

Subseries of Lecture Notes in Computer Science

LNAI Series Editors

Randy Goebel

University of Alberta, Edmonton, Canada

Yuzuru Tanaka

Hokkaido University, Sapporo, Japan

Wolfgang Wahlster

DFKI and Saarland University, Saarbrücken, Germany

LNAI Founding Series Editor

Joerg Siekmann

DFKI and Saarland University, Saarbrücken, Germany

More information about this series at <http://www.springer.com/series/1244>

Arvin Agah · John-John Cabibihan
Ayanna M. Howard · Miguel A. Salichs
Hongsheng He (Eds.)

Social Robotics

8th International Conference, ICSR 2016
Kansas City, MO, USA, November 1–3, 2016
Proceedings



Springer

Editors

Arvin Agah
Department of Electrical Engineering
and Computer Science
The University of Kansas
Lawrence, KS
USA

John-John Cabibihan
Department of Mechanical and Industrial
Engineering
Qatar University
Doha
Qatar

Ayanna M. Howard
School of Electrical and Computer
Engineering
Georgia Institute of Technology
Atlanta
USA

Miguel A. Salichs
Department of Systems Engineering
and Automation
University Carlos III de Madrid
Madrid
Spain

Hongsheng He
Department of Mechanical, Aerospace
and Biomedical Engineering
University of Tennessee
Knoxville, TN
USA

ISSN 0302-9743

ISSN 1611-3349 (electronic)

Lecture Notes in Artificial Intelligence

ISBN 978-3-319-47436-6

ISBN 978-3-319-47437-3 (eBook)

DOI 10.1007/978-3-319-47437-3

Library of Congress Control Number: 2016954466

LNCS Sublibrary: SL7 – Artificial Intelligence

© Springer International Publishing AG 2016

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, express or implied, with respect to the material contained herein or for any errors or omissions that may have been made.

Printed on acid-free paper

This Springer imprint is published by Springer Nature

The registered company is Springer International Publishing AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

The 8th International Conference on Social Robotics (ICSR 2016) was held in Kansas City, USA, in November 2016—its first year in the USA. This book contains the proceedings of the conference, comprising the 98 refereed papers, reviewed by the international Program Committee, and presented during the technical sessions of the conference.

The International Conference on Social Robotics brings together researchers and practitioners working on the interaction between humans and robots and on the integration of robots into our society. The theme of the 2016 conference was “Sociorobotics: Design and Implementation of Social Behaviors of Robots Interacting with Each Other and with Humans.”

Now in its eighth year, the International Conference on Social Robotics is the leading international forum for researchers in social robotics. The conference provides researchers and practitioners the opportunity to present and engage in dialog on the latest progress in the field of social robotics. Social robots will improve quality of human life through assistance, enabling, for instance, independent living or providing support in work-intensive, difficult, and possibly complex situations. The conference aims to foster discussion on the development of computational models, robotic embodiments, and behavior that enable social robots to have an impact on the degree of personalized companionship with humans.

In addition to technical sessions, ICSR 2016 included three workshops: The Synthetic Method in Social Robotics (SMSR 2016); Social Robots: A Tool to Advance Interventions for Autism; and Using Social Robots to Improve the Quality of Life in the Elderly. ICSR 2016 had two world-renowned researchers in social robotics as keynote speakers: Prof. Maja Matarić, Chan Soon-Shiong Professor of Computer Science, Neuroscience, and Pediatrics at the University of Southern California, and Prof. Brian Scassellati, Professor of Computer Science, Cognitive Science, and Mechanical Engineering at Yale University.

The conference venue, Kansas City Country Club Plaza, provided the participants with the opportunity to experience Kansas City’s jazz, barbecue, and fountains. The 15-block district is an excellent destination for shopping, dining, and entertainment.

We would like to express our appreciation to the Organizing Committee for putting together an excellent program, to the international Program Committee for their rigorous review of the papers, to KU Professional & Continuing Education for organizing the event, to Kansas City Marriott Country Club Plaza for hosting the event, to our generous sponsors SoftBank Robotics, University of Kansas School of Engineering, and Springer, and most importantly to the authors and participants who greatly enhanced the quality and effectiveness of the conference through their papers, presentations, and conversations.

