Flow and Situational Awareness in Wild Fire Response Operations . . . . .	11
<i>Laila Goubran, Avi Parush, and Anthony Whitehead</i>	
Supporting Analytical Reasoning: A Study from the Automotive Industry . . .	20
<i>Tove Helldin, Maria Riveiro, Sepideh Pashami, Göran Falkman, Stefan Byttner, and Slawomir Nowaczyk</i>	
Towards More Practical Information Sharing in Disaster Situations . . . . .	32
<i>Masayuki Ihara, Shunichi Seko, Akihiro Miyata, Ryosuke Aoki, Tatsuro Ishida, Masahiro Watanabe, Ryo Hashimoto, and Hiroshi Watanabe</i>	
Prototype of Decision Support Based on Estimation of Group Status Using Conversation Analysis . . . . .	40
<i>Susumu Kono and Kenro Aihara</i>	
Preventing Incorrect Opinion Sharing with Weighted Relationship Among Agents . . . . .	50
<i>Rei Saito, Masaya Nakata, Hiroyuki Sato, Tim Kovacs, and Keiki Takadama</i>	
The Temporal Analysis of Networks for Community Activity . . . . .	63
<i>Yurika Shiozu, Koya Kimura, and Katsunori Shimohara</i>	
Method to Evaluate Difficulty of Technical Terms . . . . .	72
<i>Yuta Sudo, Toru Nakata, and Toshikazu Kato</i>	
Essential Tips for Successful Collaboration – A Case Study of the “Marshmallow Challenge” . . . . .	81
<i>Noriko Suzuki, Haruka Shoda, Mamiko Sakata, and Kaori Inada</i>	
A Mechanism to Control Aggressive Comments in Pseudonym Type Computer Mediated Communications . . . . .	90
<i>Hiroki Yamaguchi and Tetsuya Maeshiro</i>	

**Information in e-Learning and e-Education**

One Size Does Not Fit All: Applying the Right Game Concepts for the Right Persons to Encourage Non-game Activities . . . . .	103
<i>Hina Akasaki, Shoko Suzuki, Kanako Nakajima, Koko Yamabe, Mizuki Sakamoto, Todorka Alexandrova, and Tatsuo Nakajima</i>	
Gaze-Aware Thinking Training Environment to Analyze Internal Self-conversation Process . . . . .	115
<i>Yuki Hayashi, Kazuhisa Seta, and Mitsuru Ikeda</i>	
Educational Externalization of Thinking Task by Kit-Build Method. . . . .	126
<i>Tsukasa Hirashima and Yusuke Hayashi</i>	
Student Authentication Method by Sequential Update of Face Information Registered in e-Learning System. . . . .	138
<i>Taisuke Kawamata, Susumu Fujimori, and Takako Akakura</i>	
An Open-Ended and Interactive Learning Using Logic Building System with Four-Frame Comic Strip. . . . .	146
<i>Kayo Kawamoto, Yusuke Hayashi, and Tsukasa Hirashima</i>	
Construction of a Literature Review Support System Using Latent Dirichlet Allocation. . . . .	159
<i>Yusuke Kometani and Keizo Nagaoka</i>	
Design for Adaptive User Interface for Modeling Students' Learning Styles. . . .	168
<i>Ashery Mbilinyi, Shinobu Hasegawa, and Akihiro Kashiara</i>	
An Adaptive Research Support System for Students in Higher Education: Beyond Logging and Tracking . . . . .	178
<i>Harriet Nyanchama Ocharo and Shinobu Hasegawa</i>	
Investigation of Learning Process with TUI . . . . .	187
<i>Natsumi Sei, Makoto Oka, and Hirohiko Mori</i>	
A Method for Consensus Building Between Teachers and Learners in Higher Education Through Co-design Process. . . . .	197
<i>Ryota Sugino, Satoshi Mizoguchi, Koji Kimita, Keiichi Muramatsu, Tatsunori Matsui, and Yoshiki Shimomura</i>	
Association Rules on Relationships Between Learner's Physiological Information and Mental States During Learning Process. . . . .	209
<i>Kazuma Takehana and Tatsunori Matsui</i>	

