



Measurement and Analysis of Mobile and Social Networks

Professor Athina Markopoulou
EECS Department
UC Irvine

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Abstract: The majority of Internet traffic today is through mobile devices and social media. Large-scale measurement and analysis of these systems is necessary in order to understand underlying patterns and enable engineering optimizations and new applications. In this talk, I will present highlights of our research in this area.

First, I will discuss online social networks. I will present our “2K+” framework for generating synthetic graphs that resemble online social networks, in terms of joint degree distribution and additional characteristics, such as clustering and node attributes [INFOCOM’13, INFOCOM’15]. This problem was motivated by our prior work on graph sampling [JSAC’11, SIGMETRICS’11, INFOCOM’10] and by popular demand to make the Facebook datasets we collected publicly available.

Second, I will discuss cellular networks. I will present our work on analyzing Call Detail Records (CDRs) in order to characterize human activity in urban environments, with applications to urban ecology [MOBIHOC’15] and ride-sharing [UBICOMP’14, SIGSPATIAL’15-16].

Third, I will present our ongoing work on AntMonitor - a system for monitoring network traffic on mobile devices [SIGCOMM C2BID’15], with applications to privacy leaks detection [MOBICOM Demo’15], crowdsourcing of network performance measurements, and improved wireless access.

Bio: Athina Markopoulou is an Associate Professor in EECS at the University of California, Irvine. She received the Diploma degree in Electrical and Computer Engineering from the National Technical University of Athens, Greece, in 1996, and the Master's and Ph.D. degrees in Electrical Engineering from Stanford University, in 1998 and 2003, respectively. She has held short-term/visiting appointments at SprintLabs (2003), Arista Networks (2005), IT University of Copenhagen (2012-2013), and she co-founded Shoelace Wireless (2012). She has received the NSF CAREER Award (2008), the Henry Samueli School of Engineering Faculty Midcareer Award for Research (2014), and the OCEC Educator Award (2017). She has been an Associate Editor for IEEE/ACM Transactions on Networking (2013-2015), an Associate Editor for ACM CCR (2016), the General Co-Chair for ACM CoNEXT 2016, and the Director of the Networked Systems program at UCI. Her research interests are in the area of networking including mobile systems and mobile data analytics, network measurement, online social networks, network security and privacy, network coding, and multimedia traffic.

Host: Professor Konstantinos Psounis, kpsounis@usc.edu