

# Zackory Erickson

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Robotics Institute  
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## Current Positions

**Assistant Professor**, Carnegie Mellon University, Robotics Institute

Sept 2021–present

## Education

**Ph.D., Robotics**

2016–2021

Georgia Institute of Technology  
Advisor: Charles C. Kemp

**M.S., Computer Science**

2020

Georgia Institute of Technology  
Advisor: Charles C. Kemp

**B.S., Computer Science, Mathematics (double major)**

2012–2016

University of Wisconsin–La Crosse

## Honors and Awards

**NVIDIA Academic Hardware Grant**

2022

*“Adapting to Distribution Shift in Deformable Manipulation with Assistive Robots”*

**NVIDIA Fellowship Finalist**

2020

**Best Student Paper Award**, IEEE International Conference on Rehabilitation Robotics (ICORR) 2019

*“Multidimensional Capacitive Sensing for Robot-Assisted Dressing and Bathing”*

**Best Paper Award in Service Robotics Finalist**, IEEE ICRA

2019

*“Classification of Household Materials via Spectroscopy”*

**President’s Fellowship**, Georgia Tech

2016–2020

**4th Heidelberg Laureate Forum**

2016

**Honorable Mention**, NSF GRFP

2016

**Strzelczyk Award**

2016

Awarded to the top graduating senior in the College of Science and Health  
for academic achievement and service to the campus and community.

**MIT CONVERGE**

2015

One of 18 prospective PhD students in the nation invited to tour MIT.

**Berkeley Engineering Preview Days**

2015

One of 14 prospective PhD students nationwide invited to tour UC Berkeley.

**Grace Olwell Memorial Endowment Fund Scholarship**

2015

**Xcel Energy Scholarship**

2015

**John and Lois Storlie Scholarship in Computer Science**

2014

**Undergraduate Research Grant**, UW–La Crosse

2013

<b>Scottish Rite Abbott Scholarship</b>	2013
<b>Dean's List, UW-La Crosse</b>	8 semesters

## Mentoring

### *PhD Students*

<b>Yufei Wang</b> , CMU, RI (co-advised with David Held)	2021–
<b>Akhil Padmanabha</b> , CMU, RI (co-advised with Carmel Majidi)	2021–
<b>Angela Chen</b> , CMU, MechE (co-advised with Melisa Orta Martinez)	2021–

### *M.S. Students*

<b>Fukang Liu</b> , CMU, MechE	2021–
<b>Vaidehi Patil</b> , CMU, RI	2021–
<b>MRSD Project: Telepresence Mobile Manipulators</b> , CMU, RI	2021–
Students: Shivani Sivakumar, Jashkumar Diyora, Shruti Gangopadhyay, Prakhar Pradeep, Jigarkumar Patel	
<b>Pratyusha Karnati</b> , Georgia Tech, CS	2020–2021
Current: Google X Robotics	
<b>Yijun (Esther) Gu</b> , Georgia Tech, CS	2019–2021
Current: PhD Student at Imperial College London	

### *Undergraduate Students*

<b>Qin (Alicia) Wang</b> , CMU, CS	2022–
<b>Daphne Han</b> , CMU, CB	2022–
<b>Alexandra (Sasha) Wald</b> , CMU, CS	2021–
<b>Kavya Puthuveetil</b> , Virginia Commonwealth University, BME	2021–
<b>Samantha Mutiti</b> , Georgia Tech, BME	2021
<b>Holden Schaffer</b> , Georgia Tech, CS	2020–2021
<b>Siyun (Sylvia) Li</b> , Georgia Tech, CS	2018–2019
<b>Jiaqi (Julia) Chen</b> , Georgia Tech, CS	2018
Current: PhD Student at ETH Zurich	
<b>Katelyn Sosnowski</b> , University of Arizona, BME	2018
Current: BME PhD Student at University of Arizona	
<b>Mallak Taleb</b> , University of Michigan, BME	2018
<b>Bharat Srirangam</b> , Georgia Tech, CS	2018–2020
Current: Woot, Inc.	
<b>Eliot Xing</b> , Georgia Tech, CE	2017–
<b>Vamsee Gangaram</b> , Georgia Tech, CS	2017–2020
Current: Microsoft	
<b>Jong Hwa (Austin) Jang</b> , Georgia Tech, CS	2017–2018
<b>Maggie Collier</b> , University of Alabama at Birmingham, BME	2017

