



The Information Science & Technology Center

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**Colorado State University's Information Science and Technology Center
(ISTeC)
*presents two lectures by***



Dr. Anthony Ephremides
Cynthia Kim Professor of Information
Technology, University of Maryland

ISTeC Distinguished Lecture
in conjunction with the
**Electrical and Computer Engineering Department and
Computer Science Department Seminar Series**

“Network Coding: A New Paradigm For Networking?”

Monday, January 28, 2008
Reception: 10:30 a.m.
Lecture: 11:00 – 12:00 noon
Lory Student Center Room 214



**Joint Electrical and Computer Engineering Department
and Computer Science Department Special Seminar**
sponsored by ISTE C

“Cooperative Techniques At The Network Level”
Tuesday, January 29 2008
Lecture: 11:00 – 12:00 noon
Lory Student Center Room 215

ABSTRACTS

“Network Coding: A New Paradigm For Networking?”

Network Coding is a relatively recent idea that has the potential to revolutionize the foundations of Networking. Both the Internet architecture as well as that of wireless networks may have to be thoroughly redesigned if the idea of Network Coding proves to be implementable. In this talk we will review and explain the principles of Network Coding, highlight the major results, identify its shortcomings, and show how the basic idea can be adapted for wireless networks. We will selectively describe some performance and design issues in more detail but we will aim at a high-level presentation accessible to a broad audience.

“Cooperative Techniques At The Network Level”

The idea of cooperation among nodes for enhanced network performance is a new idea that sprang out of the MIMO (multiple - input – multiple - output) developments of recent years. Most of the work to date has focused on physical layer views of cooperation and, in particular, on the use of relays. In this talk we will suggest that cooperation can be beneficial even when it takes place at higher layers, notably at the MAC and Routing layers. We will review one case of cooperation that utilizes a relay that exploits idle resources as in cognitive radio and one case of cooperation that performs distributed detection via route selection in a sensor network. The purpose of the review of these two examples is to illustrate the breadth of the concept and the potential for further improvements through a more general view of cooperation.

SPEAKER BIOGRAPHY

Anthony Ephremides (<http://www.ece.umd.edu/faculty/tony.html>) received his B.S. degree from the National Technical University of Athens (1967), and M.S. (1969) and Ph.D. (1971) degrees from Princeton University, all in Electrical Engineering. He has been at the University of Maryland since 1971, and currently holds a joint appointment as Professor in the Electrical Engineering Department and the Institute of Systems Research (ISR). He is co-founder of the NASA Center for Commercial Development of Space on Hybrid and Satellite Communications Networks established in 1991 at Maryland as an off-shoot of the ISR.

He was a Visiting Professor in 1978 at the National Technical University in Athens, Greece, and in 1979 at the EECS Department of the University of California, Berkeley, and at INRIA, France. During 1985-1986 he was on leave at MIT and ETH in Zurich, Switzerland. He was the General Chairman of the 1986 IEEE Conference on Decision and Control in Athens, Greece. He has also been the Director of the Fairchild Scholars and Doctoral Fellows Program, an academic and research partnership program in Satellite Communications between Fairchild Industries and the University of Maryland. He won the IEEE Donald E. Fink Prize Paper Award (1992). He has been the President of the Information Theory Society of the IEEE (1987), and served on the Board of the IEEE (1989 and 1990). He is a Fellow of the IEEE.

Dr. Ephremides' interests are in the areas of communication theory, communication systems and networks, queueing systems, signal processing, and satellite communications.

To arrange a meeting with the speaker, please contact Dr. Rockey Luo at (970) 491-7411 or rockey@enr.colostate.edu

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