UCI Samueli School of Engineering | Department of Mechanical and Aerospace Engineering

Seminar Series

A sense of touch: Why robot grippers need it and how we create it

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Don M. Cunningham Endowed Professorship
University of California at Berkeley

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McDonnell Douglas Engineering Auditorium (MDEA)

Abstract: Robots tend to avoid contact due to physical uncertainty. Yet, contact is essential for many applications. We work to better understand and creatively harness touch to design more capable dexterous systems. In this talk, I'll focus on two recent case studies that use ambient fluids for resilient and compliant grippers with tactile sensing. This includes both a smart suction cup, and a sound-emitting skin. These inventions apply to logistics pick-and-place automation. Inspired by nature, the overarching goal of this research is to access new and resilient robotic behaviors without an over-reliance on digital computing alone, but rather by harnessing morphological computation alongside active control.

Bio: Dr. Hannah Stuart is an Associate Professor in the Department of Mechanical Engineering at the University of California at Berkeley. She received her BS in Mechanical Engineering at the George Washington University in 2011, and her MS and PhD in Mechanical Engineering at Stanford University in 2013 and 2018, respectively. Her research focuses on understanding the mechanics of physical interaction in order to better design mechatronic and robotic systems for gripping and dexterous manipulation. Applications range from logistical robotics to assistive orthotics. Her specialty is in soft and multi-material mechanisms. Recent awards include the NSF CAREER grant, NASA Early Career Faculty grant, and Johnson & Johnson Women in STEM2D grant. She is a Senior Member of IEEE Robotics and Automation Society.