Current: Robotics PhD student at CMU, NDSEG fellow

**Nathan Luskey**, Georgia Tech, BME

2017–2018

Current: MSCS student at CMU

## Teaching

**16-741: Mechanics of Manipulation**, CMU

Fall 2022

**16-887: Robotic Caregivers and Intelligent Physical Collaboration**, CMU

Spring 2022

**Robotic Caregivers (BMED 4833/8813)**, Co-instructor, Georgia Tech

Spring 2021

**Robotic Caregivers (BMED 4803/8813)**, Co-developer and instructor, Georgia Tech

Spring 2020

## Invited Talks

*Robotic Caregiving and Human Interaction*

16-311: Introduction to Robotics

2022

05-899: Special Topics in HCI: Accessibility

2021

*Capacitive Servoing for Physically Assistive Robotics*

4th Workshop on Proximity Perception in Robotics, IROS

2021

*Robotic Caregivers—Sensing, Simulation, and Physical Human-Robot Interaction*

Carnegie Mellon University

2021

University of Pennsylvania

2021

*Physics-based Cloth Simulation and Learning Towards Robotic Caregiving*

Workshop on Representing and Manipulating Deformable Objects, ICRA

2021

*Robotic Caregivers—Recent Advances in Physics-based Simulation*

Medical Robotics Club, Georgia Tech

2021

*Robot-Assisted Dressing*

Workshop on Smart and Robotic Homes, RESNA

2018

*Multimodal Anomaly Detection*

Mathematics Colloquium, UW–La Crosse

2015

## Academic Service

**Co-Chair** — ICRA 2022 session on Physical HRI

2022

**Area Chair** — Conference on Robot Learning (CoRL)

2022

**Associate Editor**

IEEE Conference on Robot and Human Interactive Communication (RO-MAN)

2021, 2022

**Reviewer**

T-RO, ICRA, IROS, RA-L, Humanoids, HRI, Sensors, RO-MAN, Science Robotics

**ICRA Workshop Organizer**

Learning for Caregiving Robots

2021

**Seminar Organizer**, Georgia Tech

Life as a Professor: Student Advising and Recruiting

2020

Life as a Professor: Funding 101

2019

Life as a Professor: Starting a Start-Up

2018

## Panelist

Graduate Intro to Robotics Research, Georgia Tech	2018
Summer Undergraduate Research Experience (SURE) Program, Georgia Tech	2017–2019

## RoboGrads (robotics graduate student organization), Georgia Tech

Vice President for Robotics PhD	2019–2020
President	2018–2019

## Outreach

<b>RoboGrads</b> , Vice President of Outreach, Georgia Tech	2017–2018
Organized K-12 outreach events for over 30 robotics labs at Georgia Tech	
<b>Biomedical Robotics Club</b> , Mentor, Georgia Tech	2016–2019
Mentoring over 50 undergraduate students in how to research and build assistive devices and robots for people with impairments.	
<b>FIRST Lego League</b> , Judge	2015–2021
<b>CS Outreach &amp; Diversity Club</b> , UW–La Crosse	2015–2016
Organizing CS and robotics events for K-12 students.	
<b>FIRST Robotics</b> , Mentor, Central High School and Holmen High School	2012–2016

## Peer-Reviewed Publications (Conferences and Journals)

- [1] **Bodies Uncovered: Learning to Manipulate Real Blankets Around People via Physics Simulations**  
*IEEE Robotics and Automation Letters (RA-L)*, 2022  
Kavya Puthuveetil, Charles C. Kemp, and Zackory Erickson
- [2] **Assistive VR Gym: Interactions with Real People to Improve Virtual Assistive Robots**  
*IEEE Conference on Robot and Human Interactive Communication (RO-MAN)*, 2020  
Zackory Erickson\*, Yijun Gu\*, and Charles C. Kemp
- [3] **Multimodal Material Classification for Robots using Spectroscopy and High Resolution Texture Imaging**  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020  
Zackory Erickson, Eliot Xing, Bharat Srirangam, Sonia Chernova, and Charles C. Kemp
- [4] **Bodies at Rest: 3D Human Pose and Shape Estimation from a Pressure Image using Synthetic Data**  
*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2020 (Oral)  
Henry M. Clever, Zackory Erickson, Ariel Kapusta, Greg Turk, C. Karen Liu, and Charles C. Kemp
- [5] **Assistive Gym: A Physics Simulation Framework for Assistive Robotics**  
*IEEE International Conference on Robotics and Automation (ICRA)*, 2020  
Zackory Erickson, Vamsee Gangaram, Ariel Kapusta, C. Karen Liu, and Charles C. Kemp
- [6] **Learning to Collaborate from Simulation for Robot-Assisted Dressing**  
*IEEE Robotics and Automation Letters (RA-L)*, 2020  
Alexander Clegg, Zackory Erickson, Patrick Grady, Greg Turk, Charles C. Kemp, and C. Karen Liu
- [7] **Active Robot-Assisted Feeding with a General-Purpose Mobile Manipulator: Design, Evaluation, and Lessons Learned**  
*Robotics and Autonomous Systems*, 2020  
Daehyung Park, Yuuna Hoshi, Harshal P. Mahajan, Ho Keun Kim, Zackory Erickson, Wendy A. Rogers, Charles C. Kemp

