

Telecommunications Seminar Series presents: "Traffic Offloading and User Provided Wireless Networks: Theory and Novel Realizations"



Friday, October 30 | 12 pm
Meet & Greet at 11:30 am
IS Building, Room 403

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ABSTRACT: The proliferation of mobile internet access poses new challenges to wireless service providers as the capacity growth of their networks cannot cope with the rate of increase of mobile wireless traffic. Alternate means are considered to deal with the excessive traffic demand, that exploit the proliferation of wireless networks in unlicensed parts of the spectrum as well as of handheld devices with multiple radio interfaces.

Traffic off-loading from the cellular network to a Wi-Fi access point is possible for mobile users with wireless interfaces for both networks. We will present schemes that motivate operators, access point owners and users to cooperate in order to maximize use of available capacity in the different networks; the schemes are based on double auction mechanisms. In an alternate approach, a mobile user may gain internet access when another user with cellular internet connection is willing to relay its traffic received through a direct link between the users. We will present incentives mechanisms that facilitate the creation of such User Provided Networks in a way that all participants gain in terms of access capacity as well as energy consumption.

Finally will present a design and implementation of a novel cloud-controlled UPN that employs software defined networking support on mobile terminals, to dynamically apply data forwarding policies with adaptive flow-control.

BIO: Leandros Tassiulas is the John C. Malone Professor of Electrical Engineering at Yale University. His research interests are in the field of computer and communication networks with emphasis on fundamental mathematical models and algorithms of complex networks, architectures and protocols of wireless systems, sensor networks, novel internet architectures and experimental platforms for network research. His most notable contributions include the max-weight scheduling algorithm and the back-pressure network control policy, opportunistic scheduling in wireless, the maximum lifetime approach for wireless network energy management, and the consideration of joint access control and antenna transmission management in multiple antenna wireless systems. Tassiulas has been a Fellow of IEEE (2007) while his research has been recognized by several awards including the inaugural INFOCOM 2007 Achievement Award "for fundamental contributions to resource allocation in communication networks," the INFOCOM 1994 best paper award, a National Science Foundation (NSF) Research Initiation Award (1992), an NSF CAREER Award (1995), an Office of Naval Research Young Investigator Award (1997) and a Bodossaki Foundation award (1999). He holds a PhD in Electrical Engineering from the University of Maryland, College Park (1991). He has held faculty positions at Polytechnic University, New York, University of Maryland, College Park, and University of Thessaly, Greece.