We are hopeful that this conference will generate many future collaborations and research endeavors, resulting in enhancing human lives through the utilization of social robots.

September 2016

Arvin Agah
John-John Cabibihan
Ayanna M. Howard
Miguel A. Salichs
Hongsheng He

Organization

General Chair

Arvin Agah University of Kansas, USA

Program Chairs

John-John Cabibihan
Ayanna M. Howard
Miguel A. Salichs
Qatar University, Qatar
Georgia Institute of Technology, USA
University of Carlos III, Spain

Publication Chair

Hongsheng He University of Tennessee, USA

Workshop Chairs

Hae Won Park Massachusetts Institute of Technology, USA
Maryam Mahani Ricoh Americas Corporation, USA

Special Session Chairs

Chung Hyuk Park George Washington University, USA
David Harvie United States Military Academy, USA
Agnieszka Wykowska Luleå University, Sweden

Competition Chairs

Amit Kumar Pandey SoftBank Robotics, France
Andrew Williams Marquette University, USA

Publicity Chairs

Alan R. Wagner
Zhengchen Zhang
Gabriele Trovato
Pennsylvania State University, USA
Institute for Infocomm Research, Singapore
Waseda University, Japan

Standing Committee

Maja Matarić	University of Southern California, USA
Haizhou Li	A*Star, Singapore
Jong Hwan Kim	Korea Advanced Institute of Science and Technology, Korea
Paolo Dario	Scuola Superiore Sant'Anna, Italy
Ronald C. Arkin	Georgia Institute of Technology, USA

Program Committee Members

Roxana Agrigoroaie	ENSTA-ParisTech, France
Muneeb Imtiaz Ahmad	MARCS Institute, Australia
Rachid Alami	LAAS-CNRS, France
Minoo Alemi	Islamic Azad University, Iran
Matías Alvarado	Center of Research and Advanced Studies, CINVESTAV-IPN, Mexico
Heather Amthauer	University of Wisconsin, Eau Claire, USA
Víctor H. Andaluz	Universidad de las Fuerzas Armadas ESPE, Ecuador
Laura Aymerich Franch	EventLab, University of Barcelona, Spain
Santosh Balajee Banisetty	University of Nevada Reno, USA
Jasmin Bernotat	CITEC - Universität Bielefeld, Germany
Gerard Canal	Institut de Robòtica i Informàtica Industrial, CSIC-UPC, Spain
José Carlos Castillo	University Carlos III of Madrid, Spain
Ryad Chellali	Nanjing Tech University, China
Ben Chen	Wuhan University, China
Michael Jae-Yoon Chung	University of Washington, USA
Matthieu Courgeon	Lab-STICC, France
Brian Cruz	Korea Institute of Industrial Technology, South Korea
Arturo Cruz-Maya	ENSTA-ParisTech, France
Luisa Damiano	University of Messina, Italy
Timo Dankert	Bielefeld University, Germany
Friederike Eyssel	University of Bielefeld, Germany
Pooyan Fazli	Cleveland State University, USA
David Feil-Seifer	University of Nevada, Reno, USA
François Ferland	ENSTA-ParisTech, France
Francesco Ferrari	CITEC - Universität Bielefeld, Germany
Naomi Fitter	University of Pennsylvania, USA
Mary Ellen Foster	University of Glasgow, UK
Marlena Fraune	Indiana University, USA
Allison Funkhouser	Carnegie Mellon University, USA
Mehdi Ghayoumi	Kent State University, USA
Victor Gonzalez-Pacheco	Universidad Carlos III de Madrid, Spain
Goren Gordon	Tel Aviv University, Israel
Elena Corina Grigore	Yale University, USA
Cindy Grimm	Oregon State University, USA
Daniel Grollman	Sphero

