

Game-Theoretic Design for Networked Communities

(IEEE Communications Society Distinguished Lecture)

Mihaela van der Schaar, University of California, Los Angeles

Date: October 26, 2011 (Wednesday)
Time: 6:15 pm (refreshment starts at 6:00 pm)
Place: 202 ECEC, NJIT

About the Speaker



Mihaela van der Schaar is Chancellor's Professor of Electrical Engineering at University of California, Los Angeles. Her research interests include dynamic multi-user networks and system designs, online learning, network economics and game theory, multimedia networking, communication, processing, and systems, and multimedia stream mining. She is an IEEE Fellow, a Distinguished Lecturer of the Communications Society for 2011-2012, the Editor in Chief of IEEE Transactions on Multimedia and a member of the Editorial Board of the IEEE Journal on Selected Topics in Signal Processing. She received an NSF CAREER Award (2004), the Best Paper Award from IEEE Transactions on Circuits and Systems for Video Technology (2005), the Okawa Foundation Award (2006), the IBM Faculty Award (2005, 2007, 2008), the Most Cited Paper Award from EURASIP: Image Communications Journal (2006), the Gamenets Conference Best Paper Award (2011) and the 2011 IEEE Circuits and Systems Society Darlington Award Best Paper Award.

She received three ISO awards for her contributions to the MPEG video compression and streaming international standardization activities, and holds 33 granted US patents. For more information about her research visit: <http://medianetlab.ee.ucla.edu/>.

About the Talk

This talk proposes a new generation of ideas and technologies for designing the interactions between self-interested, learning agents in networked communities (social networks, service networks, online labor markets, crowdsourcing, P2P networks). When the communities are composed of compliant machines (wireless nodes, routers, mobile phones, etc.), network utility maximization (NUM) and other well-known control and optimization methods can be used to achieve efficient designs.

When the communities are composed of intelligent and self-interested agents (people or smart software agents acting on their behalf), such methods are not effective and efficiency is much more difficult to achieve because the interests of the individual agents may be in conflict with that of the network designer. This talk describes design principles to achieve efficient outcomes in such networks based on the use of incentives (rewards and punishments). Depending on the characteristics of the network, the community, and the capacity of the designer, the application of these principles may be through any of a number of various mechanisms. This talk discusses mechanisms based on indirect reciprocation (social norms and token exchanges).

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