

## Mathematical Challenges and Opportunities in Sensor Networking

Monday January 8, 2007

- 8:00–8:45 *Check-In/Light Breakfast (Hosted by IPAM)*
- 8:45–9:00 *Welcome and Opening Remarks*
- 9:00–9:30 **Mani Srivastava** (University of California, Los Angeles (UCLA))  
*Embedded Networked Sensing: From Smart Dust to Multi-scale, Multi-modal, Multi-user Observing Systems*
- 9:30–10:00 **Tom Harmon** (University of California, Merced (UC Merced))  
*Using Environmental Process Models to Guide Sensor Network Sampling Design*
- 10:00–10:30 *Break*
- 10:30–11:00 **Greg Pottie** (UCLA)  
*An Information Theory Research Agenda for Sensor Networks*
- 11:00–11:30 **P. R. Kumar** (University of Illinois at Urbana-Champaign)  
*From sensing to actuation over wireless networks*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:00 **Michelle Effros** (California Institute of Technology)
- 2:00–2:30 **Upamanyu Madhow** (UC Santa Barbara)  
*On Minimalism and Scale in Sensor Networks*
- 2:30–3:00 *Break*
- 3:00–3:30 **Anna Scaglione** (Cornell University)  
*Data driven sensor access architectures for sensor networks*
- 3:30–4:00 **John Fisher** (Massachusetts Institute of Technology)  
*Information-driven Inference in Resource-constrained Environments*



## Tuesday January 9, 2007

- 8:00–9:00 *Breakfast (Hosted by IPAM)*
- 9:00–9:30 **Barbara Minsker** (University of Illinois at Urbana-Champaign)  
*Cyberinfrastructure Challenges for Environmental Observatories*
- 9:30–10:00 **Hugh Durrant-Whyte** (University of Sydney)  
*Data Fusion in Sensor Networks*
- 10:00–10:30 **Richard Murray** (California Institute of Technology)  
*Distributed Consensus and Cooperative Estimation*
- 10:30–11:00 *Break*
- 11:00–11:30 **Jim Clark** (Duke University)  
*Inferential ecosystem modeling using dynamic data*
- 11:30–12:00 **Alan Gelfand** (Duke University)  
*Analyzing wireless sensor network data under suppression and failure in transmission*
- 12:00–2:00 *Lunch (on your own)*
- 2:00–5:00 **Greg Pottie** (UCLA)  
*TBA*
- 5:00–6:30 *Reception (Location: IPAM Lobby)*

## Wednesday January 10, 2007

- 8:00–9:00 *Breakfast (Hosted by IPAM)*
- 9:00–9:30 **Michael Gastpar** (UC Berkeley)  
*Sensing Reality and Communicating Bits: A Dangerous Liaison*
- 9:30–10:00 **Akbar Sayeed** (University of Wisconsin-Madison)  
*Active Wireless Sensing in Time, Frequency and Space*
- 10:00–10:30 *Break*

*(Wednesday schedule continued on next page)*

*(Wednesday schedule continued from previous page)*

- 10:30–11:00 **John Stankovic** (University of Virginia)  
*Full Life Cycle Analysis For Wireless Sensor Networks*
- 11:00–11:30 **Nigel Boston** (University of South Carolina)  
*Sensor network security through identity-based encryption*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–2:00 **Lin Xiao** (Microsoft Research)  
*Distributed Sensor Fusion using Space-Time Diffusion*
- 2:00–2:30 **Jose Moura** (Carnegie-Mellon University)  
*Distributed Inference: Topology Optimization*
- 2:30–3:00 *Break*
- 3:00–3:30 **Urbashi Mitra** (University of Southern California (USC))  
*Multihopping in wireless communication channels: Some solutions, some challenges*
- 3:30–4:00 **Venugopal Veeravalli** (University of Illinois at Urbana-Champaign)  
*SMART SLEEPING POLICIES FOR WIRELESS SENSOR NETWORKS*
- 4:00–4:30 **Venkatesh Saligrama** (Boston University)  
*Sensing Capacity, Sensing Diversity and Sparsity: Fundamental Tradeoffs & Scaling Laws*
- 4:30–5:00 **Sergio Servetto** (Cornell University)  
*Detecting Polygons and Compressing Waves – Some New Twists on Classical Problems in Information Theory*

### Thursday January 11, 2007

- 8:00–9:00 *Breakfast (Hosted by IPAM)*
- 9:00–9:30 **Alfred Hero** (University of Michigan)  
*Information extraction from large scale sensor networks*
- 9:30–10:00 **Mark Coates** (McGill University)  
*Learning to Satisfy Actuator Networks*
- 10:00–10:30 *Break*
- 10:30–11:00 **Mingyan Liu** (University of Michigan)  
*Modeling a dense wireless sensor network: complexity, stability and robustness*
- 11:00–11:30 **Robert Nowak** (University of Wisconsin-Madison)  
*Blind Calibration of Sensor Networks*
- 11:30–1:30 *Lunch (on your own)*
- 1:30–4:30 **Greg Pottie** (UCLA)  
*TBA*

## Friday January 12, 2007

8:00–9:00 *Breakfast (Hosted by IPAM)*

9:00–12:00 *Final Panel/Group Discussion*

IPAM strives to provide an inclusive environment free of harassment. IPAM does not tolerate sexual harassment, other forms of harassment, or sexual assault. Please familiarize yourself with our community agreement which includes instructions on reporting incidents by using the QR code to the right.

