Zackory Erickson

zackory@cmu.edu
zackory.com

Carnegie Mellon University
Robotics Institute
5000 Forbes Avenue
Pittsburgh, PA 15213

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 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

Scottish Rite Abbott Scholarship   2013

Dean's List, UW–La Crosse   8 semesters

Mentoring

PhD Students

Yufei Wang, CMU, RI (co-advised with David Held) · 2021–

Akhil Padmanabha, CMU, RI (co-advised with Carmel Majidi) · 2021–

Angela Chen, CMU, MechE (co-advised with Melisa Orta Martinez) · 2021–

M.S. Students

Fukang Liu, CMU, MechE · 2021–

Vaidehi Patil, CMU, RI · 2021–

MRSD Project: Telepresence Mobile Manipulators, CMU, RI · 2021–
  Students: Shivani Sivakumar, Jashkumar Diyora, Shruti Gangopadhyay, Prakhar Pradeep, Jigarkumar Patel

Pratyusha Karnati, Georgia Tech, CS · 2020–2021
  Current: Google X Robotics

Yijun (Esther) Gu, Georgia Tech, CS · 2019–2021
  Current: PhD Student at Imperial College London

Undergraduate Students

Alexandra (Sasha) Wald, CMU, CS · 2021–

Kavya Puthuveetil, Virginia Commonwealth University, BME · 2021–

Samantha Mutiti, Georgia Tech, BME · 2021

Holden Schaffer, Georgia Tech, CS · 2020–2021

Siyan (Sylvia) Li, Georgia Tech, CS · 2018–2019

Jiaqi (Julia) Chen, Georgia Tech, CS · 2018
  Current: PhD Student at ETH Zurich

Katelyn Sosnowski, University of Arizona, BME · 2018
  Current: BME PhD Student at University of Arizona

Mallak Taleb, University of Michigan, BME · 2018

Bharat Srirangam, Georgia Tech, CS · 2018–2020
  Current: Woot, Inc.

Eliot Xing, Georgia Tech, CE · 2017–

Vamsee Gangaram, Georgia Tech, CS · 2017–2020
  Current: Microsoft

Jong Hwa (Austin) Jang, Georgia Tech, CS · 2017–2018

Maggie Collier, 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

16-887: 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

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

Associate Editor
IEEE Conference on Robot and Human Interactive Communication (RO-MAN) — 2021–

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

RoboGrads, Vice President of Outreach, Georgia Tech   2017–2018
    Organized K-12 outreach events for over 30 robotics labs at Georgia Tech

Biomedical Robotics Club, Mentor, Georgia Tech   2016–2019
    Mentoring over 50 undergraduate students in how to research and build assistive
    devices and robots for people with impairments.

FIRST Lego League, Judge   2015–2021

CS Outreach & Diversity Club, UW–La Crosse   2015–2016
    Organizing CS and robotics events for K-12 students.

FIRST Robotics, 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