

# Zackory Erickson

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## Research Interests

My research encompasses assistive robotics, haptics, machine learning, and human-robot interaction. I am designing techniques that enable robots to more intelligently interact with and assist people through haptic perception (the sense of touch) and data-driven learning.

## Education

**Georgia Institute of Technology** 2016–  
Ph.D. in Robotics  
Advisor: Charles C. Kemp

**University of Wisconsin–La Crosse** 2012–2016  
B.S. in Computer Science, Mathematics (double major) · GPA: 3.93

## Publications

### *Journal*

[13] **Z. Erickson**, M. Collier, A. Kapusta, and C. C. Kemp, "Tracking Human Pose During Robot-Assisted Dressing using Single-Axis Capacitive Proximity Sensing," *IEEE Robotics and Automation Letters (RA-L)*, 2018.

### *Conference*

[12] H. M. Clever, A. Kapusta, D. Park, **Z. Erickson**, Y. Chitalia, C. C. Kemp, "Estimating 3D Human Pose on a Configurable Bed from a Single Pressure Image," *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018.

[11] **Z. Erickson**, H. M. Clever, G. Turk, C. K. Liu, and C. C. Kemp, "Deep Haptic Model Predictive Control for Robot-Assisted Dressing," *2018 IEEE International Conference on Robotics and Automation (ICRA)*, 2018.

[10] **Z. Erickson**, S. Chernova, and C. C. Kemp, "Semi-Supervised Haptic Material Recognition for Robots using Generative Adversarial Networks," in *1st Annual Conference on Robot Learning (CoRL)*, 2017.

[9] **Z. Erickson**, A. Clegg, W. Yu, G. Turk, C. K. Liu, and C. C. Kemp, "What Does the Person Feel? Learning to Infer Applied Forces During Robot-Assisted Dressing," in *2017 IEEE International Conference on Robotics and Automation (ICRA)*, 2017.

- [8] A Clegg, W. Yu, **Z. Erickson**, C. K. Liu, and G. Turk, "Learning to Navigate Cloth using Haptics," in *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017.
- [7] D. Park, H. Kim, Y. Hoshi, **Z. Erickson**, A. Kapusta, and C. C. Kemp, "A Multimodal Execution Monitor with Anomaly Classification for Robot-Assisted Feeding," in *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2017.
- [6] D. Park, **Z. Erickson**, T. Bhattacharjee, and C. C. Kemp, "Multimodal Execution Monitoring for Anomaly Detection During Robot Manipulation," in *2016 IEEE International Conference on Robotics and Automation (ICRA)*, 2016.
- [5] **Z. Erickson** and S. Foley, "On Ramp to Parallel Computing," in *Midwest Instruction and Computing Symposium (MICS)*, 2014.

#### Peer-Reviewed Workshops

- [4] **Z. Erickson**, M. Collier, A. Kapusta, and C. C. Kemp, "Investigating Capacitive Proximity Sensing for Tracking Human Pose During Robot-Assisted Dressing," in *IROS 2017 workshop on Assistance and Service Robotics in a Human Environment*, 2017.
- [3] D. Park, Y. Kim, **Z. Erickson**, and C. C. Kemp, "Towards Assistive Feeding with a General-Purpose Mobile Manipulator," in *ICRA 2016 workshop on Human-Robot Interfaces for Enhanced Physical Interactions*, 2016.

#### Preprint

- [2] **Z. Erickson**, N. Luskey, S. Chernova, and C. C. Kemp, "Classification of Household Materials via Spectroscopy," *arXiv*, 2018.
- [1] A. Kapusta, **Z. Erickson**, H. M. Clever, W. Yu, C. K. Liu, G. Turk, and C. C. Kemp, "Task Optimization of Robot-Assisted Dressing," *submitted journal*, 2018.

#### Conference Poster

- Z. Erickson and S. Foley, On Ramp to Parallel Computing. *Celebration of Student Research*, UW-La Crosse, 2014.
- Z. Erickson and S. Foley, On Ramp to Parallel Computing. *UW System Symposium for Undergraduate Research and Creative Activity*, UW–Milwaukee, 2014.

#### Invited Talks

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| Robot-Assisted Dressing, Smart and Robotic Homes Workshop, RESNA   | 2018 |
| Multimodal Anomaly Detection, Mathematics Colloquium, UW–La Crosse | 2015 |

#### Honors and Awards

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| President's Fellowship – Georgia Tech  | 2016– |
| 4th Heidelberg Laureate Forum  | 2016  |
| Invited to Heidelberg to meet Turing Award winners, Fields Medalists, Abel Prize winners, and young researchers from around the world. |       |

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 graduate students in the nation invited to tour MIT.	
Berkeley Engineering Preview Days	2015
One of 14 prospective graduate 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	2013
Scottish Rite Abbott Scholarship	2013
Dean’s List, UW–La Crosse	8 Semesters

## Mentoring

### *Undergraduate Students*

Katelyn Sosnowski, University of Arizona, BME	2018–
Mallak Taleb, University of Michigan, BME	2018–
Bharat Srirangam, Georgia Tech, CS	2018–
Eliot Xing, Georgia Tech, CE	2017–
Jong Hwa (Austin) Jang, Georgia Tech, CS	2017–
Vamsee Gangaram, Georgia Tech, CS	2017–
Maggie Collier, University of Alabama at Birmingham, BME	2017
Nathan Luskey, Georgia Tech, BME	2017–2018

## Experience

Computer Science Tutor, UW–La Crosse	2016
Led weekly recitations for new computer science students.	
Intern, Watlow	2013
Developed unit test suites and helped establish test automation by setting up build servers, continuous integration servers, and a mocking framework.	
Software Developer, Office of Residence Life, UW–La Crosse	2012–2013
Worked on software development for residence life web and desktop applications.	

## Academic Service

### *Refereeing: Conferences and Journals*

IEEE Robotics and Automation Letters (RA-L)	2018
ACM/IEEE International Conference on Human-Robot Interaction (HRI)	2017

### *Other Service*

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

## Outreach

RoboGrads, President Leading the executive board for RoboGrads, a graduate student organization for robotics researchers at Georgia Tech.	2018–
RoboGrads, Vice President of Outreach Coordinated tours and outreach events for over 30 robotics labs at Georgia Tech. Organized outreach events and robotics demos at schools, libraries, and museums in the greater Atlanta area.	2017–2018
Biomedical Robotics Club Mentor Helping 50+ undergraduate students learn about and build assistive devices and robots for people with impairments.	2016–
Judge, FIRST Lego League	2015–
CS Outreach & Diversity Club, CS and robotics events for K-12 students.	2015–2016
Mentor, FIRST Robotics, Central High School and Holmen High School	2012–2016

## Selected Media Coverage

Robot Teaches Itself How to Dress People Georgia Tech News, BBC News, CNET, ACM TechNews	2018
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