## Access to Cultural Heritage, Creativity and Art

Listening to Music and Idea Generation . . . . .	223
<i>Wen-Chih Chang and Chi-Meng Liao</i>	
Application of Co-creation Design Experiences to the Development of Green Furniture . . . . .	235
<i>Chia-Ling Chang and Ming-Hsuan Hsieh</i>	
Well-Being of Decolonizing Aesthetics: New Environment of Art with BCI in HCI. . . . .	244
<i>Hyunkyung Cho and Jin-kyung Paik</i>	
Creation of Shadow Media Using Point Cloud and Design of Co-creative Expression Space . . . . .	256
<i>Maho Hayashi, Yoshiyuki Miwa, Shiroh Itai, Hiroko Nishi, and Yuto Yamakawa</i>	
Image Mnemonics for Cognitive Mapping of the Museum Exhibits. . . . .	268
<i>Yasushi Ikei, Ken Ishigaki, Hirofumi Ota, and Keisuke Yoshida</i>	
AR Reference Model for K-Culture Time Machine . . . . .	278
<i>Eunseok Kim, Junghoon Jo, Kihong Kim, Sunhyuck Kim, Seungmo Hong, Jea-In Kim, Noh-young Park, Hyerim Park, Tamás Matuszka, Jungwha Kim, and Woontack Woo</i>	
Encouraging People to Interact with Interactive Systems in Public Spaces by Managing Lines of Participants . . . . .	290
<i>Takuji Narumi, Hiroyuki Yabe, Shunsuke Yoshida, Tomohiro Tanikawa, and Michitaka Hirose</i>	
Visualization of Composer Relationships Using Implicit Data Graphs . . . . .	300
<i>Christoph Niese, Tatiana von Landesberger, and Arjan Kuijper</i>	
Crowd-Cloud Window to the Past: Constructing a Photo Database for On-Site AR Exhibitions by Crowdsourcing . . . . .	313
<i>Sohei Osawa, Ryohei Tanaka, Takuji Narumi, Tomohiro Tanikawa, and Michitaka Hirose</i>	
Backend Infrastructure Supporting Audio Augmented Reality and Storytelling . . . . .	325
<i>Kari Salo, Diana Giova, and Tommi Mikkonen</i>	
Creativity Comes from Interaction: Multi-modal Analyses of Three-Creator Communication in Constructing a Lego Castle . . . . .	336
<i>Haruka Shoda, Koshi Nishimoto, Noriko Suzuki, Mamiko Sakata, and Noriko Ito</i>	

Co-creative Expression Interface: Aiming to Support Embodied Communication for Developmentally Disabled Children. . . . .	346
<i>Takuto Takahashi, Ryutaro Hayashi, Yoshiyuki Miwa, and Hiroko Nishi</i>	
High-Resolution Tactile Display for Lips . . . . .	357
<i>Yuhei Tsutsui, Koichi Hirota, Takuya Nojima, and Yasushi Ikei</i>	
Fortune Air: Interactive Fortune-Telling for Entertainment Enhancement in a Praying Experience . . . . .	367
<i>Ryoko Ueoka and Naoto Kamiyama</i>	

**e-Science and e-Research**

Prioritizing Tasks Using User-Support-Worker's Activity Model (USWAM). . . . .	379
<i>Hashim Iqbal Chunpir</i>	
Improving User Interfaces for a Request Tracking System: Best Practical RT . . . . .	391
<i>Hashim Iqbal Chunpir, Endrit Curri, Luciana Zaina, and Thomas Ludwig</i>	
Strategic Knowledge Management for Interdisciplinary Teams - Overcoming Barriers of Interdisciplinary Work Via an Online Portal Approach . . . . .	402
<i>Tatjana Hamann, Anne Kathrin Schaar, André Calero Valdez, and Martina Ziefle</i>	
Data Integration and Knowledge Coordination for Planetary Exploration Traverses . . . . .	414
<i>Jordan R. Hill, Barrett S. Caldwell, Michael J. Miller, and David S. Lees</i>	
Gauging the Reliability of Online Health Information in the Turkish Context. . . . .	423
<i>Edibe Betül Karbay and Hashim Iqbal Chunpir</i>	
How to Improve Research Data Management: The Case of Sciebo (Science Box). . . . .	434
<i>Konstantin Wilms, Christian Meske, Stefan Stieglitz, Dominik Rudolph, and Raimund Vogl</i>	

