

Thomas R Groechel

CONTACT INFORMATION	3425 Motor Ave #310 Los Angeles, CA 90034	<i>Mobile:</i> 248-921-3254 <i>E-mail:</i> groechel@usc.edu
RESEARCH INTERESTS	Socially Assistive Robot (SAR) Tutors, Virtual and Augmented Reality Robotics	
EDUCATION	University of Southern California , Los Angeles, CA – Ph.D. Computer Science – Research Advisor: Professor Maja J. Matarić	<i>July 2018 - Present</i>
	University of Michigan , Ann Arbor, MI – B.S.E. Computer Science – Undergraduate Research Advisor: Professor Odest C. Jenkins	<i>Sep 2014 - May 2018</i>
EXPERIENCE	Ph.D. Researcher, USC Interaction Lab , Los Angeles, CA – Created mixed reality robot tutor aiming to teach kids through movement – Developed on and deployed telepresence robots in schools for home-bound students – Supported in-home deployments of robot tutor for students with ASD	<i>July 2018 - Present</i>
	UG Researcher, UofM 4Progress Lab , Ann Arbor, MI – Developed 2D SLAM algorithm using Iterative Closest Point visualization – Implemented Stochastic Gradient Descent for loop closure based on <i>Fast Iterative Alignment of Pose Graphs with Poor Initial Estimates</i> (Olson et al.) using the Fetch	<i>May 2016 - May 2018</i>
	Staff Development Czar and TA , Ann Arbor, MI – Created Staff Development program for teaching staff of 30 graduate and undergraduate TAs to improve teaching skills of new staff members and seasoned veterans – Structured 35 student lab session to review and teach concepts in a specialized alternative to traditional lecture, tailoring for active learning – Produced class specific help and tip videos to give students an extra resource to common issues in a newer format	<i>Sep 2016 - May 2018</i>
	Robotics Software Intern at TRAC Labs , Houston, TX – Adapted local mapping and navigation to move TRACBot, a mobile-manipulator, to maneuver dynamically through obstacles such as doors and people in order to reach/use items in Affordance Template library – Refitted and rebuilt action server nodes into custom system to perform dynamic re-planning based on real time observations	<i>Summer 2017</i>
STUDENT RESEARCH MENTORING	Current Undergraduates – Chloe Kuo Merit Research Fellow, USC Computer Science – Julia Cordero Merit Research Fellow, USC Computer Science – Roddur Dasgupta USC Computer Science – Haemin Lee USC Computer Science – Kartik Mahajan Merit Research Fellow, USC Computer Science – Radhika Agrawal Merit Research Fellow, USC Computer Science – Nisha Chatwani Merit Research Fellow, USC Computer Science – Adam Wathieu Georgetown University Computer Science – Annika Modi USC SHINE Program, High School Student – Jacob Zhi USC SHINE Program, High School Student	

Previous Students

- Roxanna Pakkar Merit Research Fellow, USC Electrical Engineering
- Zhonghao Shi USC Computer Science
- İpek Gökten USC SHINE Program, High School Student
- Mena Hassan USC SHINE Program, High School Student
- Adnan Karim SURE Student, University of Calgary Computer Science
- Ryan Stevenson USC Computer Science Games
- Ashley Perez USC SHINE Program, High School Student
- Bryan Pyo USC SHINE Program, High School Student

CONTRIBUTIONS TO GRANT PROPOSALS

NSF NRI 2.0 - Communicate, Share, Adapt: A Mixed Reality Framework for Facilitating Robot Integration and Customization

- Contributed significant ideas and content to proposal based upon ongoing Ph.D. work in Mixed Reality SAR
- Research grant awarded in fall 2019

