

# When Robots Should and Should Not Act Like a Person: Acceptance, Value, and Trust

NRI: FND: Human-Robot Collaboration with Distributed and Embodied Intelligence  
Grant 1734456 | August 2018

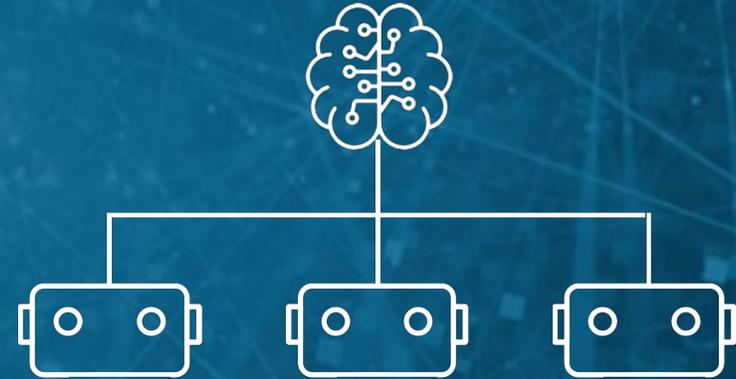
**John Zimmerman** & Aaron Steinfeld | Carnegie Mellon University



(1) One-for-one



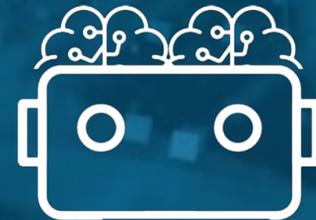
(2) One-for-all



(3) Re-embodiment



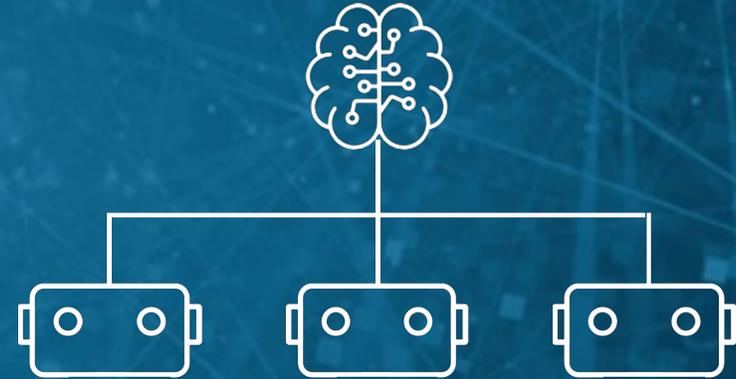
(4) Co-embodiment



(1) One-for-one



(2) One-for-all



(3) Re-embodiment



(4) Co-embodiment



# 16+ STUDIES

## ROMAN 2018

Luria, Michal, Jodi Forlizzi, and Jessica Hodgins. "The effects of eye design on the perception of social robots." In *2018 27th IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*, pp. 1032-1037. IEEE, 2018.

## HRI 2019

Reig, Samantha, Jodi Forlizzi, and Aaron Steinfeld. "Leveraging robot embodiment to facilitate trust and smoothness." In *2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pp. 742-744. IEEE, 2019.

Tan, Xiang Zhi, Samantha Reig, Elizabeth J. Carter, and Aaron Steinfeld. "From one to another: how robot-robot interaction affects users' perceptions following a transition between robots." In *2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*, pp. 114-122. IEEE, 2019.

## HRI 2020

Tan, Xiang Zhi, Michal Luria, and Aaron Steinfeld. "Defining Transfers Between Multiple Service Robots." In *Companion of the 2020 ACM/IEEE International Conference on Human-Robot Interaction*, pp. 465-467. 2020.

Reig, Samantha, Michal Luria, Janet Z. Wang, Danielle Oltman, Elizabeth Jeanne Carter, Aaron Steinfeld, Jodi Forlizzi, and John Zimmerman. "Not Some Random Agent: Multi-person interaction with a personalizing service robot." In *Proceedings of the 2020 ACM/IEEE international conference on human-robot interaction*, pp. 289-297. 2020.

## HRI 2021

Luria, Michal, Marius Hoggenmüller, Wen-Ying Lee, Luke Hespanhol, Malte Jung, and Jodi Forlizzi. "Research through Design Approaches in Human-Robot Interaction." In *Companion of the 2021 ACM/IEEE Conference on Human-Robot Interaction*, pp. 685-687. 2021.

Lee, Minha, Dimosthenis Kontogiorgos, Ilaria Torre, Michal Luria, Ravi Tejwani, Matthew J. Dennis, and Andre Pereira. "Robo-identity: Exploring artificial identity and multi-embodiment." In *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction*, pp. 718-720. 2021.