**Information in Health and Well-being**

Well-Being and HCI in Later Life - What Matters? . . . . .	445
<i>Arlene J. Astell, Faustina Hwang, Elizabeth A. Williams, Libby Archer, Sarah Harney-Levine, Dave Wright, and Maggie Ellis</i>	

Improving Sense of Well-Being by Managing Memories of Experience . . . . .	454
<i>Mark Chignell, Chelsea de Guzman, Leon Zucherman, Jie Jiang, Jonathan Chan, and Nipon Charoenkitkarn</i>	
Towards Understanding Senior Citizens' Gateball Participations Behavior and Well-Being: An Application of the Theory of Planned Behavior . . . . .	466
<i>Chia-Chien Hsu, Yu-Chin Hsu, and Ching-Torng Lin</i>	
Video Recommendation System that Arranges Video Clips Based on Pre-defined Viewing Times . . . . .	478
<i>Mitsuhiro Kimoto, Tomoki Nakahata, Takahiro Hirano, Takuya Nagashio, Masahiro Shiomi, Takamasa Iio, Ivan Tanev, and Katsunori Shimohara</i>	
Diminished Agency: Attenuating a Sense of Agency for Problem Finding on Personal Physical Performance . . . . .	487
<i>Sho Sakurai, Yuki Ban, Nami Ogawa, Takuji Narumi, Tomohiro Tanikawa, and Michitaka Hirose</i>	
Evaluating Hedonic and Eudaimonic Motives in Human-Computer Interaction . . . . .	494
<i>Katie Seaborn</i>	
Personalized Real-Time Sleep Stage from Past Sleep Data to Today's Sleep Estimation . . . . .	501
<i>Yusuke Tajima, Tomohiro Harada, Hiroyuki Sato, and Keiki Takadama</i>	
Exploring Dance Teaching Anxiety in Japanese Schoolteachers . . . . .	511
<i>Rina Yamaguchi, Haruka Shoda, Noriko Suzuki, and Mamiko Sakata</i>	
<b>Case Studies</b>	
Sensory Evaluation Method with Multivariate Analysis for Pictograms on Smartphone . . . . .	521
<i>Naotsune Hosono, Hiromitsu Inoue, Miwa Nakanishi, and Yutaka Tomita</i>	
Exploring Information Needs of Using Battery Swapping System for Riders. . .	531
<i>Fei-Hui Huang</i>	
Detecting Multitasking Work and Negative Routines from Computer Logs. . .	542
<i>Hirofumi Kaburagi, Simona Vasilache, and Jiro Tanaka</i>	
A Leader and Media Spot Estimation Method Using Location Information. . .	550
<i>Koya Kimura, Yurika Shiozu, Ivan Tanev, and Katsunori Shimohara</i>	

What Kind of Foreign Baseball Players Want to Get Japanese Baseball Team? . . . . .	560
<i>Hirohito Matsuka and Yumi Asahi</i>	
Effect of Changes in Fresh Vegetables Prices Give Consumers . . . . .	569
<i>Ryota Morizumi and Yumi Asahi</i>	
Tacit Skills Discovery by Data Mining . . . . .	579
<i>Makoto Oka and Hirohiko Mori</i>	
Basic Observation About the Difficulty of Assembly Wood Puzzle by Wooden Joint. . . . .	589
<i>Takamitsu Tanaka, Masao Tachibana, Thongthai Wongwichai, and Yen-Yu Kang</i>	
Livelog: Sensing and Inducing Japanese Idol Fan Activities with Smartphone . . . . .	599
<i>Tomohiro Tanikawa, Rihito Hashido, Takuji Narumi, and Michitaka Hirose</i>	
<b>Author Index</b> . . . . .	607

