Call for Papers
IEEE Communication Society
IEEE Journal of Selected Areas in Communications

Exploiting Limited Feedback in Tomorrow's Wireless Communication Networks

Recent research has demonstrated that by utilizing channel state information at the transmitter, the physical layer can be optimized to provide higher link capacity and throughput, more efficiently share the channel with multiple users, increase range by exploiting diversity due to spatial and frequency selectivity, and simplify multi-user receivers through known interference cancellation. Unfortunately, acquiring channel state information at the transmitter is difficult. In most systems, the only opportunity for the transmitter to learn about the channel is through a feedback control channel. Because feedback information is control overhead, the rate of the feedback channel is limited. This motivates the study of *limited feedback* techniques where only partial or quantized information from the receiver is conveyed back to the transmitter. Successful examples of limited feedback include adaptive modulation and Grassmannian beamforming.

While the renewed interest in feedback is a result of investigations at the physical layer, there are feedback benefits and limitations at other layers as well. In cellular networks, feedback can enable opportunistic scheduling and flexible interference management between cells. Multihop, or mesh networks, also offer tremendous applications for feedback. Nodes can control scheduling and routing decisions based on the apparent loads at neighboring nodes for different types of traffic. Other types of information beyond just channel state information may be used for feedback in networking applications – for example queue state information, offered loads, and local traffic conditions. The current performance of network flows with respect to some underlying user requirements can also be utilized. Feedback strategies need to be evaluated in terms of network centric performance measures such as throughput delay-tradeoffs or end-to-end performance. In addition, the network may be responsible for scheduling and transmitting feedback packets, thus the effects of overhead due to feedback, the extent to which feedback should be propagated to other nodes, and the effects of delayed and unreliable feedback

This special issue aims to bring together contributions from researchers and practitioners in the area of wireless networking with an emphasis on feedback-based communication techniques. Original papers are solicited with focus on signal processing tools, scheduling algorithms, MAC protocols, capacity, network performance, and distributed algorithms involving channel state, queue state, and other forms of limited feedback as summarized in but not limited to, the following topics:

- Feedback in relay channels and cooperative communication scenarios
- Analog network coding with limited feedback
- Feedback-based congestion control
- Feedback in MIMO systems including multi-user systems and interference prone multi-cell systems
- Analog feedback, partial feedback, or imperfect channel state considerations
- Signaling protocols for exchanging feedback
- Feedback-based MAC and scheduling algorithms
- Cross layer design with feedback considerations
- Implications of noisy, delayed, or lost feedback
- New codebook designs and adaptive feedback algorithms
- Performance gains of feedback in practical systems including experimental results

Prospective authors should follow the submission instructions available at http://www.jsac.ucsd.edu/Guidelines/info.html and should submit their manuscripts according to the following timetable:

Manuscript Submission:	November 1, 2007
Notification of acceptance:	April 1, 2008
Final Manuscript Due:	July 1, 2008
Publication:	4th quarter 2008

Guest editors:

Robert W. Heath Jr. The University of Texas at Austin United States rheath@ece.utexas.edu	Vincent Lau Hong Kong University of Science and Technology Hong Kong eeknlau@ee.ust.hk	David J. Love Purdue University United States djlove@ecn.purdue.edu	David Gesbert Eurecom Institute France david.gesbert@eurecom.fr	Bhaskar Rao University of San Diego United States brao@ece.ucsd.edu	Matthew Andrews Alcatel-Lucent Bell Labs United States andrews@research.bell-labs.com