

IRIM Seminar Series

Get in Touch: Tactile Perception for Human-Robot Systems

Veronica Santos, Professor of Mechanical & Aerospace Engineering and Director of the Biomechatronics Lab at UCLA

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KLAUS BUILDING 1116

Abstract: Compared to vision, the complementary sense of touch has yet to be broadly integrated into robotic systems that physically interact with the world. An artificial sense of touch is especially useful when vision is limited or unavailable. In this presentation, I will highlight our work on task-driven efforts to endow robots with tactile perception capabilities for human-robot interaction, remote work in harsh environments, and the manipulation of deformable objects. Real-time tactile perception and decision-making capabilities could be used to advance semi-autonomous robot systems and reduce the cognitive burden on human teleoperators. With advances in haptic display technologies, interfaces with the human body, and networking capabilities, however, touch can be used for more than completing novel tasks. Touch can enhance social connections from afar, enable the inclusion of marginalized groups in community activities, and create new opportunities for remote work involving social and physical interactions.

Bio: Veronica Santos is a Professor of Mechanical and Aerospace Engineering and Director of the UCLA Biomechatronics Lab (<http://biomechatronics.ucla.edu>). She currently serves as the Associate Dean of Equity, Diversity, and Inclusion and Faculty Affairs for the UCLA Samueli School of Engineering. Dr. Santos earned her B.S. in mechanical engineering (music minor) from UC Berkeley, was a Quality and R&D Engineer at Guidant Corporation, and earned her M.S. and Ph.D. in mechanical engineering (biometry minor) from Cornell University. As a postdoc at the University of Southern California, she contributed to the development of a bio-inspired tactile sensor for prosthetic hands before moving to Arizona State University as an Assistant Professor. Her research interests include hand biomechanics, human-machine systems, tactile sensing and perception, and prosthetics/robotics for grasp and manipulation. Dr. Santos was selected for an NSF CAREER Award, the U.S. Defense Science Study Group, a U.S. National Academy of Engineering Frontiers of Engineering Education Symposium, and numerous teaching awards. Her work has appeared in TechCrunch and Forbes, among others. Dr. Santos has served as an ICRA Editor and IEEE Haptics Symposium Editor-in-Chief, among other duties. She was a General Co-Chair for the 2022 IEEE Haptics Symposium, a role she will continue for 2024.



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