Horst-Michael Gross	Ilmenau University of Technology, Germany
Zhang Haojie	China Noveri Vehicle Research Institute, China
Kerstin Sophie Haring	The University of Tokyo, Japan
David Harvie	United States Military Academy, USA
Mojgan Hashemian	INESC-ID, Portugal
Wei He	University of Science and Technology, China
Hisashi Ishihara	Osaka University, Japan
Serena Ivaldi	Inria, France
Wafa Johal	École Polytechnique Fédérale de Lausanne, Switzerland
Martin Johansson	KTH, Sweden
Benjamin Johnston	University of Technology Sydney, Australia
James Kennedy	Plymouth University, UK
Youssef Khaoula	Toyohashi University of Technology, Japan
Abderrahmane Kheddar	CNRS-UM LIRMM IDH, France
Katherine Kuchenbecker	University of Pennsylvania, USA
Hee Rin Lee	Indiana University, USA
Hagen Lehmann	Istituto Italiano di Tecnologia, Italy
Yan Li	University of Tennessee, USA
Yanan Li	Imperial College London, UK
Dayao Liang	Tsinghua University, China
Chao Luo	Tsinghua University, China
Gergely Magyar	Technical University of Kosice, Slovakia
Maria Malfaz	Universidad Carlos III de Madrid, Spain
Ali Meghdari	Sharif University of Technology, Iran
Isabelle Menne	University of Wuerzburg, Germany
Byung-Cheol Min	Purdue University, USA
Azadeh Mohebi	Iranian Research Institute for Information Science and Technology, Iran
Omar Mubin	Western Sydney University, Australia
Michael Novitzky	Massachusetts Institute of Technology, USA
Mohammad Obaid	Doc University, Turkey
Benjamin Oistad	Indiana University, USA
Suman Ojha	University of Technology Sydney, Australia
Billy Okal	University of Freiburg, Germany
Maike Paetzl	Uppsala University, Sweden
Amit Kumar Pandey	SoftBank Robotics, France
Raul Paradeda	Instituto Superior Técnico, Portugal
Damien Pellier	Université Grenoble Alpes, France
Noé Pérez-Higuera	Pablo de Olavide University, Spain
Beatriz Quintino Ferreira	Universidade de Lisboa, Portugal
Rafael Ramón-Vigo	Pablo de Olavide University, Spain
Syed Ali Raza	University of Technology, Sydney, Australia
Tiago Ribeiro	INESC-ID and Instituto Superior Técnico - Universidade de Lisboa, Portugal
Francesco Riccio	Sapienza University of Rome, Italy

Silvia Rossi	Università di Napoli, Italy
Michelle Salvador	University of Denver, USA
Birte Schiffhauer	Bielefeld University, Germany
Sebastian Schneider	Bielefeld University, CITEC, Applied Informatics, Germany
Jaeeun Shim	Georgia Institute of Technology, USA
Jainendra Shukla	Instituto de Robótica Para La Dependencia, Spain
Michel Sigüenza	Pontifical Catholic University of Peru, Peru
Melissa Smith	George Mason University, USA
Wing Chee So	Chinese University of Hong Kong, SAR China
Shuang Song	Tsinghua University, China
Jiuya Song	Tsinghua University, China
Melanie Swan	New School for Social Research, USA
Saima Tariq	National University of Science and Technology, Pakistan
Nazgul Tazhigaliyeva	Nazarbayev University, Kazakhstan
Konstantinos Tsiakas	University of Texas at Arlington, USA
Andre Vellino	University of Ottawa, Canada
Mari Velonaki	UNSW, Australia
Jered Vroon	University of Twente, The Netherlands
Kimmo Vänni	Tampere University of Applied Sciences, Finland
Alan Wagner	The Pennsylvania University, USA
Chen Wang	National University of Singapore, Singapore
Huanhuan Wang	Purdue University, USA
Julika Welge	Folkwang Universität der Künste, Germany
Mary-Anne Williams	University of Technology Sydney, Australia
Andrew Williams	Marquette University, USA
Jason Wilson	Tufts University, USA
Reza Yazdanpanah	University of Tennessee, USA
Abdolmalaki	
Zhengchen Zhang	Institute for Infocomm Research, Singapore
Wenzeng Zhang	Tsinghua University, China
Bin Zhang	The University of Electro-Communications, Japan
Zhi Zheng	Vanderbilt University, USA