# Contents – Part I

## Information Presentation

How to Support the Lay Users Evaluations of Medical Information on the Web? . . . . .	3
<i>Katarzyna Abramczuk, Michał Kałol, and Adam Wierzbicki</i>	
Living Globe: Tridimensional Interactive Visualization of World Demographic Data . . . . .	14
<i>Eduardo Duarte, Pedro Bordonhos, Paulo Dias, and Beatriz Sousa Santos</i>	
Effectiveness of Choosing Dissonant Combination of Tones for Multivariate Data Sonification . . . . .	25
<i>Yukio Horiguchi, Moriyu Nakashima, Hiroaki Nakanishi, and Tetsuo Sawaragi</i>	
A Trial Cartooning to Promote Understanding of a Scenario. . . . .	34
<i>Shigeyoshi Iizuka</i>	
The Influence of Numerical Displays on Human Performance in the Manual RVD Task. . . . .	40
<i>Wang Liu, Yu Tian, Chunhui Wang, Weifen Huang, Shanguang Chen, and Jun Wang</i>	
A System Description Model Without Hierarchical Structure . . . . .	48
<i>Tetsuya Maeshiro and Midori Maeshiro</i>	
Knowledge Used for Information Search: A Computer Simulation Study . . . .	60
<i>Miki Matsumuro and Kazuhisa Miwa</i>	
Study on the Target Frame of HMDs in Different Background Brightness . . .	70
<i>Jiang Shao, Haiyan Wang, Rui Zhao, Jing Zhang, Zhangfan Shen, and Hongwei Xi</i>	
A Decision Tree Based Image Enhancement Instruction System for Producing Contemporary Style Images . . . . .	80
<i>Meng-Luen Wu and Chin-Shyurng Fahn</i>	
Spatial Conformity Research of Temporal Order Information Presentation in Visualization Design . . . . .	91
<i>Xiaozhou Zhou, Chengqi Xue, Lei Zhou, Jiang Shao, and Zhangfan Shen</i>	

**Big Data Visualization**

Externalization of Data Analytics Models: Toward Human-Centered Visual Analytics . . . . .	103
<i>Arman Didandeh and Kamran Sedig</i>	
Investigating Cognitive Characteristics of Visualization and Insight Environments: A Case Study with WISE . . . . .	115
<i>Juliana Jansen Ferreira, Vinícius Segura, and Renato Cerqueira</i>	
Support Vector Mind Map of Wine Speak . . . . .	127
<i>Brendan Flanagan and Sachio Hirokawa</i>	
A Visualization Technique Using Loop Animations. . . . .	136
<i>Takao Ito and Kazuo Misue</i>	
Subjective Evaluation for 2D Visualization of Data from a 3D Laser Sensor . . .	148
<i>Patrik Lif, Gustav Tolt, Håkan Larsson, and Alice Lagebrant</i>	
Comparison of Two Visualization Tools in Supporting Comprehension of Data Trends . . . . .	158
<i>Chen Ling, Julie S. Bock, Leslie Goodwin, G. Cole Jackson, and Molly K. Floyd</i>	
A Visual Citation Search Engine. . . . .	168
<i>Tetsuya Nakatoh, Hayato Nakanishi, Toshiro Minami, Kensuke Baba, and Sachio Hirokawa</i>	
Visualization of Brand Images Extracted from Home-Interior Commercial Websites Using Color Features . . . . .	179
<i>Naoki Takahashi, Takashi Sakamoto, and Toshikazu Kato</i>	
Ergonomic Considerations for the Design and the Evaluation of Uncertain Data Visualizations . . . . .	191
<i>Sabine Theis, Christina Bröhl, Matthias Wille, Peter Rasche, Alexander Mertens, Emma Beauxis-Aussalet, Lynda Hardman, and Christopher M. Schlick</i>	
Towards a Visual Data Language to Improve Insights into Complex Multidimensional Data. . . . .	203
<i>Jan Wojdziak, Bettina Kirchner, Dietrich Kammer, Martin Herrmann, and Rainer Groh</i>	
A Graphical System for Interactive Creation and Exploration of Dynamic Information Visualization . . . . .	214
<i>Jaqueline Zaia and João Luiz Bernardes Jr.</i>	



