ECE Distinguished Lecture Series

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Optimizing Information Freshness in Wireless Networks: From Theory to Practice

Monday, November 2, 2020, 10:00 am – 11:00 am

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Abstract

Age of Information (AoI) is a recently proposed performance metric that captures the freshness of the information from the perspective of the application. AoI measures the time that elapsed from the moment that the most recently received packet was generated to the present time. In this talk, we explore the AoI optimization problem in wireless networks.

We start by considering a wireless network with a number of nodes transmitting information to a base station and develop low-complexity transmission scheduling policies that result in near-optimal AoI performance. We then extend our results to wireless networks under general interference constraints, and develop joint routing and scheduling schemes for minimizing AoI. Finally, we discuss implementation of our transmission scheduling policies using software defined radios.

Biography

Eytan Modiano is Professor in the Department of Aeronautics and Astronautics and Associate Director of the Laboratory for Information and Decision Systems (LIDS) at MIT. Prior to Joining the faculty at MIT in 1999, he was a Naval Research Laboratory Fellow between 1987 and 1992, a National Research Council Post Doctoral Fellow during 1992-1993, and a member of the technical staff at MIT Lincoln Laboratory between 1993 and 1999. Eytan Modiano received his B.S. degree in Electrical Engineering and Computer Science from the University of Connecticut at Storrs in 1986 and his M.S. and PhD degrees, both in Electrical Engineering, from the University of Maryland, College Park, MD, in 1989 and 1992 respectively.

His research is on modeling, analysis and design of communication networks and protocols. He received the *Infocom Achievement Award (2020) for contributions to the analysis and design of cross-layer resource allocation algorithms for wireless, optical, and satellite networks.* He is the co-recipient of the Infocom 2018 Best paper award, the MobiHoc 2018 best paper award, the MobiHoc 2016 best paper award, the Wiopt 2013 best paper award, and the Sigmetrics 2006 best paper award. He was the Editor-in-Chief for IEEE/ACM Transactions on Networking (2017-2020), and served as Associate Editor for IEEE Transactions on Information Theory and IEEE/ACM Transactions on Networking. He was the Technical Program co-chair for IEEE Wiopt 2006, IEEE Infocom 2007, ACM MobiHoc 2007, and DRCN 2015. He had served on the IEEE Fellows committee in 2014 and 2015, and is a Fellow of the IEEE and an Associate Fellow of the AIAA.