Contents

Learning Robot Navigation Behaviors by Demonstration Using a RRT* Planner	1
<i>Noé Pérez-Higueras, Fernando Caballero, and Luis Merino</i>	
Adaptive Robot Assisted Therapy Using Interactive Reinforcement Learning	11
<i>Konstantinos Tsiakas, Maria Dagioglou, Vangelis Karkaletsis, and Fillia Makedon</i>	
Personalization Framework for Adaptive Robotic Feeding Assistance	22
<i>Gerard Canal, Guillem Alenyà, and Carme Torras</i>	
A Framework for Modelling Local Human-Robot Interactions Based on Unsupervised Learning	32
<i>Rafael Ramón-Vigo, Noé Pérez-Higueras, Fernando Caballero, and Luis Merino</i>	
Using Games to Learn Games: Game-Theory Representations as a Source for Guided Social Learning	42
<i>Alan Wagner</i>	
User Evaluation of an Interactive Learning Framework for Single-Arm and Dual-Arm Robots	52
<i>Aleksandar Jevtić, Adrià Colomé, Guillem Alenyà, and Carme Torras</i>	
Formalizing Normative Robot Behavior	62
<i>Billy Okal and Kai O. Arras</i>	
Decision-Theoretic Human-Robot Interaction: Designing Reasonable and Rational Robot Behavior	72
<i>Mary-Anne Williams</i>	
Physiologically Inspired Blinking Behavior for a Humanoid Robot	83
<i>Hagen Lehmann, Alessandro Roncone, Ugo Pattacini, and Giorgio Metta</i>	
Infinite Personality Space for Non-fungible Robots	94
<i>Daniel H. Grollman</i>	
Investigating the Differences in Effects of the Persuasive Message's Timing During Science Learning to Overcome the Cognitive Dissonance	104
<i>Khaoula Youssef, Jaap Ham, and Michio Okada</i>	

Investigating the Effects of the Persuasive Source's Social Agency Level and the Student's Profile to Overcome the Cognitive Dissonance	115
<i>Khaoula Youssef, Jaap Ham, and Michio Okada</i>	
Responsive Social Agents: Feedback-Sensitive Behavior Generation for Social Interactions	126
<i>Jered Vroon, Gwenn Englebienne, and Vanessa Evers</i>	
A Human-Robot Competition: Towards Evaluating Robots' Reasoning Abilities for HRI.	138
<i>Amit Kumar Pandey, Lavindra de Silva, and Rachid Alami</i>	
The Effects of Cognitive Biases in Long-Term Human-Robot Interactions: Case Studies Using Three Cognitive Biases on MARC the Humanoid Robot	148
<i>Mriganka Biswas and John Murray</i>	
Ethical Decision Making in Robots: Autonomy, Trust and Responsibility: Autonomy Trust and Responsibility.	159
<i>Fahad Alaieri and André Vellino</i>	
How Facial Expressions and Small Talk May Influence Trust in a Robot.	169
<i>Raul Benites Paradeda, Mojgan Hashemian, Rafael Afonso Rodrigues, and Ana Paiva</i>	
A Study on Trust in a Robotic Suitcase	179
<i>Beatriz Quintino Ferreira, Kelly Karipidou, Filipe Rosa, Sofia Petisca, Patrícia Alves-Oliveira, and Ana Paiva</i>	
How Much Should a Robot Trust the User Feedback? Analyzing the Impact of Verbal Answers in Active Learning.	190
<i>Victor Gonzalez-Pacheco, Maria Malfaz, Jose Carlos Castillo, Alvaro Castro-Gonzalez, Fernando Alonso-Martín, and Miguel A. Salichs</i>	
Recommender Interfaces: The More Human-Like, the More Humans Like	200
<i>Mariacarla Staffa and Silvia Rossi</i>	
Designing a Social Robot to Assist in Medication Sorting	211
<i>Jason R. Wilson, Linda Tickle-Degnen, and Matthias Scheutz</i>	
Other-Oriented Robot Deception: How Can a Robot's Deceptive Feedback Help Humans in HRI?	222
<i>Jae-eun Shim and Ronald C. Arkin</i>	
Ethically-Guided Emotional Responses for Social Robots: Should I Be Angry?	233
<i>Suman Ojha and Mary-Anne Williams</i>	

