Contents

Learning Robot Navigation Behaviors by Demonstration Using a RRT* Planner 1
Noé Pérez-Higueras, Fernando Caballero, and Luis Merino

Adaptive Robot Assisted Therapy Using Interactive Reinforcement Learning 11
Konstantinos Tsiakas, Maria Dagioglou, Vangelis Karkaletsis, and Fillia Makedon

Personalization Framework for Adaptive Robotic Feeding Assistance 22
Gerard Canal, Guillem Alenyà, and Carme Torras

A Framework for Modelling Local Human-Robot Interactions Based on Unsupervised Learning 32
Rafael Ramón-Vigo, Noé Pérez-Higueras, Fernando Caballero, and Luis Merino

Using Games to Learn Games: Game-Theory Representations as a Source for Guided Social Learning 42
Alan Wagner

User Evaluation of an Interactive Learning Framework for Single-Arm and Dual-Arm Robots 52
Aleksandar Jevtić, Adrià Colomé, Guillem Alenyà, and Carme Torras

Formalizing Normative Robot Behavior 62
Billy Okal and Kai O. Arras

Decision-Theoretic Human-Robot Interaction: Designing Reasonable and Rational Robot Behavior 72
Mary-Anne Williams

Physiologically Inspired Blinking Behavior for a Humanoid Robot 83
Hagen Lehmann, Alessandro Roncone, Ugo Pattacini, and Giorgio Metta

Infinite Personality Space for Non-fungible Robots 94
Daniel H. Grollman

Investigating the Differences in Effects of the Persuasive Message's Timing During Science Learning to Overcome the Cognitive Dissonance 104
Khaoula Youssef, Jaap Ham, and Michio Okada

Investigating the Effects of the Persuasive Source's Social Agency Level and the Student's Profile to Overcome the Cognitive Dissonance 115
Khaoula Youssef, Jaap Ham, and Michio Okada

Responsive Social Agents: Feedback-Sensitive Behavior Generation for Social Interactions 126
Jered Vroon, Gwenn Englebienne, and Vanessa Evers

A Human-Robot Competition: Towards Evaluating Robots' Reasoning Abilities for HRI. 138
Amit Kumar Pandey, Lavindra de Silva, and Rachid Alami

The Effects of Cognitive Biases in Long-Term Human-Robot Interactions: Case Studies Using Three Cognitive Biases on MARC the Humanoid Robot 148
Mriganka Biswas and John Murray

Ethical Decision Making in Robots: Autonomy, Trust and Responsibility: Autonomy Trust and Responsibility. 159
Fahad Alaieri and André Vellino

How Facial Expressions and Small Talk May Influence Trust in a Robot. . . . 169
Raul Benites Paradeda, Mojgan Hashemian, Rafael Afonso Rodrigues, and Ana Paiva

A Study on Trust in a Robotic Suitcase 179
Beatriz Quintino Ferreira, Kelly Karipidou, Filipe Rosa, Sofia Petisca, Patrícia Alves-Oliveira, and Ana Paiva

How Much Should a Robot Trust the User Feedback? Analyzing the Impact of Verbal Answers in Active Learning. 190
Victor Gonzalez-Pacheco, Maria Malfaz, Jose Carlos Castillo, Alvaro Castro-Gonzalez, Fernando Alonso-Martín, and Miguel A. Salichs

Recommender Interfaces: The More Human-Like, the More Humans Like . . . 200
Mariacarla Staffa and Silvia Rossi

Designing a Social Robot to Assist in Medication Sorting 211
Jason R. Wilson, Linda Tickle-Degnen, and Matthias Scheutz

Other-Oriented Robot Deception: How Can a Robot's Deceptive Feedback Help Humans in HRI? 222
Jaeeun Shim and Ronald C. Arkin

Ethically-Guided Emotional Responses for Social Robots: Should I Be Angry? 233
Suman Ojha and Mary-Anne Williams

Interactive Navigation of Mobile Robots Based on Human's Emotion 243
Rui Jiang, Shuzhi Sam Ge, Nagacharan Teja Tangirala, and Tong Heng Lee

Social Human-Robot Interaction: A New Cognitive and Affective Interaction-Oriented Architecture 253
Carole Adam, Wafa Johal, Damien Pellier, Humbert Fiorino, and Sylvie Pesty

MuDERI: Multimodal Database for Emotion Recognition Among Intellectually Disabled Individuals 264
Jainendra Shukla, Miguel Barreda-Ángeles, Joan Oliver, and Domènec Puig

"How Is His/Her Mood": A Question That a Companion Robot May Be Able to Answer 274
Mojgan Hashemian, Hadi Moradi, and Maryam S. Mirian

