

Jake Brawer, Ph.D.

Ph.D. in Computer Science / [website](#) / [github](#) / jake.brawer@yale.edu

RESEARCH OVERVIEW

Summary I build **human-robot collaborative systems** that learn through their interactions. My research draws upon recent innovations in machine learning as well as foundational techniques in artificial intelligence for designing systems that learn and utilize **abstract knowledge** to make social and physical interactions more **naturalistic** and **robust**.

EDUCATION

2016-2023 **Ph.D. in Computer Science** Yale University, Advisor: Brian Scassellati

2012-2016 **B.A. in Cognitive Science; Computer Science minor** Vassar College

RESEARCH EXPERIENCE

2016-Current **Robotics Ph.D. student** –Social robotics laboratory, *Yale University*
Human–robot collaboration research under the supervision of Professor Brian Scassellati.

2014-2015 **Research Fellow** –Interdisciplinary robotics research lab, *Vassar College*
Designed and programmed a genotype-phenotype mapping scheme for mobile behavior-based robots incorporating sexual reproduction and ontogenetic factors.

IN PROGRESS

Qin, Meiyang, **Brawer, Jake**, and Scassellati, Brian (2023). “**Using Task, Affordance, and Motion Planning (TAAMP) to Detect Infeasible or Limited Solutions in Affordance-Constrained Environments**”. In: *In submission at the 2023 IEEE international conference on robotics and automation (ICRA)*. IEEE.

JOURNAL ARTICLES

Qin, Meiyang, **Brawer, Jake**, and Scassellati, Brian (2022a). “**Robot Tool Use: A Survey**”. In: *Frontiers in Robotics and AI* 9, p. 369.

* Qin, Meiyang, * **Brawer, Jake**, and Scassellati, Brian (2021). “**Rapidly Learning Generalizable and Robot-Agnostic Tool-Use Skills for a Wide Range of Tasks**”. In: *Frontiers in Robotics and AI* 8, p. 380.

Brawer, Jake, Hill, Aaron, Livingston, Ken, Aaron, Eric, Bongard, Joshua, and Long Jr, John H (2017). “**Epigenetic Operators and the Evolution of Physically Embodied Robots**”. In: *Frontiers in Robotics and AI* 4, p. 1.

* Authors contributed equally

CONFERENCE PROCEEDINGS

- Brawer, Jake**, Ghose, Debasmita, Candon, Kate, Qin, Meiyong, Roncone, Alessandro, Vazquez, Marynel, and Scassellati, Brian (2023). “**Interactive Policy Shaping for Human-Robot Collaboration with Transparent Matrix Overlays**”. In: *Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*. IEEE.
- Qin, Meiyong, **Brawer, Jake**, and Scassellati, Brian (2022b). “**Task-Oriented Robot-to-Human Handovers in Collaborative Tool-Use Tasks**”. In: *2022 31st IEEE International Conference on Robot & Human Interactive Communication (RO-MAN)*. IEEE.
- Brawer, Jake**, Qin, Meiyong, and Scassellati, Brian (2020). “**A causal approach to tool affordance learning**”. In: *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, pp. 8394–8399.
- Brawer, Jake**, Mangin, Olivier, Roncone, Alessandro, Widder, Sarah, and Scassellati, Brian (2018). “**Situated Human–Robot Collaboration: predicting intent from grounded natural language**”. In: *Intelligent Robots and Systems (IROS)*.
- Scassellati, Brian, **Brawer, Jake**, Tsui, Katherine, Nasihati Gilani, Setareh, Malzkuhn, Melissa, Manini, Barbara, Stone, Adam, Kartheiser, Geo, Merla, Arcangelo, Shapiro, Ari, et al. (2018). “**Teaching Language to Deaf Infants with a Robot and a Virtual Human**”. In: *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*. ACM, p. 553.
- Tan, Zong Xuan, **Brawer, Jake**, and Scassellati, Brian (2018). “**That’s Mine! Learning Ownership Relations and Norms for Robots**”. In: *Thirty-second AAAI conference on artificial intelligence*.

THESIS

- Brawer, Jake** (2023). “**Fusing Symbolic and Subsymbolic Approaches for Natural and Effective Human-Robot Collaboration**”. PhD thesis. Yale University.

TECHNICAL AND SCIENTIFIC SKILLS

Programming	Python (and scientific tools), C-C++ , L^AT_EX , Git , Jekyll , Emacs , Continuous integration (with Travis), Docker
ML/AI Tools	Scikit-learn, Pytorch, NLTK, ROS
Robots	6+ years experience with Baxter research robot , 3+ years experience with UR5 robot
System	8+ years of daily Linux experience

GRANTS

- March 2018 **Bridging the Gap: An NSF Workshop on Conversational Agents and Human–Robot Interaction**
Justine Cassell, Brian Scassellati, Jake Brawer, Michael Madaio
NSF Cyber–Human Systems (CHS), Robust Intelligence, National Robotics Initiative. Award #1829237

TEACHING EXPERIENCE

Spring 2018/2019	Intelligent Robotics Teaching Assistant
Fall 2017	Object Oriented Programming Teaching Assistant
Fall 2014/2015	Perception and Action Teaching Assistant

SERVICE

Conference reviews	International Conference on Humanoid Robots (Humanoids ; 2018) International Conference on Intelligent Robots and Systems (IROS ; 2020) International Conference on Human–Robot Interaction (HRI ; 2017, 2018, 2019, 2020, 2021, 2022, 2023) International Conference on Robotics and Automation (ICRA ; 2019)
Journal reviews	ACM Transactions on Human–Robot Interaction (THRI ; 2019, 2020)
Students supervised	Kevin Choi (2018) Acshi Haggenmiller (2016-2017) Sarah Widder (2017-2019) Tan Zong Xuan (2017-2018) Kayleigh Bishop (2017-2019) John Dallard (2021-2022)