

# Language to Action: Towards Interactive Task Learning with Physical Agents

Joyce Y. Chai

Department of Computer Science and Engineering  
Michigan State University  
East Lansing, Michigan, 48824  
jchai@cse.msu.edu

## ABSTRACT

Language communication plays an important role in human learning and skill acquisition. With the emergence of a new generation of cognitive robots, empowering these physical agents to learn directly from human partners about the world and joint tasks becomes increasingly important. In this talk, I will share some recent work on interactive task learning where humans can teach physical agents new tasks through natural language communication and demonstration. I will give examples of language use in interactive task learning and discuss multiple levels of grounding that are critical in this process. I will demonstrate the importance of common-sense knowledge, particularly the acquisition of very basic physical causality knowledge, in grounding human language to actions not only perceived but also performed by the agent. As humans and agents often have mismatched capabilities and knowledge, I will highlight the role of collaboration in communicative grounding to mediate differences and strive for a common ground of joint representations.

## KEYWORDS

Natural language processing; interactive task learning; human-robot communication

### ACM Reference Format:

Joyce Y. Chai. 2018. Language to Action: towards Interactive Task Learning with Physical Agents. In *Proc. of the 17th International Conference on Autonomous Agents and Multiagent Systems (AAMAS 2018), Stockholm, Sweden, July 10-15, 2018*, IFAAMAS, ?? pages.

## Short Bio

Joyce Chai is a Professor in the Department of Computer Science and Engineering at Michigan State University, where she was awarded the William Beal Outstanding Faculty Award in 2018. She holds a Ph.D. in Computer Science from Duke University. Prior to joining MSU in 2003, she was a Research Staff Member at IBM T. J. Watson Research Center. Her research interests include natural language processing, situated dialogue agents, human-robot communication, artificial intelligence, and intelligent user interfaces. Her recent work is focused on situated language processing to facilitate natural communication with robots and other artificial agents. She served as Program Co-chair for the Annual Meeting of the Special Interest Group in Dialogue and Discourse (SIGDIAL) in 2011, the ACM International Conference on Intelligent User Interfaces (IUI) in 2014, and the Annual Meeting of the North America Chapter of Association of Computational Linguistics (NAACL) in 2015. She received a National Science Foundation CAREER Award in 2004 and the Best Long Paper Award from the Annual Meeting of Association of Computational Linguistics (ACL) in 2010.