Interactive Navigation of Mobile Robots Based on Human's Emotion	243
<i>Rui Jiang, Shuzhi Sam Ge, Nagacharan Teja Tangirala, and Tong Heng Lee</i>	
Social Human-Robot Interaction: A New Cognitive and Affective Interaction-Oriented Architecture	253
<i>Carole Adam, Wafa Johal, Damien Pellier, Humbert Fiorino, and Sylvie Pesty</i>	
MuDERI: Multimodal Database for Emotion Recognition Among Intellectually Disabled Individuals	264
<i>Jainendra Shukla, Miguel Barreda-Ángeles, Joan Oliver, and Domènec Puig</i>	
"How Is His/Her Mood": A Question That a Companion Robot May Be Able to Answer	274
<i>Mojgan Hashemian, Hadi Moradi, and Maryam S. Mirian</i>	
Emotion in Robots Using Convolutional Neural Networks	285
<i>Mehdi Ghayoumi and Arvind K. Bansal</i>	
Rhythmic Timing in Playful Human-Robot Social Motor Coordination	296
<i>Naomi T. Fitter, Dylan T. Hawkes, and Katherine J. Kuchenbecker</i>	
The Effects of an Impolite vs. a Polite Robot Playing Rock-Paper-Scissors	306
<i>Álvaro Castro-González, José Carlos Castillo, Fernando Alonso-Martín, Olmer V. Olorogui-Ortega, Victor González-Pacheco, María Malfaz, and Miguel A. Salichs</i>	
Qualitative User Reactions to a Hand-Clapping Humanoid Robot	317
<i>Naomi T. Fitter and Katherine J. Kuchenbecker</i>	
Nonlinear Controller of Arachnid Mechanism Based on <i>Theo Jansen</i>	328
<i>Víctor H. Andaluz, David Pérez, Darwin Sánchez, Cristina Bucay, Carlos Sánchez, Vicente Morales, and David Rivas</i>	
Designing and Assessing Expressive Open-Source Faces for the Baxter Robot	340
<i>Naomi T. Fitter and Katherine J. Kuchenbecker</i>	
Spontaneous Human-Robot Emotional Interaction Through Facial Expressions	351
<i>Ali Meghdari, Minoo Alemi, Ali Ghorbandaei Pour, and Alireza Taheri</i>	
Functional and Non-functional Expressive Dimensions: Classification of the Expressiveness of Humanoid Robots	362
<i>François Ferland and Adriana Tapus</i>	

Facing Emotional Reactions Towards a Robot – An Experimental Study Using FACS.	372
<i>Isabelle M. Menne, Christin Schnellbacher, and Frank Schwab</i>	
Head and Face Design for a New Humanoid Service Robot	382
<i>Hagen Lehmann, Anand Vazhapilli Sureshbabu, Alberto Parmiggiani, and Giorgio Metta</i>	
The Influence of Robot Appearance and Interactive Ability in HRI: A Cross-Cultural Study	392
<i>Kerstin Sophie Haring, David Silvera-Tawil, Katsumi Watanabe, and Mari Velonaki</i>	
Congruency Matters - How Ambiguous Gender Cues Increase a Robot's Uncanniness.	402
<i>Maike Paetzel, Christopher Peters, Ingela Nyström, and Ginevra Castellano</i>	
Collaborative Visual Object Tracking via Hierarchical Structure	413
<i>Fangwen Tu, Shuzhi Sam Ge, Henry Pratama Suryadi, Yazhe Tang, and Chang Chieh Hang</i>	
Data Augmentation for Object Recognition of Dynamic Learning Robot	422
<i>Jiunn Yuan Chan, Shuzhi Sam Ge, Chen Wang, and Mingming Li</i>	
Rotational Coordinate Transformation for Visual-Inertial Sensor Fusion	431
<i>Hongsheng He, Yan Li, and Jindong Tan</i>	
Developing an Interactive Gaze Algorithm for Android Robots.	441
<i>Brian D. Cruz, Byeong-Kyu Ahn, Hyun-Jun Hyung, and Dong-Wook Lee</i>	
Recovery Behavior of Artificial Skin Materials After Object Contact.	449
<i>John-John Cabibihan, Mohammad Khaleel Abu Basha, and Kishor Sadasivuni</i>	
One-Shot Evaluation of the Control Interface of a Robotic Arm by Non-experts	458
<i>Sebastien Marichal, Adrien Malaisé, Valerio Modugno, Oriane Dermy, François Charpillet, and Serena Ivaldi</i>	
A Novel Parallel Pinching and Self-adaptive Grasping Robotic Hand	469
<i>Dayao Liang and Wenzeng Zhang</i>	
PCSS Hand: An Underactuated Robotic Hand with a Novel Parallel-Coupled Switchable Self-adaptive Grasp.	481
<i>Shuang Song and Wenzeng Zhang</i>	

