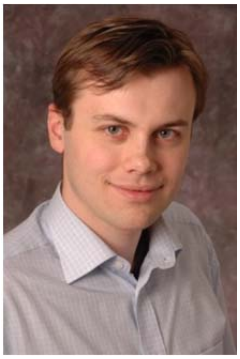
Distinguishing Users with Capacitive Touch Communication

Marco Gruteser, Rutgers University

Date: Nov. 20, 2012 (Tuesday)
Time: 5:00 pm (refreshment starts at 4:45 pm)
Place: 202 ECEC, NJIT



About the Speaker

Marco Gruteser is an Associate Professor of Electrical and Computer Engineering at Rutgers University and a member of the Wireless Information Network Laboratory (WINLAB). He has pioneered privacy algorithms for location data and is also recognized for his work on connected vehicle applications. Beyond these topics, his 90+ peer-reviewed articles and patents span a wide range of wireless, mobile systems, and pervasive computing issues. He received his MS and PhD degrees from the University of Colorado in 2000 and 2004, respectively, and has held research and visiting positions at the IBM T. J. Watson Research Center and Carnegie Mellon University. His recognitions include an NSF CAREER award, a Rutgers Board of Trustees Research Fellowship for Scholarly Excellence, as well as best paper awards at ACM MobiCom 2012, ACM MobiCom 2011 and ACM MobiSys 2010. His work has been featured in numerous media outlets including the MIT Technology Review, NPR, the New York Times, and CNN TV.

About the Talk (registration: https://meetings.vtools.ieee.org/meeting_registration/register/14385)

As we are surrounded by an ever-larger variety of post-PC devices, the traditional methods for identifying and authenticating users have become cumbersome and time-consuming. This talk will present a capacitive communication method through which a device can recognize who is interacting with it. This method exploits the capacitive touchscreens, which are now used in laptops, phones, and tablets, and many other devices, as a signal receiver. The signal that identifies the user can be generated by a small transmitter embedded into a ring, watch, or other artifact carried on the human body. We explore two example system designs with a low-power continuous transmitter that communicates through the skin and a signet ring that needs to be touched to the screen. Experiments with our prototype transmitter and tablet receiver show that capacitive communication through a touchscreen is possible, even without hardware or firmware modifications on a receiver. This latter approach imposes severe limits on the data rate, but the rate is sufficient for differentiating users in multiplayer tablet games or parental control applications. Controlled experiments with a signal generator also indicate that future designs may be able to achieve datarates that are useful for providing less obtrusive authentication with similar assurance as PIN codes or swipe patterns commonly used on smartphones today.

Sponsors: **IEEE Communications Society North Jersey Chapter**
NJIT Department of Electrical and Computer Engineering

For more information contact Nirwan Ansari (973)596-3670. Check **http://web.njit.edu/~ieeenj/comm.html** for latest updates. Directions to NJIT can be found at: **http://www.njit.edu/about/visit/gettingtonjit.php**.