K-12 EDUCATIONAL OUTREACH

Microsoft TEALS Teaching Volunteer

Los Angeles Center for Enriched Studies, Los Angeles, CA *July 2019-Present*

USC Robotics Academy Judge

University of Southern California, Los Angeles, CA *Dec 2018/19, Apr 2019*

Robotics Family Night

Monterey Hills Elementary, Los Angeles, CA *May 2019, Nov 2019*

The Help Group STEM³ Academy Visit

STEM³ Academy, Los Angeles, CA *June 2019*

VEX Robotics Team Leader

Clifford Street Elementary, Los Angeles, CA *Oct 2018 - Feb 2019*

HONORS AND AWARDS

USC Viterbi Undergraduate Research Mentoring Award

May 2020

USC CSCI Best Research Assistant

May 2020

USC Robotics George Bekey Service Award

May 2019

PUBLICATIONS

- [1] Naomi T. Fitter, Luke M. Rush, Elizabeth Cha, **Thomas R. Groechel**, Maja J. Matarić, and Leila Takayama “Closeness is Key over Long Distances: Effects of Interpersonal Closeness on Telepresence Experience”, Accepted in *2020 ACM/IEEE International Conference on Human Robot Interaction (HRI '20)*, Cambridge, UK, Mar-2020.
- [2] Tom Williams, Daniel Szafir, Tathagata Chakraborti, Ong Soh Khim, Eric Rosen, Serena Booth, **Thomas R. Groechel**, “Virtual, Augmented, and Mixed Reality for Human-Robot Interaction (VAM-HRI)”, Accepted in *Companion of the 2020 ACM/IEEE International Conference on Human-Robot Interaction (Companion-HRI '20)*, Cambridge, UK, Mar-2020.
- [3] Matthew Rueben, **Thomas R. Groechel**, Yulun Zhang, Gisele Ragusa, Maja J. Matarić “Increasing Telepresence Robot Operator Awareness of Speaking Volume Appropriateness: Initial Model Development”, Accepted in *Companion of the 2020 ACM/IEEE International Conference on Human-Robot Interaction (Companion-HRI '20)*, Cambridge, UK, Mar-2020.
- [4] **Thomas R. Groechel**, Zhonghao Shi, Roxanna Pakkar, and Maja J. Matarić “Using Socially Expressive Mixed Reality Arms for Enhancing Low-Expressivity Robots”, In *2019 IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN '19)*, New Delhi, India, Oct-2019.

Robotics Society of Japan and Korean Robotics Society Distinguished Interdisciplinary Research Award Finalist (3 nominated out of 206)

TALKS, DEMOS, AND PRESENTATIONS	Live Mixed Reality Demo and How it Applies to Socially Assistive Robotics USC Remote Robotics Open House Via Zoom <i>19 May 2020</i> Communicate Share, Adapt: A Mixed Reality Framework for Facilitation Robot Integration and Customization Poster Presentation NSF NRI 2.0 PI Meeting, Arlington, VA <i>27 Feb 2020</i> Human-Robot Interaction & Socially Assistive Robots Laguna Woods Village, Laguna Woods, CA <i>19 Feb 2020</i> USC Robotics Visions & Voices: Emotionally Intelligent Robots Demo University of Southern California, Los Angeles, CA <i>24 Oct 2019</i> SAR Through Augmented Reality Extensions Demo and Discussion Public Affairs Council, Laguna Beach, CA <i>8-9 Jan 2019</i>
PROFESSIONAL SERVICE	Workshop Organizer <ul style="list-style-type: none">– “The Third International Workshop on Virtual, Augmented, and Mixed Reality for Human-Robot Interaction (VAM-HRI)”, Accepted <i>2020 ACM/IEEE International Conference on Human Robot Interaction (HRI '20)</i> Reviewer <ul style="list-style-type: none">– VAM-HRI Workshop at HRI 2020– Science Robotics 2018 Women in US Academic Research in Robotics Website <i>July 2019 - Present</i> <ul style="list-style-type: none">– Designed and implemented, under Prof. Matarić’s supervision, an actively curated and monitored list of current women in US academic robotics research– Link: us-women-in-robotics-research.github.io