JLST Hand: A Novel Powerful Self-adaptive Underactuated Hand with Joint-Locking and Spring-Tendon Mechanisms	492
<i>Jiuya Song and Wenzeng Zhang</i>	
Path Analysis for the Halo Effect of Touch Sensations of Robots on Their Personality Impressions	502
<i>Yuki Yamashita, Hisashi Ishihara, Takashi Ikeda, and Minoru Asada</i>	
A Human-Robot Speech Interface for an Autonomous Marine Teammate.	513
<i>Michael Novitzky, Hugh R.R. Dougherty, and Michael R. Benjamin</i>	
Annotation of Utterances for Conversational Nonverbal Behaviors	521
<i>Allison Funkhouser and Reid Simmons</i>	
Identifying Engagement from Joint Kinematics Data for Robot Therapy Prompt Interventions for Children with Autism Spectrum Disorder	531
<i>Bi Ge, Hae Won Park, and Ayanna M. Howard</i>	
Social Robots and Teaching Music to Autistic Children: Myth or Reality?	541
<i>Alireza Taheri, Ali Meghdari, Minoo Alemi, Hamidreza Pouretemad, Pegah Poorgoldooz, and Maryam Roohbakhsh</i>	
Development of an ABA Autism Intervention Delivered by a Humanoid Robot	551
<i>Michelle Salvador, Anna Sophia Marsh, Anibal Gutierrez, and Mohammad H. Mahoor</i>	
Interactive Therapy Approach Through Collaborative Physical Play Between a Socially Assistive Humanoid Robot and Children with Autism Spectrum Disorder	561
<i>Saima Tariq, Sara Baber, Asbah Ashfaq, Yasar Ayaz, Muhammad Naveed, and Saba Mohsin</i>	
Examine the Potential of Robots to Teach Autistic Children Emotional Concepts: A Preliminary Study	571
<i>Huanhuan Wang, Pai-Ying Hsiao, and Byung-Cheol Min</i>	
Longitudinal Impact of Autonomous Robot-Mediated Joint Attention Intervention for Young Children with ASD	581
<i>Zhi Zheng, Guangtao Nie, Amy Swanson, Amy Weitlauf, Zachary Warren, and Nilanjan Sarkar</i>	
Culture as a Driver for the Design of Social Robots for Autism Spectrum Disorder Interventions in the Middle East.	591
<i>Hifza Javed, John-John Cabibihan, Mohammad Aldosari, and Asma Al-Attiyah</i>	