Emotion in Robots Using Convolutional Neural Networks 285
Mehdi Ghayoumi and Arvind K. Bansal

Rhythmic Timing in Playful Human-Robot Social Motor Coordination 296
Naomi T. Fitter, Dylan T. Hawkes, and Katherine J. Kuchenbecker

The Effects of an Impolite vs. a Polite Robot Playing Rock-Paper-Scissors . . . 306
Álvaro Castro-González, José Carlos Castillo, Fernando Alonso-Martín, Olmer V. Olortegui-Ortega, Victor González-Pacheco, María Malfaz, and Miguel A. Salichs

Qualitative User Reactions to a Hand-Clapping Humanoid Robot 317
Naomi T. Fitter and Katherine J. Kuchenbecker

Nonlinear Controller of Arachnid Mechanism Based on *Theo Jansen* 328
Víctor H. Andaluz, David Pérez, Darwin Sáchez, Cristina Bucay, Carlos Sáchez, Vicente Morales, and David Rivas

Designing and Assessing Expressive Open-Source Faces for the Baxter Robot 340
Naomi T. Fitter and Katherine J. Kuchenbecker

Spontaneous Human-Robot Emotional Interaction Through Facial Expressions 351
Ali Meghdari, Minoo Alemi, Ali Ghorbandaei Pour, and Alireza Taheri

Functional and Non-functional Expressive Dimensions: Classification of the Expressiveness of Humanoid Robots 362
François Ferland and Adriana Tapus

Facing Emotional Reactions Towards a Robot – An Experimental Study Using FACS 372
Isabelle M. Menne, Christin Schnellbacher, and Frank Schwab

Head and Face Design for a New Humanoid Service Robot 382
Hagen Lehmann, Anand Vazhapilli Sureshbabu, Alberto Parmiggiani, and Giorgio Metta

The Influence of Robot Appearance and Interactive Ability in HRI: A Cross-Cultural Study 392
Kerstin Sophie Haring, David Silvera-Tawil, Katsumi Watanabe, and Mari Velonaki

Congruency Matters - How Ambiguous Gender Cues Increase a Robot's Uncanniness 402
Maike Paetzel, Christopher Peters, Ingela Nyström, and Ginevra Castellano

Collaborative Visual Object Tracking via Hierarchical Structure 413
Fangwen Tu, Shuzhi Sam Ge, Henry Pratama Suryadi, Yazhe Tang, and Chang Chieh Hang

Data Augmentation for Object Recognition of Dynamic Learning Robot 422
Jiunn Yuan Chan, Shuzhi Sam Ge, Chen Wang, and Mingming Li

Rotational Coordinate Transformation for Visual-Inertial Sensor Fusion 431
Hongsheng He, Yan Li, and Jindong Tan

Developing an Interactive Gaze Algorithm for Android Robots 441
Brian D. Cruz, Byeong-Kyu Ahn, Hyun-Jun Hyung, and Dong-Wook Lee

Recovery Behavior of Artificial Skin Materials After Object Contact 449
John-John Cabibihan, Mohammad Khaleel Abu Basha, and Kishor Sadasivuni

One-Shot Evaluation of the Control Interface of a Robotic Arm by Non-experts 458
Sebastian Marichal, Adrien Malaisé, Valerio Modugno, Oriane Dermy, François Charpillet, and Serena Ivaldi

A Novel Parallel Pinching and Self-adaptive Grasping Robotic Hand 469
Dayao Liang and Wenzeng Zhang

PCSS Hand: An Underactuated Robotic Hand with a Novel Parallel-Coupled Switchable Self-adaptive Grasp 481
Shuang Song and Wenzeng Zhang

JLST Hand: A Novel Powerful Self-adaptive Underactuated Hand with Joint-Locking and Spring-Tendon Mechanisms 492
Jiuya Song and Wenzeng Zhang

Path Analysis for the Halo Effect of Touch Sensations of Robots on Their Personality Impressions 502
Yuki Yamashita, Hisashi Ishihara, Takashi Ikeda, and Minoru Asada

A Human-Robot Speech Interface for an Autonomous Marine Teammate. . . . 513
Michael Novitzky, Hugh R.R. Dougherty, and Michael R. Benjamin

Annotation of Utterances for Conversational Nonverbal Behaviors 521
Allison Funkhouser and Reid Simmons

Identifying Engagement from Joint Kinematics Data for Robot Therapy Prompt Interventions for Children with Autism Spectrum Disorder 531
Bi Ge, Hae Won Park, and Ayanna M. Howard

Social Robots and Teaching Music to Autistic Children: Myth or Reality? . . . 541
Alireza Taheri, Ali Meghdari, Minoo Alemi, Hamidreza Pouretemad, Pegah Poorgoldooz, and Maryam Roohbakhsh