- [8] **Multidimensional Capacitive Sensing for Robot-Assisted Dressing and Bathing**  
*IEEE International Conference on Rehabilitation Robotics (ICORR)*, 2019 (**Best Student Paper**)  
 Zackory Erickson, Henry M. Clever, Vamsee Gangaram, Greg Turk, C. Karen Liu, and Charles C. Kemp
- [9] **Classification of Household Materials via Spectroscopy**  
*IEEE Robotics and Automation Letters (RA-L)*, 2019 (**Best Paper Award in Service Robotics Finalist at ICRA 2019**)  
 Zackory Erickson, Nathan Luskey, Sonia Chernova, and Charles C. Kemp
- [10] **Personalized Collaborative Plans for Robot-Assisted Dressing via Optimization and Simulation**  
*Autonomous Robots*, 2019  
 Ariel Kapusta, Zackory Erickson, Henry M. Clever, Wenhao Yu, C. Karen Liu, Greg Turk, and Charles C. Kemp
- [11] **Autonomous Tool Construction Using Part Shape and Attachment Prediction**  
*Robotics: Science and Systems (RSS)*, 2019  
 Lakshmi Nair, Nithin Srikanth, Zackory Erickson, Sonia Chernova
- [12] **Deep Haptic Model Predictive Control for Robot-Assisted Dressing**  
*IEEE International Conference on Robotics and Automation (ICRA)*, 2018  
 Zackory Erickson, Henry M. Clever, Greg Turk, C. Karen Liu, and Charles C. Kemp
- [13] **Tracking Human Pose During Robot-Assisted Dressing using Single-Axis Capacitive Proximity Sensing**  
*IEEE Robotics and Automation Letters (RA-L)*, 2018  
 Zackory Erickson, Maggie Collier, Ariel Kapusta, and Charles C. Kemp
- [14] **3D Human Pose Estimation on a Configurable Bed from a Pressure Image**  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018  
 Henry M. Clever, Ariel Kapusta, Daehyung Park, Zackory Erickson, Yash Chitalia, Charles C. Kemp
- [15] **Semi-Supervised Haptic Material Recognition for Robots using Generative Adversarial Networks**  
*Conference on Robot Learning (CoRL)*, 2017  
 Zackory Erickson, Sonia Chernova, and Charles C. Kemp
- [16] **What Does the Person Feel? Learning to Infer Applied Forces During Robot-Assisted Dressing**  
*IEEE International Conference on Robotics and Automation (ICRA)*, 2017  
 Zackory Erickson, Alexander Clegg, Wenhao Yu, Greg Turk, C. Karen Liu, and Charles C. Kemp
- [17] **Learning to Navigate Cloth using Haptics**  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017  
 Alexander Clegg, Wenhao Yu, Zackory Erickson, C. Karen Liu, and Greg Turk
- [18] **A Multimodal Execution Monitor with Anomaly Classification for Robot-Assisted Feeding**  
*IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017  
 Daehyung Park, Hokeun Kim, Yuuna Hoshi, Zackory Erickson, Ariel Kapusta, and Charles C. Kemp
- [19] **Multimodal Execution Monitoring for Anomaly Detection During Robot Manipulation**  
*IEEE International Conference on Robotics and Automation (ICRA)*, 2016  
 Daehyung Park, Zackory Erickson, Tapomayukh Bhattacharjee, and Charles C. Kemp