

CONFERENCIA INVITADA

Fecha: 27 de Junio

Hora : 12:30 - 13:30

Lugar: Salón de grados del Departamental I. Campus de Fuenlabrada.

TÍTULO: Wireless Collaborative Communication and Networking

ABSTRACT:

Collaborative networking protocols for wireless networks aspire to yield significant improvements in terms of capacity, coverage, and error performance with respect to existing alternatives. We begin by introducing user cooperation as a diversity enabler for wireless random access (RA) at the medium access control sub-layer. This is accomplished through a two-phase protocol in which active users start with a low power transmission attempting to reach nearby users and follow up with a high power transmission in cooperation with the users recruited in the first phase. We prove that for networks with a large number of users, the throughput of a cooperative wireless RA network operating over Rayleigh fading links approaches the throughput of a RA network operating over additive white Gaussian noise links. We then consider a novel approach to routing for wireless collaborative networks in which routing algorithms are described by the evolution of a Markov chain enabling the definition of deliverability criteria in terms of absorbing states. We further introduce optimal routing protocols by selecting the routing matrix from a convex polygon containing all feasible routing matrices. The criteria of optimality include minimization of the packet error probability for a given delay bound and the minimization of the average packet delay.

BIO:

Alejandro Ribeiro received his B.Sc. degree in Electrical Engineering from Universidad de la Republica Oriental del Uruguay, Montevideo, Uruguay in 1998. From 1998 to 2003 he was a member of the Technical Staff at Bellsouth Montevideo. Since May 2003 he has been working towards his Ph.D. degree in the Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN where he received his M.Sc. degree in Electrical Engineering in 2005. His research interests lie in the areas of communication theory, signal processing and networking. His current research focuses on wireless cooperative communications, random access, wireless ad-hoc and sensor networks, and distributed signal processing. Mr. Ribeiro is the recipient of the 2005 and 2006 ICASSP student paper awards and a Fulbright Scholar.