## Information Analytics, Discovery and Exploration

Interactive Pattern Exploration: Securely Mining Distributed Databases . . . . .	229
<i>Priya Chawla, Raj Bhatnagar, and Chia Han</i>	
Effect of Heuristics on Serendipity in Path-Based Storytelling with Linked Data . . . . .	238
<i>Laurens De Vocht, Christian Beecks, Ruben Verborgh, Erik Mannens, Thomas Seidl, and Rik Van de Walle</i>	
Interaction for Information Discovery Empowering Information Consumers . . .	252
<i>Kurt Englmeier and Fionn Murtagh</i>	
Federated Query Evaluation Supported by SPARQL Recommendation . . . . .	263
<i>Gergő Gombos and Attila Kiss</i>	
Evaluation of a System to Analyze Long-Term Images from a Stationary Camera . . . . .	275
<i>Akira Ishii, Tetsuya Abe, Hiroyuki Hakoda, Buntarou Shizuki, and Jiro Tanaka</i>	
The Effect of the Arrangement of Fuzzy If-Then Rules on the Performance of On-Line Fuzzy Classification . . . . .	287
<i>Tomoharu Nakashima</i>	
An Efficient Scheme for Candidate Solutions of Search-Based Multi-objective Software Remodularization. . . . .	296
<i>Amarjeet Prajapati and Jitender Kumar Chhabra</i>	
Dynamic Sampling for Visual Exploration of Large Dense-Dense Matrices . . .	308
<i>Philipp Roskosch, James Twellmeyer, and Arjan Kuijper</i>	

## Interaction Design

Analysis of Hand Raising Actions for Group Interaction Enhancement . . . . .	321
<i>Saizo Aoyagi, Michiya Yamamoto, and Satoshi Fukumori</i>	
Content Authoring Tool to Assign Signage Items to Regions on a Paper Poster . . . . .	329
<i>Akira Hattori, Hiroshi Suzuki, and Haruo Hayami</i>	
Motion Control Algorithm of ARM-COMS for Entrainment Enhancement . . .	339
<i>Teruaki Ito and Tomio Watanabe</i>	
IVOrpheus 2.0 - A Proposal for Interaction by Voice Command-Control in Three Dimensional Environments of Information Visualization . . . . .	347
<i>Lennon Furtado, Anderson Marques, Nelson Neto, Marcelle Mota, and Bianchi Meiguins</i>	

A Sketch-Based User Interface for Image Search Using Sample Photos . . . . .	361
<i>Hitoshi Sugimura, Hayato Tsukiji, Mizuki Kumada, Toshiya Iiba, and Kosuke Takano</i>	
Proposal and Evaluation of a Document Reader that Supports Pointing and Finger Bookmarking . . . . .	371
<i>Kentaro Takano, Shingo Uchihashi, Hirohito Shibata, Kengo Omura, Junko Ichino, Tomonori Hashiyama, and Shunichi Tano</i>	
An Advanced Web-Based Hindi Language Interface to Database Using Machine Learning Approach. . . . .	381
<i>Zorawar Singh Virk and Mohit Dua</i>	
MapCube: A Mobile Focus and Context Information Visualization Technique for Geographic Maps . . . . .	391
<i>Björn Werkmann and Matthias Hemmje</i>	
<b>Human-Centered Design</b>	
Design Education at the Cross-Roads of Change . . . . .	405
<i>Denis A. Coelho</i>	
Clarification of Customers’ “Demand” in Development Process . . . . .	413
<i>Shin’ichi Fukuzumi and Yukiko Tanikawa</i>	
Product Awareness Between Consumers and Designers – A Family Dining Table Design as Example. . . . .	421
<i>Ming-Hsuan Hsieh and Chia-Ling Chang</i>	
User Interface Developing Framework for Engineers . . . . .	433
<i>Hiroyuki Miki, Kunikazu Suzuki, and Tsuyoshi Suzuki</i>	
Agile Human-Centred Design: A Conformance Checklist . . . . .	442
<i>Karsten Nebe and Snigdha Baloni</i>	
Understanding the Dynamics and Temporal Aspects of Work for Human Centered Design . . . . .	454
<i>Kate Sellen</i>	
User Centered Design Methods and Their Application in Older Adult Community . . . . .	462
<i>Joash Sujan Samuel Roy, W. Patrick Neumann, and Deborah I. Fels</i>	

