

Alyssa Kubota

Computer Science and Engineering
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RESEARCH INTERESTS Human-robot interaction, Longitudinal behavior adaptation, Artificial intelligence,
Community health technology, Human activity recognition

EDUCATION

Ph.D., Computer Science and Engineering June 2022
University of California San Diego (Expected)
Advisor: Dr. Laurel D. Riek
Research Topic: Robot Behavior Adaptation for Longitudinal HRI

M.S., Computer Science and Engineering December 2020
University of California San Diego

B.S., Computer Science May 2017
Harvey Mudd College – Claremont, CA
Graduated with Distinction, Honors in Computer Science

AWARDS AND HONORS

NSF SCH Workshop - Smart Health in the AI and COVID Era Grant 2021
HRI Pioneers Workshop Travel Grant 2021
CRA-W Grad Cohort Workshop Travel Grant 2019
MIT Summer School on Cognitive Robotics Travel Grant 2018
Robotics: Science and Systems (RSS), Women in Robotics Travel Grant 2018

HMC Honors in Computer Science – Outstanding achievement in CS 2017
HMC Graduated with Distinction – Cumulative GPA over 3.30 2017
HMC Center for Environmental Studies Research Grant 2015
HMC Dean's List 2014 - 17

PUBLICATIONS

Refereed Conference and Journal Publications

11. **Kubota, A.**, Pourebadi, M., Banh, S., Kim, S., and Riek, L. D. (2021) "Somebody That I Used to Know: The Risks of Personalizing Robots for Dementia Care". In *Proceedings of We Robot 2021*. [Acceptance rate: 15%]
10. **Kubota, A.** and Riek, L. D. (2021) "Methods for Robot Behavior Adaptation for Cognitive Neurorehabilitation". In *Annual Review of Control, Robotics, and Autonomous Systems*.
9. **Kubota, A.**, Peterson, E. I., Rajendren, V., Kress-Gazit, H., and Riek, L. D. (2020) "JESSIE: Synthesizing Social Robot Behaviors for Personalized Neurorehabilitation and Beyond". In *Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. [Acceptance rate: 23.6%]
8. Taylor, A., Lee, H., **Kubota, A.**, and Riek, L. D. (2019) "Coordinating Clinical Teams: Using Robots to Empower Nurses to Stop the Line". In *Proceedings of the ACM Conference on Computer-Supported Cooperative Work (CSCW)*. [Acceptance rate: 30%]

Best Paper Award Honorable Mention (Top 5% of submissions)

7. **Kubota, A.**, Iqbal, T., Shah, J. A., and Riek, L. D. (2019) "Activity recognition in manufacturing: The roles of motion capture and sEMG+inertial wearables in detecting fine vs. gross motion". In *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA)*.
6. Frank, A., **Kubota, A.**, and Riek, L. D. (2019) "Wearable activity recognition for robust human-robot teaming in safety-critical environments via hybrid neural networks". In *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*.

Refereed Workshop Publications

5. **Kubota, A.** and Riek, L. D. (2021) "Behavior Adaptation for Robot-Assisted Neurorehabilitation". In *Proceedings of the ACM/IEEE International Conference on Human-Robot Interaction (HRI) Pioneers Workshop*. [Acceptance rate: 37%]
4. Banh, S., Zheng, E., **Kubota, A.**, and Riek, L. D. (2021) "A Robot-based Gait Training System for Post-Stroke Rehabilitation". In *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction (HRI '21 Companion) Late Breaking Reports Workshop*.

Refereed Abstracts and Posters

3. **Kubota, A.**, Iqbal, T., Shah, J. A., and Riek, L. D. (2019) "Motion capture and sEMG+inertial wearables in detecting fine vs. gross motion". *Southern California Robotics Symposium (SCR)*.

2. **Kubota, A.**, Iqbal, T., Shah, J. A., and Riek, L. D. (2019) "Human activity recognition via motion capture and wearable sensors". *The Computing Research Association Widening Participation (CRA-WP), Grad Cohort Workshop for Women*.

1. **Kubota, A.** and Riek, L. D. (2018) "Recognition of Manufacturing Activities using Deep Learning and Wearable Sensors". *Robotics: Science and Systems (RSS), Women in Robotics Workshop*.

RESEARCH EXPERIENCE

Robots for Dementia Caregiving and Neurorehabilitation 2019 - Present

- Empowered clinicians to program social robots for cognitive training via an end-to-end robotic system uniting control synthesis and tangible programming.
- Refined a social robot for neurorehabilitation with preference learning algorithms.
- Developed a demonstrative musical robot to facilitate food intake recall for people with dementia.
- Evaluated the efficacy of our robot in assisting dementia caregivers during mealtimes through interviews with stakeholders.

