Electrical & Computer ENGINEERING

SEMINAR

THURSDAY
APRIL 17, 2008

Scaife Hall Auditorium
Room 125

4:30 p.m.
Refreshments—4:00 p.m.

“Conflicting Agendas – Advanced Sensing Systems and the Right to Privacy”

Stephen Wicker
PROFESSOR
CORNELL UNIVERSITY

Stephen B. Wicker is a Professor of Electrical and Computer Engineering at Cornell University, and a member of the graduate fields of Computer Science and Applied Mathematics. Professor Wicker was awarded the 1988 Cornell College of Engineering Michael Tien Teaching Award and the 2000 Cornell School of Electrical and Computer Engineering Teaching Award. As of early 2007, he has supervised thirty doctoral dissertations.

Professor Wicker is the author of *Codes, Graphs, and Iterative Decoding* (Kluwer, 2002), *Turbo Coding* (Kluwer, 1999), *Error Control Systems for Digital Communication and Storage* (Prentice Hall, 1995) and *Reed-Solomon Codes and Their Applications* (IEEE Press, 1994). He has served as Associate Editor for Coding Theory and Techniques for the *IEEE Transactions on Communications*, and is currently Associate Editor for the *ACM Transactions on Sensor Networks*. He has served two terms as a member of the Board of Governors of the IEEE Information Theory Society, and chaired the Technical Program Committee for the Fifth International Conference on Information Processing in Sensor Networks (IPSN 2006).

Professor Wicker teaches and conducts research in wireless information networks, cellular networks, packet-switched computer networks, and digital telephony. His research has focused on the development and application of advanced technologies for adaptive networks. He is also conducting joint research with the Berkeley School of Law on privacy policy and the impact of the deployment of sensor networks in public spaces. Current interests include the application of artificial intelligence and game theory to self-configuring wireless sensor networks. Other interests include network security, the behavior of complex systems and phase transitions in NP-hard problems, and the evolution of the nation’s telecommunications networks.

Professor Wicker is the Cornell Principal Investigator for the TRUST Science and Technology Center – a National Science Foundation center dedicated to the development of technologies for securing the nation’s critical infrastructure.

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In this talk I will explore the privacy concerns arising from the use of sensing systems to collect data in public and residential contexts. I will focus on the collection of power consumption data for demand response systems, though the results of our work are readily generalized. I begin with a discussion of the “right to privacy” from both a philosophical and a legal perspective. This portion of the talk will depend heavily on recent Supreme Court decisions that appear to prohibit the use of advanced sensing technology, without a warrant, to collect data that would otherwise have been unavailable without intruding into the home. As we will see, this is a thin, blurry line at best. I will then discuss the advanced metering systems that have been deployed in California for use in Demand-Response systems. I will show that the data being collected in these systems can be used to derive detailed information about activities within the home. Privacy metrics will be introduced that detect and quantify personally identifiable information within sensed data. I conclude by showing that power consumption data falls within the Court’s Kyllo precedent, and discuss the implications for the handling and re-use of power consumption data by utilities.

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