



Spring 2010 CIS Colloquium

Analysis and Design of Mobile Ad-hoc Networks: Beyond Poisson Regime

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11 AM - 12 PM, Tuesday, March 23
Wachman Hall 447
(4th Floor Conference Room)

ABSTRACT:

Inter-meeting time between mobile nodes is one of the key metrics in a Mobile Ad-hoc Network (MANET) and is central to the end-to-end delay of forwarding algorithms. Inter-meeting time is typically assumed to be exponentially distributed in many performance studies of MANET or numerically shown to be exponentially distributed under most existing mobility models in the literature.

However, recent empirical results show otherwise: the inter-meeting time distribution in fact follows a power-law. This outright discrepancy potentially undermines our understanding of the performance tradeoffs in MANET obtained under the exponential distribution of the inter-meeting time. Thus, there is need for further study of the non-exponential behavior of inter-meeting time distribution including its fundamental cause and its effect on the MANET performance analysis and system design. This talk mainly discusses how to meet these challenges by disclosing the relationship between the underlying random mobility patterns and the stochastic properties of inter-meeting time, as well as how such properties can be exploited for better system design. In addition, we will also discuss the application of stochastic methods in the design of Internet congestion control as well as wireless scheduling.