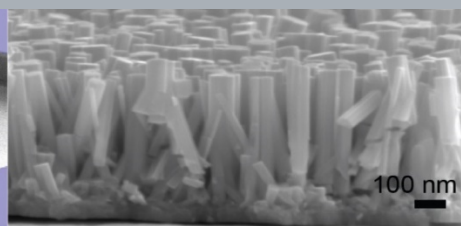
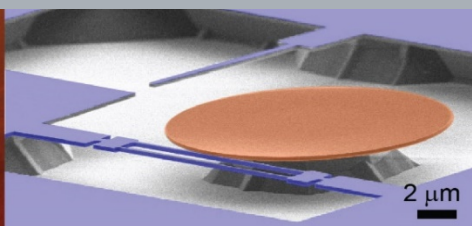
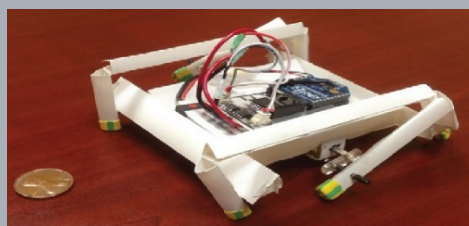




# WPI

## MECHANICAL ENGINEERING



### ME Graduate Seminar

## Towards Robotic Straight Razor Shaving of Humans

Peter Whitney, Ph.D.  
Assistant Professor  
Mechanical and Industrial Engineering  
Northeastern University

Wednesday, November 6, 2019  
10:00 – 10:50 a.m.  
Higgins Labs 218

### Abstract

Safe and successful deployment of robots that directly and physically interact with humans remains a challenge. In this talk we will investigate robotic straight razor shaving of the human face as an example of physical human-robot interaction that demands the highest mechanical responsiveness, force sensitivity, and control precision. From the lessons in this task, we move to other (real) applications, including the development of wheelchair-mounted haptic-grade robotic manipulators for assistance with activities of daily living, remotely operated MRI-compatible surgical tools, and shared-autonomy underwater manipulators for explosives ordinance disposal (EOD). Key research elements in support of these applications include soft-composite materials engineering and design, low-friction fluid actuators, and high dynamic range force feedback control.

### About the Speaker



*Peter Whitney is an assistant professor of Mechanical and Industrial Engineering at Northeastern University, engaged in research on human-safe, medical, and collaborative robot systems, through advances in mechanical design, soft-composite engineering, and multi-sensory feedback control. He obtained his PhD in 2012 at Harvard University, working with Prof. Robert Wood on pop-up book style micro-composite MEMS fabrication and insect-scale experimental aerodynamics, and worked as a postdoc under Jessica Hodgins at Disney Research (CMU) on human-safe robot design, which culminated in the development of "Jimmy", a human-safe mechanically tele-operated robot puppet. His research is funded by grants from NSF CHS, NSF NRI, ONR, and the ARM Institute.*