Contents

Designing and Developing Intelligent Environments

Visualizing Human-Environment Interactions: Integrating Concepts and Techniques from HCI, Human Factors and Media Psychology .......... 3
  Bimal Balakrishnan, Loukas Kalisperis, and Danielle Oprean

Using the GQM Method to Evaluate Calmness in Ubiquitous Applications ... 13
  Rainara M. Carvalho, Rossana M.C. Andrade, and Káthia M. Oliveira

Distributable Interface Design for Web Applications ....................... 25
  Gianni Fenu and Lucio Davide Spano

The Map as a Tool for Identifying Pervasive Interactions in Today’s Home .............................................. 36
  Konstantinos Grivas and Stelios Zerefos

Makers with a Cause: Fabrication, Reflection and Community Collaboration .................................................. 49
  Foad Hamidi and Melanie Baljko

Enabling Programmability of Smart Learning Environments by Teachers ... 62
  Asterios Leonidis, Margherita Antona, and Constantine Stephanidis

Co-creation in Context: The User as Co-creator Approach .................... 74
  Ingrid Mulder, Fenne Van Doorn, and Pieter Jan Stappers

Star(t) to Shine: Unlocking Hidden Talents Through Sharing and Making ... 85
  Emilia Louisa Pucci and Ingrid Mulder

A Framework for Navigating Human Behavior Through Gameful Digital Rhetoric ................................................... 97
  Mizuki Sakamoto and Tatsuo Nakajima

Evaluating Ubiquitous Computing Environments Using 3D Simulation ...... 109
  Arlindo Santos and Helena Rodrigues

The Transformative Potential of Making in Teacher Education:
A Case Study on Teacher Training Through Making and Prototyping .......... 119
  Susanna Tesconi and Lucia Arias
**Natural Interaction**

Brain Signal for Smart Offices .................................................. 131
    Ghada Al-Hudhud, Noha Alrajhi, Nouf Alonaizy, Aysha Al-Mahmoud,
    Latifah Almazrou, and Dalal bin Muribah

Developing and Evaluating Two Gestural-Based Virtual Environment Navigation Methods for Large Displays ............................................. 141
    Paulo Dias, João Parracho, João Cardoso, Beatriz Quintino Ferreira,
    Carlos Ferreira, and Beatriz Sousa Santos

Immersing Users in Landscapes Using Large Scale Displays in Public Spaces .................................................................................. 152
    Giannis Drossis, Antonios Ntelidakis, Dimitris Grammenos,
    Xenophon Zabulis, and Constantine Stephanidis

A Gesture Recognition Method for Proximity-Sensing Surfaces in Smart Environments ................................................................. 163
    Biying Fu, Tobias Grosse-Puppendahl, and Arjan Kuijper

Developing Intuitive Gestures for Spatial Interaction with Large Public Displays. ................................................................. 174
    Yubo Kou, Yong Ming Kow, and Kelvin Cheng

AR Coloring Jigsaw Puzzles with Texture Extraction and Auto-UV Mapping Algorithm. ................................................................. 182
    Youngho Lee

Smart Kiosk with Gait-Based Continuous Authentication .................. 188
    Duong-Tien Phan, Nhan Nguyen-Trong Dam, Minh-Phuc Nguyen,
    Minh-Triet Tran, and Toan-Thinh Truong

Gesture-Based Configuration of Location Information in Smart Environments with Visual Feedback ................................. 201
    Carsten Stocklöw and Martin Majewski

Subjective User Experience and Performance with Active Tangibles on a Tabletop Interface ................................................................. 212
    Jan B.F. van Erp, Alexander Toet, Koos Meijer, Joris Janssen,
    and Arnoud de Jong

Auditory Browsing Interface of Ambient and Parallel Sound Expression for Supporting One-to-many Communication ..................... 224
    Tomoko Yonezawa
Design and Development of Distributed, Ambient and Pervasive Interactions

Immersiveness of Ubiquitous Computing Environments Prototypes: A Case Study .................................................. 237
  Tiago Abade, José C. Campos, Rui Moreira, Carlos C.L. Silva, and José Luís Silva

Employing Virtual Humans for Interaction, Assistance and Information Provision in Ambient Intelligence Environments ........................................ 249
  Chryssi Birliraki, Dimitris Grammenos, and Constantine Stephanidis

From Collaborative Scenario Recording to Smart Room Assistance Models .............................................. 262
  Gregor Buchholz and Peter Forbrig

Hierarchical Narrowcasting ..................................................... 274
  Michael Cohen

Development of a User-Oriented IoT Middleware Architecture Based on Users’ Context Data .................................................... 287
  Taehyun Ha, Sangwon Lee, and Narae Kim

Measuring the Arrangement of Multiple Information Devices by Observing Their User’s Face ..................................................... 296
  Saori Kikutani, Koh Kakusho, Takeshi Okadome, Masaaki Iiyama, and Satoshi Nishiguchi

SpreadView: A Multi-touch Based Multiple Contents Visualization Method Composed of Aligned Layers .................................................. 305
  Joong Ho Lee, Hyoyoung Kim, and Ji-Hyung Park

Bandage Man: A Spatial Interaction Design in a Sensible Space for Connecting Family ................................................... 317
  Min-Nan Liao and Teng-Wen Chang

Learning Instead of Markers: Flexible Recognition of Mobile Devices on Interactive Surfaces ................................................... 325
  Philipp Mock, Jörg Edelmann, and Wolfgang Rosenstiel

GlassNage: Layout Recognition for Dynamic Content Retrieval in Multi-Section Digital Signage ................................................... 337
  Adiyan Mujibiya