Robo2Box: A Toolkit to Elicit Children’s Design Requirements for Classroom Robots	600
<i>Mohammad Obaid, Asim Evren Yantaç, Wolmet Barendregt, Güncel Kirlangıç, and Tilbe Göksun</i>	
Interaction with Artificial Companions: Presentation of an Exploratory Study	611
<i>Matthieu Courgeon, Charlotte Hoareau, and Dominique Duhaut</i>	
Design and Development of Dew: An Emotional Social-Interactive Robot	621
<i>Yiping Xia, Chen Wang, and Shuzhi Sam Ge</i>	
RASA: A Low-Cost Upper-Torso Social Robot Acting as a Sign Language Teaching Assistant	630
<i>Mohammad Zakipour, Ali Meghdari, and Minoo Alemi</i>	
Robust Children Behavior Tracking for Childcare Assisting Robot by Using Multiple Kinect Sensors	640
<i>Bin Zhang, Tomoaki Nakamura, Rena Ushiogi, Takayuki Nagai, Kasumi Abe, Takashi Omori, Natsuki Oka, and Masahide Kaneko</i>	
Learning with or from the Robot: Exploring Robot Roles in Educational Context with Children	650
<i>Nazgul Tazhigaliyeva, Yerassyl Diyas, Dmitriy Brakk, Yernar Aimambetov, and Anara Sandygulova</i>	
Automatic Adaptation of Online Language Lessons for Robot Tutoring	660
<i>Leah Perlmutter, Alexander Fiannaca, Eric Kernfeld, Sahil Anand, Lindsey Arnold, and Maya Cakmak</i>	
Robots in the Classroom: What Teachers Think About Teaching and Learning with Education Robots	671
<i>Natalia Reich-Stiebert and Friederike Eyssel</i>	
The Influence of a Social Robot’s Persona on How it is Perceived and Accepted by Elderly Users	681
<i>Andrea Bartl, Stefanie Bosch, Michael Brandt, Monique Dittrich, and Birgit Lugrin</i>	
From Social Practices to Social Robots – User-Driven Robot Development in Elder Care	692
<i>Matthias Rehm, Antonia L. Krummheuer, Kasper Rodil, Mai Nguyen, and Bjørn Thorlacius</i>	
Co-design and Robots: A Case Study of a Robot Dog for Aging People	702
<i>Tuck W. Leong and Benjamin Johnston</i>	

An Effort to Develop a Web-Based Approach to Assess the Need for Robots Among the Elderly	712
<i>Kimmo J. Vänni and Annina K. Korpela</i>	
Predicting the Intention of Human Activities for Real-Time Human-Robot Interaction (HRI)	723
<i>Vibekananda Dutta and Teresa Zielinska</i>	
The ENRICHME Project: Lessons Learnt from a First Interaction with the Elderly	735
<i>Roxana Agrigoroaie, François Ferland, and Adriana Tapus</i>	
Design and Implementation of a Task-Oriented Robot for Power Substation . . .	746
<i>Haojie Zhang, Bo Su, and Zhibao Su</i>	
The MuMMER Project: Engaging Human-Robot Interaction in Real-World Public Spaces	753
<i>Mary Ellen Foster, Rachid Alami, Olli Gestranius, Oliver Lemon, Marketta Niemelä, Jean-Marc Odobez, and Amit Kumar Pandey</i>	
Introducing IOmi - A Female Robot Hostess for Guidance in a University Environment	764
<i>Eiji Onchi, Cesar Lucho, Michel Sigüenza, Gabriele Trovato, and Francisco Cuellar</i>	
Colleague or Tool? Interactivity Increases Positive Perceptions of and Willingness to Interact with a Robotic Co-worker	774
<i>Benjamin C. Oistad, Catherine E. Sembroski, Kathryn A. Gates, Margaret M. Krupp, Marlena R. Fraune, and Selma Šabanović</i>	
Help Me! Sharing of Instructions Between Remote and Heterogeneous Robots	786
<i>Jianmin Ji, Pooyan Fazli, Song Liu, Tiago Pereira, Dongcai Lu, Jiangchuan Liu, Manuela Veloso, and Xiaoping Chen</i>	
Enabling Symbiotic Autonomy in Short-Term Interactions: A User Study . . .	796
<i>Francesco Riccio, Andrea Vanzo, Valeria Mirabella, Tiziana Catarci, and Daniele Nardi</i>	
Conceptual Framework for RoboDoc: A New Social Robot for Research Assistantship	808
<i>Azadeh Mohebi, Ramin Golshaie, Soheil Ganjefar, Ammar Jalalimanesh, Parnian Afshar, Ali Aali Hosseini, Seyyed Alireza Ghoreishi, and Amir Badamchi</i>	
Mechanical Design of Christine, the Social Robot for the Service Industry . . .	819
<i>Yi Mei Foong, Xiaomei Liu, Shuzhi Sam Ge, and Jie Guo</i>	