**Haptic, Tactile and Multimodal interaction**

Effect of Physiological and Psychological Conditions by Aroma and Color on VDT Task . . . . .	475
<i>Takeo Ainoya and Keiko Kasamatsu</i>	
Topographic Surface Perception Modulated by Pitch Rotation of Motion Chair . . . . .	483
<i>Tomohiro Amemiya, Koichi Hirota, and Yasushi Ikei</i>	
Mel Frequency Cepstral Coefficients Based Similar Albanian Phonemes Recognition. . . . .	491
<i>Bertan Karahoda, Krenare Pireva, and Ali Shariq Imran</i>	
Minimal Virtual Reality System for Virtual Walking in a Real Scene . . . . .	501
<i>Michiteru Kitazaki, Koichi Hirota, and Yasushi Ikei</i>	
Designing Effective Vibration Patterns for Tactile Interfaces. . . . .	511
<i>Daiji Kobayashi and Ryogo Nakamura</i>	
Relationship Between Operability in Touch Actions and Smartphone Size Based on Muscular Load . . . . .	523
<i>Kentaro Kotani, Ryo Ineyama, Daisuke Hashimoto, Takafumi Asao, and Satoshi Suzuki</i>	
Why Is Tactile Information not Accurately Perceived? Accuracy and Transfer Characteristics of Visualized Schematic Images Induced by Perceived Tactile Stimuli. . . . .	531
<i>Keisuke Kumagai, Kazuki Sakai, Kentaro Kotani, Satoshi Suzuki, and Takafumi Asao</i>	
Multimodal Information Coding System for Wearable Devices of Advanced Uniform. . . . .	539
<i>Andrey L. Ronzhin, Oleg O. Basov, Anna I. Motienko, Alexey A. Karpov, Yuri V. Mikhailov, and Milos Zelezny</i>	
Increasing User Appreciation of Spherical Videos by Finger Touch Interaction . . . . .	546
<i>Yuta Sakakibara, Ryohei Tanaka, Takuji Narumi, Tomohiro Tanikawa, and Michitaka Hirose</i>	
Production of a VR Horror Movie Using a Head-Mounted Display with a Head-Tracking System. . . . .	556
<i>Kenichi Sera, Takashi Kitada, and Nahomi Maki</i>	
Basic Investigation for Improvement of Sign Language Recognition Using Classification Scheme. . . . .	563
<i>Hirotooshi Shibata, Hiromitsu Nishimura, and Hiroshi Tanaka</i>	

Empirical Study of Physiological Characteristics Accompanied by Tactile Thermal Perception: Relationship Between Changes in Thermal Gradients and Skin Conductance Responses . . . . .	575
<i>Takafumi Shinoda, Kouki Shimomura, Kentaro Kotani, Satoshi Suzuki, Takafumi Asao, and Shigeyoshi Iizuka</i>	
Using the Office Desk as a Touch Interface . . . . .	585
<i>Hirobumi Tomita, Simona Vasilache, and Jiro Tanaka</i>	
<b>Author Index</b> . . . . .	597

Human Interface and the Management of Information:  
Applications and Services  
18th International Conference, HCI International 2016  
Toronto, Canada, July 17-22, 2016. Proceedings, Part II  
Yamamoto, S. (Ed.)  
2016, XXIV, 610 p. 290 illus., Softcover  
ISBN: 978-3-319-40396-0