Carter, Elizabeth J., Samantha Reig, Xiang Zhi Tan, Gierad Laput, Stephanie Rosenthal, and Aaron Steinfeld. "Death of a Robot: social media reactions and language usage when a robot stops operating." In *2020 15th ACM/IEEE*

## HRI 2022

Reig, Samantha, Elizabeth J. Carter, Terrence Fong, Aaron Steinfeld, and Jodi Forlizzi. "Perceptions of Explicitly vs. Implicitly Relayed Commands Between a Robot and Smart Speaker." In *Proceedings of the 2022 ACM/IEEE International Conference on Human-Robot Interaction*, pp. 1012-1016. 2022.

## DIS 2018

Yang, Qian, Alex Scuito, John Zimmerman, Jodi Forlizzi, and Aaron Steinfeld. "Investigating how experienced UX designers effectively work with machine learning." In *Proceedings of the 2018 designing interactive systems conference*, pp. 585-596. 2018.

## DIS 2019

Luria, Michal, Samantha Reig, Xiang Zhi Tan, Aaron Steinfeld, Jodi Forlizzi, and John Zimmerman. "Re-Embodiment and Co-Embodiment: Exploration of social presence for robots and conversational agents." In *Proceedings of the 2019 on Designing Interactive Systems Conference*, pp. 633-644. 2019.

## DIS 2020

Luria, Michal. "Mine, Yours or Amazon's? Designing Agent Ownership and Affiliation." In *Companion Publication of the 2020 ACM Designing Interactive Systems*

Luria, Michal, Judeth Oden Choi, Rachel Gita Karp, John Zimmerman, and Jodi Forlizzi. "Robotic Futures: Learning about Personally-Owned Agents through Performance." In *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, pp. 165-177. 2020.

Cambre, Julia, Samantha Reig, Queenie Kravitz, and Chinmay Kulkarni. "All Rise for the AI Director" Eliciting Possible Futures of Voice Technology through Story Completion." In *Proceedings of the 2020 ACM Designing Interactive Systems Conference*, pp. 2051-2064. 2020.

## DIS 2021

Reig, Samantha, Michal Luria, Elsa Forberger, Isabel Won, Aaron Steinfeld, Jodi Forlizzi, and John Zimmerman. "Social robots in service contexts: Exploring the rewards and risks of personalization and re-embodiment." In *Designing Interactive Systems Conference 2021*, pp. 1390-1402. 2021.

## HAI 2021

Reig, Samantha, Elizabeth Jeanne Carter, Lynn Kirabo, Terrence Fong, Aaron Steinfeld, and Jodi Forlizzi. "Smart Home Agents and Devices of Today and Tomorrow: Surveying Use and Desires." In *Proceedings of the 9th International*

User Enactments

Speed Dating | Storyboard

Crowdworkers



Image: Wikimedia Commons







Image: Wikimedia Commons



Image: Wikimedia Commons

THE REVEREND AVERY C.  
**ALEXANDER**

ACADEMIC RESEARCH  
**HOSPITAL**



CHECK-IN / REGISTRATION FOR  
RADIOLOGY SERVICES:  
Mammogram, X-Ray, CT & Bone Scan  
Ultrasound, MRI, Neurodiagnostic, Sleep Lab  
CARDIOLOGY TESTS:  
Echo, Stress Test, ECG  
SURGERY:  
Pre-op and Discharge  
SCOPES:  
Endoscopy, Colonoscopy  
FREE CARE, MEDICAL RECORDS & BILLING  
ONCOLOGY CLINIC / RAD-ONC  
DENTISTRY TOWERS  
DENTAL CENTER  
DENTAL CENTER

? Information

HOSPITAL  
Elevators

Floor



Image: Wikimedia Commons



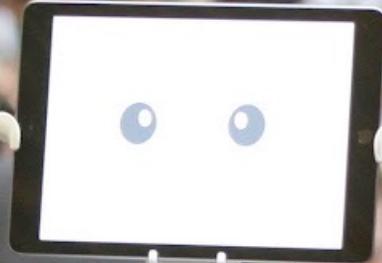
Image: Wikimedia Commons

Do NOT re-embody across wide differences in social status



Issue 1

How many *social presences*?



"ROBO

Issue 2

Who does the robot work for?





← Tweet

[#growingupwithsisters](#)

Every time my sister leaves the house



Home



Explore



Notifications



Messages



Bookmarks



Lists



Profile



More

Tweet

Image: Twitter



Image: Pixabay

# Issue 3

Can robots be owned, even when they are a service?

**Product:** exchange of money for ownership of thing

**Service:** intangible performance at point of delivery



Image: Wikimedia Commons

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