Thomas R Groechel

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RESEARCH INTERESTS

Socially Assistive Robot (S.A.R.) Tutors, Virtual and Augmented Reality Robotics

EDUCATION

University of Southern California, Los Angeles, CA   *July 2018 - Present*
– Ph.D. Computer Science,
– Research Advisor: Professor Maja J. Matarić

University of Michigan, Ann Arbor, MI   *Sep 2014 - May 2018*
– B.S.E. Computer Science
– Undergraduate Research Advisor: Odest C. Jenkins

EXPERIENCE

Graduate Researcher Interaction Lab Los Angeles, CA   *July 2018 - Present*
– 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

UG Researcher 4Progress Lab, Ann Arbor, MI   *May 2016 - May 2018*
– Developed 2-D S.L.A.M. algorithm using Iterative Closest Point visualization
– Implemented Stochastic Gradient Descent to perform loop closure with Fetch 2-D map readings from Ed Olson's paper Fast Iterative Alignment of Pose Graphs with Poor Initial Estimates

Staff Development Czar and TA, Ann Arbor, MI   *Sep 2016 - May 2018*
– Created and led "Staff Development" program for second level computer science staff to improve both new staff members as well as seasoned veterans
– Structured 35 student lab session to review and teach concepts in a specialized alternative to traditional lecture, tailoring for active self learning
– Produced class specific help and tip videos to give students an extra resource to common issues in a newer format

Robotics Software Intern at TRACLabs, Houston, TX   *Summer 2017*
– Adapted local mapping and navigation to move TRACBot 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 upon real time observations

STUDENT RESEARCH MENTORING

Current Undergraduates

– Roxanna Pakkar	USC Electrical Engineering, Merit Research Fellow
– Zhonghao Shi	USC Computer Science
– Chloe Kuo	USC Computer Science, Merit Research Fellow
– Julia Cordero	USC Computer Science, Merit Research Fellow
– Roddur Dasgupta	USC Computer Science
– Haemin Lee	USC Computer Science

Previous Students

– Ryan Stevenson	USC Computer Science Games
– Adnan Karim	University of Calgary Computer Science, SURE Student
– İpek Göktan	Highschool Student, USC SHINE Program
– Mena Hassan	Highschool Student, USC SHINE Program

CONTRIBUTIONS TO GRANT PROPOSALS	**NSF NRI 2.0 - Communicate, Share, Adapt: A Mixed Reality Framework for Facilitating Robot Integration and Customization** – Research grant awarded and based upon Ph.D. work Augmented Reality S.A.R. – Outlined and contributed significant text to proposal

K-12 EDUCATIONAL OUTREACH	**Microsoft TEALS Teaching Volunteer**, Los Angeles, CA *July 2019-Present* – Volunteer teaching program designed to teach a high school teacher from a non-CS background how to teach computer science – Teach AP Computer Science to students at Los Angeles Center for Enriched Studies **The Help Group STEM Academy**, Los Angeles, CA *June 2019* **Monterey Hills Elementary Assembly**, Los Angeles, CA *May 2019, Nov 2019* **USC Robotics Academy Judge**, Los Angeles, CA *Dec 2018/19, Apr 2019* **VEX Robotics Team Leader**, Los Angeles, CA *Oct 2018 - Feb 2019*

HONORS AND AWARDS	**USC 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 2020 ACM/IEEE International Conference on Human Robot Interaction (HRI '20), Cambridge, UK, Mar-2020. [2] **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 Interactactive Communication (RO-MAN '19), New Delhi, India, Oct-2019. **Robotics Society of Japan and Korean Robotics Society Distinguished Interdisciplinary Research Award Finalist (3 nominated from 206)**

TALKS AND DEMOS	**Robots Visions & Voices Demo** University of Southern California *24 Oct 2019* **S.A.R. Through Augmented Reality Extensions Demo and Discussion** Public Affairs Council in Laguna Beach, CA *8-9 Jan 2019*

PROFESSIONAL SERVICE	**Workshop Organizer** – *Virtual Augmented and Mixed Reality (VAM) HRI* – Accepted for **HRI 2020** **Tutorial Organizer** – *Physically Situating Multi-modal Mixed Reality Human-Robot Interaction* – Accepted for **IROS 2020** **Reviewer for these Conferences and Journals** – Science Robotics 2018 **Women in US Academic Research in Robotics Website** *July 2019 - Present* – Created and maintain a list of current women in US academic robotics research – Link: us-women-in-robotics-research.github.io