Development of an ABA Autism Intervention Delivered by a Humanoid Robot 551
Michelle Salvador, Anna Sophia Marsh, Anibal Gutierrez, and Mohammad H. Mahoor

Interactive Therapy Approach Through Collaborative Physical Play Between a Socially Assistive Humanoid Robot and Children with Autism Spectrum Disorder 561
Saima Tariq, Sara Baber, Asbah Ashfaq, Yasar Ayaz, Muhammad Naveed, and Saba Mohsin

Examine the Potential of Robots to Teach Autistic Children Emotional Concepts: A Preliminary Study 571
Huanhuan Wang, Pai-Ying Hsiao, and Byung-Cheol Min

Longitudinal Impact of Autonomous Robot-Mediated Joint Attention Intervention for Young Children with ASD 581
Zhi Zheng, Guangtao Nie, Amy Swanson, Amy Weitlauf, Zachary Warren, and Nilanjan Sarkar

Culture as a Driver for the Design of Social Robots for Autism Spectrum Disorder Interventions in the Middle East. 591
Hifza Javed, John-John Cabibihan, Mohammad Aldosari, and Asma Al-Attiyah

Robo2Box: A Toolkit to Elicit Children's Design Requirements for Classroom Robots 600
Mohammad Obaid, Asım Evren Yantaç, Wolmet Barendregt, Güncel Kırlangıç, and Tilbe Göksun

Interaction with Artificial Companions: Presentation of an Exploratory Study. 611
Matthieu Courgeon, Charlotte Hoareau, and Dominique Duhaut

Design and Development of Dew: An Emotional Social-Interactive Robot . . . 621
Yiping Xia, Chen Wang, and Shuzhi Sam Ge

RASA: A Low-Cost Upper-Torso Social Robot Acting as a Sign Language Teaching Assistant 630
Mohammad Zakipour, Ali Meghdari, and Minoo Alemi

Robust Children Behavior Tracking for Childcare Assisting Robot by Using Multiple Kinect Sensors 640
Bin Zhang, Tomoaki Nakamura, Rena Ushiogi, Takayuki Nagai, Kasumi Abe, Takashi Omori, Natsuki Oka, and Masahide Kaneko

Learning with or from the Robot: Exploring Robot Roles in Educational Context with Children 650
Nazgul Tazhigaliyeva, Yerassyl Diyas, Dmitriy Brakk, Yernar Aimambetov, and Anara Sandygulova

Automatic Adaptation of Online Language Lessons for Robot Tutoring 660
Leah Perlmutter, Alexander Fiannaca, Eric Kernfeld, Sahil Anand, Lindsey Arnold, and Maya Cakmak

Robots in the Classroom: What Teachers Think About Teaching and Learning with Education Robots 671
Natalia Reich-Stiebert and Friederike Eyssel

The Influence of a Social Robot's Persona on How it is Perceived and Accepted by Elderly Users 681
Andrea Bartl, Stefanie Bosch, Michael Brandt, Monique Dittrich, and Birgit Lugrin

From Social Practices to Social Robots – User-Driven Robot Development in Elder Care 692
Matthias Rehm, Antonia L. Krummheuer, Kasper Rodil, Mai Nguyen, and Bjørn Thorlacius

Co-design and Robots: A Case Study of a Robot Dog for Aging People 702
Tuck W. Leong and Benjamin Johnston

An Effort to Develop a Web-Based Approach to Assess the Need for Robots Among the Elderly 712
Kimmo J. Vänni and Annina K. Korpela

Predicting the Intention of Human Activities for Real-Time Human-Robot Interaction (HRI). 723
Vibekananda Dutta and Teresa Zielinska

The ENRICHME Project: Lessons Learnt from a First Interaction with the Elderly 735
Roxana Agrigoroaie, François Ferland, and Adriana Tapus

Design and Implementation of a Task-Oriented Robot for Power Substation . . . 746
Haojie Zhang, Bo Su, and Zhibao Su

The MuMMER Project: Engaging Human-Robot Interaction in Real-World Public Spaces 753
Mary Ellen Foster, Rachid Alami, Olli Gestranius, Oliver Lemon, Marketta Niemelä, Jean-Marc Odobez, and Amit Kumar Pandey

Introducing IOmi - A Female Robot Hostess for Guidance in a University Environment. 764
Eiji Onchi, Cesar Lucho, Michel Sigüenza, Gabriele Trovato, and Francisco Cuellar

Colleague or Tool? Interactivity Increases Positive Perceptions of and Willingness to Interact with a Robotic Co-worker 774
Benjamin C. Oistad, Catherine E. Sembroski, Kathryn A. Gates, Margaret M. Krupp, Marlena R. Fraune, and Selma Šabanović

