

Contents

Preface	ix
List of Contributors	xi
1 Looking Forward to Interactive Task Learning	1
<i>Kevin A. Gluck and John E. Laird</i>	
2 Framing the Problem of Interactive Task Learning	9
<i>Tom M. Mitchell, Simon Garrod, John E. Laird, Stephen C. Levinson, and Kenneth R. Koedinger</i>	
Knowledge	
3 Functional Knowledge Requirements for Interactive Task Learning	19
<i>Robert E. Wray III, Niels A. Taatgen, Christian Lebiere, Katerina Pastra, Peter Pirolli, Paul S. Rosenbloom, Matthias Scheutz, Terrence C. Stewart, and Janet Wiles</i>	
4 What People Learn from Instruction	53
<i>Christian Lebiere</i>	
5 An Ontological Perspective on Interactive Task Learning	63
<i>Charles Rich</i>	
6 The Representation of Task Knowledge at Multiple Levels of Abstraction	75
<i>Niels A. Taatgen</i>	
Interaction	
7 Interaction for Task Instruction and Learning	91
<i>Andrea L. Thomaz, Elena Lieven, Maya Cakmak, Joyce Y. Chai, Simon Garrod, Wayne D. Gray, Stephen C. Levinson, Ana Paiva, and Nele Russwinkel</i>	
8 Natural Forms of Purposeful Interaction among Humans: What Makes Interaction Effective?	111
<i>Stephen C. Levinson</i>	
9 Teaching Robots New Tasks through Natural Interaction	127
<i>Joyce Y. Chai, Maya Cakmak, and Candace L. Sidner</i>	
10 The Essence of Interaction in Boundedly Complex, Dynamic Task Environments	147
<i>Wayne D. Gray, John K. Lindstedt, Catherine Sibert, Matthew-Donald D. Sangster, Roussel Rahman, Ropafadzo Denga, and Marc Destefano</i>	

Instruction	
11	Task Instruction 169
	<i>Julie A. Shah, Kevin A. Gluck, Tony Belpaeme, Kenneth R. Koedinger, Katharina J. Rohlfing, Han L. J. van der Maas, Paul Van Eecke, Kurt VanLehn, Anna-Lisa Vollmer, and Matthew Yee-King</i>
12	What Do Human Tutors Do? 193
	<i>Kurt VanLehn</i>
13	Strategies for Interactive Task Learning and Teaching 207
	<i>Katrien Beuls, Luc Steels, and Paul Van Eecke</i>
14	Creativity and Feedback: Designing Systems to Support Student Learning and Improve Instruction 217
	<i>Arthur Still, Matthew Yee-King, and Mark d'Inverno</i>
Learning New Tasks	
15	Learning Task Knowledge 237
	<i>Dario D. Salvucci, John E. Laird, Franklin Chang, Kenneth D. Forbus, Parisa Kordjamshidi, Tom M. Mitchell, Shiwali Mohan, Michael Spranger, Suzanne Stevenson, Andrea Stocco, and J. Gregory Trafton</i>
16	Early Developing Prerequisites for Human Interactive Task Learning 259
	<i>Franklin Chang</i>
17	Characteristics of the Learning Problem in Situated Interactive Task Learning 273
	<i>John E. Laird, Shiwali Mohan, James Kirk, and Aaron Mininger</i>
Ethical Considerations	
18	Ethical Aspects and Challenges for Interactive Task Learning 295
	<i>Matthias Scheutz</i>
	Bibliography 305
	Subject Index 333
	Strüngmann Forum Report Series 339