UC RIVERSIDE | Mechanical Engineering

The Department of Mechanical Engineering Presents

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Title: Wearable Haptic Devices for Ubiquitous Communication

Abstract: Haptic devices allow touch-based information transfer between humans and intelligent systems, enabling communication in a salient but private manner that frees other sensory channels. For such devices to become ubiquitous, their physical and computational aspects must be intuitive and unobtrusive. The amount of information that can be transmitted through touch is limited in large part by the location, distribution, and sensitivity of human mechanoreceptors. Not surprisingly, many haptic devices are designed to be held or worn at the highly sensitive fingertips, yet stimulation using a device attached to the fingertips precludes natural use of the hands. Thus, we explore the design of a wide array of haptic feedback mechanisms, ranging from devices that can be actively touched by the fingertips to multi-modal haptic actuation mounted on the arm. We demonstrate how these devices are effective in virtual reality, human-machine communication, and human-human communication.

About the Speaker: Allison M. Okamura received the BS degree from the University of California at Berkeley in 1994, and the MS and PhD degrees from Stanford University in 1996 and 2000, respectively, all in mechanical engineering. She is a Professor in the mechanical engineering department at Stanford University, with a courtesy appointment in computer science. She is currently co-general chair of the 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems and a deputy director of the Wu Tsai Stanford Neurosciences Institute. She has been editor-in-chief of the journal IEEE Robotics and Automation Letters. Her awards include the 2020 IEEE Engineering in Medicine and Biology Society Technical Achievement Award, 2019 IEEE Robotics and Automation Society Distinguished Service Award, and 2016 Duca Family University Fellow in Undergraduate Education. She is an IEEE Fellow. Her academic interests include haptics, teleoperation, virtual environments and simulators, medical robotics, soft robotics, neuromechanics and rehabilitation, prosthetics, and education. Outside academia, she enjoys spending time with her husband and two children, running, and playing ice hockey. For more information, please see the CHARM Lab website.

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