Influence of User's Personality on Task Execution When Reminded by a Robot	829
<i>Arturo Cruz-Maya and Adriana Tapus</i>	
Comparing Ways to Trigger Migration Between a Robot and a Virtually Embodied Character	839
<i>Elena Corina Grigore, Andre Pereira, Jie Jessica Yang, Ian Zhou, David Wang, and Brian Scassellati</i>	
Does the Safety Demand Characteristic Influence Human-Robot Interaction?	850
<i>Jamie Poston, Houston Lucas, Zachary Carlson, and David Feil-Seifer</i>	
On Designing Socially Acceptable Reward Shaping	860
<i>Syed Ali Raza, Jesse Clark, and Mary-Anne Williams</i>	
Motivational Effects of Acknowledging Feedback from a Socially Assistive Robot	870
<i>Sebastian Schneider and Franz Kummert</i>	
Who Am I? What Are You? Identity Construction in Encounters Between a Teleoperated Robot and People with Acquired Brain Injury	880
<i>Antonia L. Krummheuer</i>	
Contribution Towards Evaluating the Practicability of Socially Assistive Robots – by Example of a Mobile Walking Coach Robot	890
<i>Horst-Michael Gross, Markus Eisenbach, Andrea Scheidig, Thanh Quang Trinh, and Tim Wengefeld</i>	
Philosophy of Social Robotics: Abundance Economics	900
<i>Melanie Swan</i>	
Toward a Hybrid Society: The Transformation of Robots, from Objects to Social Agents	909
<i>Francesco Ferrari and Friederike Eyssel</i>	
Iterative Design of a System for Programming Socially Interactive Service Robots	919
<i>Michael Jae-Yoon Chung, Justin Huang, Leila Takayama, Tessa Lau, and Maya Cakmak</i>	
Engagement Detection During Deictic References in Human-Robot Interaction	930
<i>Timo Dankert, Michael Goerlich, Sebastian Wrede, Raphaela Gehle, and Karola Pitsch</i>	

Making Turn-Taking Decisions for an Active Listening Robot for Memory Training	940
<i>Martin Johansson, Tatsuro Hori, Gabriel Skantze, Anja Höthker, and Joakim Gustafson</i>	
Look at Me Now: Investigating Delayed Disengagement for Ambiguous Human-Robot Stimuli	950
<i>Melissa A. Smith and Eva Wiese</i>	
Concurrency Simulation in Soccer	961
<i>Jonathan Tellez-Giron and Matías Alvarado</i>	
Let the User Decide! User Preferences Regarding Functions, Apps, and Interfaces of a Smart Home and a Service Robot	971
<i>Birte Schiffhauer, Jasmin Bernotat, Friederike Eyssel, Rebecca Bröhl, and Jule Adriaans</i>	
Welcome to the Future – How Naïve Users Intuitively Address an Intelligent Robotics Apartment	982
<i>Jasmin Bernotat, Birte Schiffhauer, Friederike Eyssel, Patrick Holthaus, Christian Leichsenring, Viktor Richter, Marian Pohling, Birte Carlmeyer, Norman Köster, Sebastian Meyer zu Borgsen, René Zorn, Kai Frederic Engelmann, Florian Lier, Simon Schulz, Rebecca Bröhl, Elena Seibel, Paul Hellwig, Philipp Cimiano, Franz Kummert, David Schlangen, Petra Wagner, Thomas Hermann, Sven Wachsmuth, Britta Wrede, and Sebastian Wrede</i>	
Better Than Human: About the Psychological Superpowers of Robots	993
<i>Julika Welge and Marc Hassenzahl</i>	
A Method for Establishing Correspondences Between Hand-Drawn and Sensor-Generated Maps	1003
<i>Leo Bowen-Biggs, Suzanne Dazo, Yili Zhang, Alexander Hubers, Matthew Rueben, Ross Sowell, William D. Smart, and Cindy M. Grimm</i>	
Erratum to: Introducing IOmi - A Female Robot Hostess for Guidance in a University Environment	E1
<i>Eiji Onchi, Cesar Lucho, Michel Sigüenza, Gabriele Trovato, and Francisco Cuellar</i>	
Author Index	1015