

## Capturing Multisensory Interactions in Cutaneous Displays

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When we move our fingertips across a table or along a piece of fabric, we are immediately able to sense whether it is rough or smooth and even in the absence of vision we can probably determine what the table or cloth is made from. This ability to identify and perceive the properties of objects relies on our sense of touch or more accurately active touch or haptic sensing. It is not only tactile cues arising from mechanoreceptors in the skin that provide us with spatial and temporal information about objects, but also signals from thermoreceptors that sense changes in skin temperature associated with contacting objects made from different materials. Tactile and thermal displays designed to replicate these sensations in virtual environments or for teleoperated robotic systems have typically focused on a single modality rather than the multisensory experience associated with object contact. In our work we have sought to understand the multisensory interactions that occur in the cutaneous senses by examining how tactile and thermal information is processed. We are particularly interested in how these independent sensory systems function synergistically, given their profound differences in temporal and spatial processing.

### References:

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### Biography:

Lynette Jones received her PhD from McGill University in 1983 and then completed a postdoctoral fellowship at the Montreal Neurological Institute. She joined the Faculty of Medicine at McGill University in 1986 and in 1994 moved to the School of Engineering at the Massachusetts Institute of Technology (MIT). At present she is a Senior Research Scientist in the Department of Mechanical Engineering at MIT. She has contributed extensively to the area of haptics, tactile and thermal displays, and sensorimotor control of the hand. Her research group has built a number of tactile and thermal displays that have been used in research conducted by both academic and industrial organizations. Dr. Jones is a fellow of the IEEE and is the Editor-in-Chief of the IEEE Transactions on Haptics.