Help Me! Sharing of Instructions Between Remote and Heterogeneous Robots 786
Jianmin Ji, Pooyan Fazli, Song Liu, Tiago Pereira, Dongcai Lu, Jiangchuan Liu, Manuela Veloso, and Xiaoping Chen

Enabling Symbiotic Autonomy in Short-Term Interactions: A User Study . . . 796
Francesco Riccio, Andrea Vanzo, Valeria Mirabella, Tiziana Catarci, and Daniele Nardi

Conceptual Framework for RoboDoc: A New Social Robot for Research Assistantship 808
Azadeh Mohebi, Ramin Golshaie, Soheil Ganjefar, Ammar Jalalimanesh, Parnian Afshar, Ali Aali Hosseini, Seyyed Alireza Ghoreishi, and Amir Badamchi

Mechanical Design of Christine, the Social Robot for the Service Industry . . . 819
Yi Mei Foong, Xiaomei Liu, Shuzhi Sam Ge, and Jie Guo

Influence of User's Personality on Task Execution When Reminded by a Robot 829
Arturo Cruz-Maya and Adriana Tapus

Comparing Ways to Trigger Migration Between a Robot and a Virtually Embodied Character 839
Elena Corina Grigore, Andre Pereira, Jie Jessica Yang, Ian Zhou, David Wang, and Brian Scassellati

Does the Safety Demand Characteristic Influence Human-Robot Interaction? 850
Jamie Poston, Houston Lucas, Zachary Carlson, and David Feil-Seifer

On Designing Socially Acceptable Reward Shaping 860
Syed Ali Raza, Jesse Clark, and Mary-Anne Williams

Motivational Effects of Acknowledging Feedback from a Socially Assistive Robot. 870
Sebastian Schneider and Franz Kummert

Who Am I? What Are You? Identity Construction in Encounters Between a Teleoperated Robot and People with Acquired Brain Injury 880
Antonia L. Krummheuer

Contribution Towards Evaluating the Practicability of Socially Assistive Robots – by Example of a Mobile Walking Coach Robot 890
Horst-Michael Gross, Markus Eisenbach, Andrea Scheidig, Thanh Quang Trinh, and Tim Wengefeld

Philosophy of Social Robotics: Abundance Economics 900
Melanie Swan

Toward a Hybrid Society: The Transformation of Robots, from Objects to Social Agents 909
Francesco Ferrari and Friederike Eyssel

Iterative Design of a System for Programming Socially Interactive Service Robots 919
Michael Jae-Yoon Chung, Justin Huang, Leila Takayama, Tessa Lau, and Maya Cakmak

Engagement Detection During Deictic References in Human-Robot Interaction 930
Timo Dankert, Michael Goerlich, Sebastian Wrede, Raphaela Gehle, and Karola Pitsch

Making Turn-Taking Decisions for an Active Listening Robot for Memory Training 940
Martin Johansson, Tatsuro Hori, Gabriel Skantze, Anja Höthker, and Joakim Gustafson

Look at Me Now: Investigating Delayed Disengagement for Ambiguous Human-Robot Stimuli 950
Melissa A. Smith and Eva Wiese

Concurrency Simulation in Soccer 961
Jonathan Tellez-Giron and Matías Alvarado

Let the User Decide! User Preferences Regarding Functions, Apps, and Interfaces of a Smart Home and a Service Robot 971
Birte Schiffhauer, Jasmin Bernotat, Friederike Eyssel, Rebecca Bröhl, and Jule Adriaans

Welcome to the Future – How Naïve Users Intuitively Address an Intelligent Robotics Apartment 982
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

Better Than Human: About the Psychological Superpowers of Robots 993
Julika Welge and Marc Hassenzahl

A Method for Establishing Correspondences Between Hand-Drawn and Sensor-Generated Maps 1003
Leo Bowen-Biggs, Suzanne Dazo, Yili Zhang, Alexander Hubers, Matthew Rueben, Ross Sowell, William D. Smart, and Cindy M. Grimm

Erratum to: Introducing IOmi - A Female Robot Hostess for Guidance in a University Environment E1
Eiji Onchi, Cesar Lucho, Michel Sigüenza, Gabriele Trovato, and Francisco Cuellar

Author Index 1015

http://www.springer.com/978-3-319-47436-6

Social Robotics
8th International Conference, ICSR 2016, Kansas City, MO, USA, November 1-3, 2016 Proceedings
Agah, A.; Cabibihan, J.-J.; Howard, A.; Salichs, M.A.; He, H. (Eds.)
2016, XIX, 1018 p. 355 illus., Softcover
ISBN: 978-3-319-47436-6