Human–Computer Interaction Series

Editors-in-chief

Desney Tan Microsoft Research, Redmond, WA, USA

Jean Vanderdonckt Louvain School of Management, Université catholique de Louvain, Louvain-la-Neuve, Belgium More information about this series at http://www.springer.com/series/6033

Robert J. Moore · Margaret H. Szymanski Raphael Arar · Guang-Jie Ren Editors

Studies in Conversational UX Design



Editors Robert J. Moore IBM Research-Almaden San Jose, CA, USA

Margaret H. Szymanski IBM Research-Almaden San Jose, CA, USA Raphael Arar IBM Research-Almaden San Jose, CA, USA

Guang-Jie Ren IBM Research-Almaden San Jose, CA, USA

ISSN 1571-5035 ISSN 2524-4477 (electronic) Human–Computer Interaction Series ISBN 978-3-319-95578-0 ISBN 978-3-319-95579-7 (eBook) https://doi.org/10.1007/978-3-319-95579-7

Library of Congress Control Number: 2018949051

© Springer International Publishing AG, part of Springer Nature 2018

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. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

This Springer imprint is published by the registered company Springer Nature Switzerland AG The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Contents

1	Robert J. Moore and Raphael Arar]
Pa	art I Human Conversation and Conversational Agents	
2	Adapting to Customer Initiative: Insights from Human Service Encounters Margaret H. Szymanski and Robert J. Moore	19
3	Safety First: Conversational Agents for Health Care	33
Pa	nrt II Agent Knowledge	
4	Conversational Agents for Physical World Navigation	61
5	Helping Users Reflect on Their Own Health-Related Behaviors Rafal Kocielnik, Gary Hsieh and Daniel Avrahami	85
Pa	art III Agent Misunderstanding	
6	Teaching Agents When They Fail: End User Development in Goal-Oriented Conversational Agents	119
7	Recovering from Dialogue Failures Using Multiple Agents in Wealth Management Advice	139

vi Contents

Pa	rt IV Agent Design	
8	Conversational Style: Beyond the Nuts and Bolts of Conversation	161
9	A Natural Conversation Framework for Conversational UX Design	181

Contributors

Raphael Arar IBM Research-Almaden, San Jose, CA, USA

Reza Asadi College of Computer and Information Science, Northeastern University, Boston, USA

Daniel Avrahami FXPAL, Palo Alto, CA, USA

Amos Azaria Ariel University, Ariel, Israel

Jan Balata Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czech Republic

Gregory A. Bennett Linguist | UX Researcher, San Francisco, CA, USA

Timothy Bickmore College of Computer and Information Science, Northeastern University, Boston, USA

Heloisa Candello IBM Research, São Paulo, Brazil

Gary Hsieh University of Washington, Seattle, WA, USA

Rafal Kocielnik University of Washington, Seattle, WA, USA

Igor Labutov Carnegie Mellon University, Pittsburgh, PA, USA

Toby Jia-Jun Li Carnegie Mellon University, Pittsburgh, PA, USA

Zdenek Mikovec Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czech Republic

Tom M. Mitchell Carnegie Mellon University, Pittsburgh, PA, USA

Robert J. Moore IBM Research-Almaden, San Jose, CA, USA

Brad A. Myers Carnegie Mellon University, Pittsburgh, PA, USA

Stefan Olafsson College of Computer and Information Science, Northeastern University, Boston, USA

viii Contributors

Claudio Pinhanez IBM Research, São Paulo, Brazil

Alexander I. Rudnicky Carnegie Mellon University, Pittsburgh, PA, USA

Pavel Slavik Faculty of Electrical Engineering, Czech Technical University in Prague, Prague, Czech Republic

Margaret H. Szymanski IBM Research-Almaden, San Jose, CA, USA

Ha Trinh College of Computer and Information Science, Northeastern University, Boston, USA