Robots for Post-stroke Gait Rehabilitation 2020 - Present

- Designed an embodied, interactive robotic system for post-stroke rehabilitation to provide adaptive performance feedback and explore how feedback mechanisms impact human motor learning.

Coordinating Human-Robot Teams in Uncertain Environments 2017 - 19

- Developed an activity recognition system to enable robots to detect human activity via non-visual sensors and deep learning techniques.
- Spearheaded assessment of sensor modality efficacy when recognizing different motion granularities to discern the appropriate modality for diverse situations.
- Investigated augmentation of non-visual inertial data with muscle activity data to unobtrusively recognize fine movement.

Hotel Recommender System – American Express Clinic Project 2016 - 17

Advisor: Dr. Zachary Dodds

- Led development of an intelligent hotel recommendation system using machine learning algorithms and improved accuracy by 17%.
- Revealed unique relationships between hotel preferences and attributes from customer data.

	Computing for Active Transportation	2015
	Advisor: Dr. Julie Medero	
	<ul style="list-style-type: none"> ● Pioneered a "walking school bus" routing program that performs automatic assignment of students to local meeting locations. ● Improved safety while decreasing time and air pollution associated with driving students to school. ● Laid the foundation for extensive work enabling children to safely walk and bike to school. 	
PROFESSIONAL EXPERIENCE	Facebook , Seattle, WA	2016
	<i>Security Infrastructure – Program Analysis Software Intern</i>	
	<ul style="list-style-type: none"> ● Engineered a remote client and proxy server for static analysis. ● Surveyed users and developed a user-friendly proxy server web tool. ● Explored and implemented new static analysis query types. 	
TEACHING EXPERIENCE	University of California San Diego	2019 - 20
	<i>Teaching Assistant</i>	
	Introduction to Human Robot Interaction	
	Harvey Mudd College	2014 - 17
	<i>Teaching Assistant</i>	
	Introduction to Computer Science	
	Harvey Mudd College	2014 - 17
	<i>Teaching Assistant</i>	
	Principles of Computer Science	
	Harvey Mudd College	2016 - 17
	<i>Teaching Assistant</i>	
	Databases	
SUPERVISEES	Soyon Kim (B.S. Mathematics-Computer Science)	2020 - Present
	Sharon Banh (B.S. Cognitive Science)	2020 - Present
	Ashwin Rao (B.S. Computer Engineering)	2020 - Present
	Emily Zheng (B.S. Computer Science)	2020
	Vaishali Rajendren (M.S. Electrical and Computer Engineering)	2019 - 2021
	Emma Peterson (B.S. Computer Science & Mathematics)	2019

ACADEMIC SERVICE	Web/Publicity Chair. ACM/IEEE Conference on Human Robot Interaction (HRI)	2022
	Reviewer. Robotics Science and Systems (RSS)	2021
	Reviewer. Human Factors and Ergonomics Society (HFES) Aging Technical Group	2021
	Reviewer. ACM/IEEE Conference on Human Robot Interaction (HRI)	2020 - 21
	Reviewer. ACM Transactions on Human-Robot Interaction (THRI)	2020 - 21
	Student Volunteer. HRI Program Committee Meeting	2020
	Reviewer. ACM Transactions on Internet Technology (TOIT)	2020
	Reviewer. IEEE Transactions on Robotics (T-RO)	2019 - 21
PROFESSIONAL AFFILIATIONS & LEADERSHIP	UC San Diego Graduate Robotics Association	2017 - Present
	Community Outreach Chair (2019 - Present)	
	UC San Diego CSE Department Visit Day Robotics Group Lead	2018 - Present
	UC San Diego Graduate Women in Computing Mentor (2019 - Present)	2017 - Present
	Rancho del Rey Middle School VEX Robotics Mentor	2018 - 2019
INVITED TALKS AND DEMOS	NSF, Smart and Connected Health (SCH)	2021
	Smart Health in the AI and COVID Era Workshop Invited Talk	
	UC San Diego, Warren College Honors Society	2020
	PhD Panel Invited Panelist	
	Casa Romantica Lecture Series	2019
	Robots for Public Good Invited Panelist	
	UC San Diego, Computer Science and Engineering (CSE)	2019 - 20
	Research Open House Invited Demonstration	
	Harvey Mudd College	2018 - 19
	Research Open House Invited Panelist	
Contextual Robotics Institute	2017 - 19	
Research Forum Invited Demonstration		