2009-10 Lecture Series on Science of Information

Dr. Natasha Devroye
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University of Illinois at Chicago

Monday, February 22, 2010
LWSN 1142
2:00 p.m.

Title

Fundamental Limits of Cognitive Networks

Abstract

Behind every wireless system lies a theoretical goal and an immense amount of work to achieve this goal. As the technology behind wireless communication becomes increasingly flexible and capable, researchers and engineers are left with a large number of possible directions in which to set their goals. With all these advances and opportunities, the question of "What is theoretically possible?" becomes more and more relevant.

In this talk we will attack this question in relation to networks of intense current interest: cognitive networks. Cognitive networks are networks in which a number of wireless devices, some of which may be more capable and/or adaptive cognitive radios wish to communicate. This talk will first highlight key information theoretic metrics for and models of multi-terminal cognitive networks - how to model the extra capabilities of cognitive radios is key. We then proceed on an intuitive tour of the current state of the art in cognitive networks from an information theoretic perspective, obtaining bounds on the capacity regions of more "intelligent" and "cognitive" networks.

Biography

Natasha Devroye has been an Assistant Professor in the Department of Electrical and Computer Engineering at the University of Illinois at Chicago since January 2009. From July 2007 until July 2008 she was a Lecturer at Harvard University. Natasha obtained her Ph.D in Engineering Sciences from the School of Engineering and Applied Sciences at Harvard University in 2007, an M.Sc from Harvard University in 2003 and a Honors B. Eng in Electrical Engineering from McGill University in 2001. She has worked as a research intern at
Intel Corporation, Santa Clara, CA as well as Mitsubishi Electric Research Labs in Cambridge, MA. Her interests include multi-user information theory, wireless communications, and scheduling. She is particularly focused on information theoretic limits of cognitive and cooperative communications.

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A reception will be held before the talk in LWSN 1142.

If you are interested in meeting with Dr. Devroye, please contact Prof. Szpankowski at spa@cs.purdue.edu or 46703.