Manseibashi Reminiscent Window: On-Site AR Exhibition System Using Mobile Devices ................................................... 349
  Naoya Okada, Jun Imura, Takuji Narumi, Tomohiro Tanikawa, and Michitaka Hirose
Enhancing Facial Impression for Video Conference

Sungyeon Park, Heeseung Choi, and Ig-Jae Kim

Art and Coffee in the Museum

Nikolaos Partarakis, Emmanouil Zidianakis, Margherita Antona, and Constantine Stephanidis

Context-Based Document Management in Smart Living Environments

Julian von Wilmsdorff, Alexander Marinc, and Arjan Kuijper

Smart Devices, Objects and Materials

The Capacitive Chair

Andreas Braun, Sebastian Frank, and Reiner Wichert

Aspects Concerning the Calibration Procedure for a Dual Camera

Smartphone Based ADAS

Mihai Duguleana, Florin Girbacia, Cristian Postelnicu, Andreea Beraru, and Gheoghe Mogan

Task Specific Paper Controller that Can Be Created by Users for a Specific Computer Operation

Daisuke Komoriya, Buntarou Shizuki, and Jiro Tanaka

Re-appropriating Old Furniture via IoT, in an Artistic Context:
The Case of “DolceVita”

Irene Mavrommati and Konstantinos Grivas

Novel Method for Notification from Interactive Smart Cover

Young Hoon Oh and Da Young Ju

Combining Generative Art and Physiological Information for New Situation of Garden Restaurant

Tung-Chen Tsai and Chao-Ming Wang

Design of Co-evolving Textiles Applied to Smart Products

Rachel Zuanon and Geraldo Coelho Lima Júnior

Location, Motion and Activity Recognition

User Location Modeling Based on Heterogeneous Data Sources

Patrick Gottschaeemmer, Tobias Grosse-Puppendahl, and Arjan Kuijper

Monitoring Wildlife in Contaminated Environments via the Carrier Pigeon-Like Sensing System

Hiroki Kobayashi, Hiromi Kudo, and Kaoru Sezaki
Crowd Monitoring: Critical Situations Prevention Using Smartphones and Group Detection ................................................................. 496
Joseph El Mallah, Francesco Carrino, Omar Abou Khaled, and Elena Mugellini

Indirect Monitoring of Cared Person by Onomatopoeic Text of Environmental Sound and User’s Physical State ......................... 506
Yusuke Naka, Naoto Yoshida, and Tomoko Yonezawa

Estimating Positions of Students in a Classroom from Camera Images Captured by the Lecturer’s PC .................................................. 518
Junki Nishikawa, Koh Kakusho, Masaaki Iiyama, Satoshi Nishiguchi, and Masayuki Murakami

Activity Context Integration in Mobile Computing Environments ......... 527
Yoosoo Oh

BearWatcher: Animal Motion Estimation Application for Tourism and Welfare .................................................................................. 536
Keni Ren, Jani Hourunranta, Joni Tolonen, and Johannes Karlsson

Children Tracking System in Indoor and Outdoor Places .................... 547
Mounira Taileb, Wejdan Wajdi, Hind Hamdi, Galia Al-Garni, Sarah Al-Shehri, and Manal Al-Marwani

Smart Cities and Communities

Spending Precious Travel Time More Wisely: A Service Model that Provides Instant Travel Assistance Using Input from Locals .............. 557
Kenro Aihara, Susumu Kono, and Shizuhiro Sugino

Interpreting Food-Venue Visits: Spatial and Social Contexts of Mobile Consumption in Urban Spaces .............................................. 568
Shin’ichi Konomi, Kenta Shoji, and Tomoyo Sasao

Co-design Practice in a Smart City Context Through the Gamification Approach: A Survey About the Most Suitable Applications .......... 578
Antonio Opromolla, Valentina Volpi, Andrea Ingrosso, and Carlo Maria Medaglia

Activity Recipe: Spreading Cooperative Outdoor Activities for Local Communities Using Contextual Reminders .............................. 590
Tomoyo Sasao, Shin’ichi Konomi, and Keisuke Kuribayashi

Nicole D. Sintov, Michael D. Orosz, and P. Wesley Schultz
Tou Hsiang Kun – A Platform for Elderly and Neighborhood to Help Each Other .................................................. 614
Yi-Sin Wu, Teng-Wen Chang, Ying-Ru He, Yi Wang, Wei-Hung Chen, and You-Cheng Zhang

Consumer Concerns About Smart Meters ........................................ 625
Rani Yesudas and Roger Clarke

Humor in Ambient Intelligence

Laughter as the Best Medicine: Exploring Humour-Mediated Health Applications .................................................. 639
Claire Dormann

An AI for Humorously Reframing Interaction Narratives with Human Users ........................................ 651
Christian F. Hempelmann and Max Petrenko

Humor Techniques: From Real World and Game Environments to Smart Environments ........................................ 659
Anton Nijholt

On Algorithmic Discovery and Computational Implementation of the Opposing Scripts Forming a Joke .................... 671
Victor Raskin

Different Knowledge, Same Joke: Response-Based Computational Detection of Humor ........................................ 680
Julia M. Taylor

Twitter: The Best of Bot Worlds for Automated Wit ................. 689
Tony Veale, Alessandro Valitutti, and Guofu Li

Author Index ........................................................................... 701
Distributed, Ambient, and Pervasive Interactions
Third International Conference, DAPI 2015, Held as Part of HCI International 2015, Los Angeles, CA, USA, August 2-7, 2015, Proceedings
A. Streitz, N.; Markopoulos, P. (Eds.)
2015, XVIII, 702 p. 274 illus., Softcover
ISBN: 978-3-319-20803-9