

## **An Invitation for all SCS:**

SCS Faculty Candidate: **Heather Culbertson**

Monday, February 13<sup>th</sup> **2:00 PM GHC 6115**

Host: Jessica Hodgins & Paul Steif

RI & MechE

### **Realistic and Intuitive Haptic Feedback for Communication in Virtual and Real-World Environments**

The haptic (touch) sensations felt when interacting with the physical world create a rich and varied impression of objects and their environment. However, humans are spending significantly more time online and are increasingly interacting with people and objects through a digital medium. Unfortunately, digital interactions remain unsatisfying and limited, representing the human as having only visual and auditory inputs.

In this talk I will describe how we can leverage our knowledge of the sense of touch to design haptic systems that allow the human to communicate through the digital world in a natural and intuitive way. I will highlight my contributions in furthering haptic realism in virtual reality through the creation of highly realistic virtual objects that are created by modeling high-frequency acceleration, force, and speed data recorded during physical interactions. I will then describe advances I have made in novel wearable haptic devices for communicating information to a human using intuitive and natural cues.

#### **BIO**

Heather Culbertson is a Postdoctoral Research Fellow in the Department of Mechanical Engineering at Stanford University where she works in the Collaborative Haptics and Robotics in Medicine (CHARM) Lab. Her research focuses on the design and control of haptic devices and rendering systems. She received her PhD in the Department of Mechanical Engineering and Applied Mechanics (MEAM) at the University of Pennsylvania in 2015 working in the Haptics Group, part of the General Robotics, Automation, Sensing and Perception (GRASP) Laboratory. She completed a Masters in MEAM at the University of Pennsylvania in May of 2013, and earned a BS degree in mechanical engineering at the University of Nevada, Reno in 2010.