



Beyond Internet MRA: Networks of Networks

● **November 3 – 7, 2008**

ORGANIZING COMMITTEE: WALTER WILLINGER, CHAIR (AT&T TECHNOLOGIES), DAVID ALDERSON (NAVAL POSTGRADUATE SCHOOL), JOHN DOYLE (CAL TECH), RAMESH GOVINDAN (USC), CRAIG PARTRIDGE (BBN TECHNOLOGIES)

● Scientific Overview

Activities of enterprises typically involve multiple networks. The networks' activities are correlated because they are invoked to support a common task, and the networks are interdependent because the characteristics of one determine the inputs or constraints for another. They are becoming even more correlated and interdependent as they shift more and more of their controls to be information intensive and data network-based. While this "networks of networks" concept enables enormous efficiency and flexibility, it also has a dark side -- by requiring increasingly complex design processes, it creates vastly increased opportunities for potentially catastrophic failures. This trend in network evolution poses serious questions about the operation and reliability of these critical infrastructure systems in the absence of an adequate theory. The purpose of this workshop is to bring together domain experts from the fields of engineering, biology, mathematics, and critical infrastructure protection to develop the foundation of a nascent theory in support of the networks of networks concept. In particular, we will use the Internet as a case study to illustrate how early verbal observations and arguments with deep engineering insight have led via an interplay with mathematics and measurements to increasingly formal statements and powerful theoretical developments that can be viewed as of what we envision to ultimately become a full-fledged "theory" for Internet-like systems.

● Confirmed Speakers

David Alderson (Naval Postgraduate School); Jean Carlson (UC Santa Barbara); Lijun Chen (Caltech); Mung Chiang (Princeton); David Clark (MIT); John Doyle (Caltech); Kevin Fall (Intel research); Mark Gaynor (BU); Vijay Gill (Google); John Heidemann (USC); Krister Jacobsson (Caltech); Ali Jadbabaie (University of Pennsylvania); Ramesh Johari (Stanford); Steven Low (CalTech); John Lui (Chinese University of Hong Kong); Petri Mahonen (RWTH Aachen); David Meyer (University of Oregon); Michael Mitzenmacher (Harvard University); Fernando Paganini (Universidad ORT Uruguay); Guru Parulkar (Stanford); Balaji Prabhakar (Stanford); Tim Roughgarden (Stanford); Mary Shaw (CMU); Kevin Wood (Naval Postgraduate School); Bill Woodcock (Packet Clearing House); John Wroclawski (USC); Hui Zhang (CMU); Lixia Zhang (UCLA)

● Long Program Schedule

This workshop is part of the long program Internet Multi-Resolution Analysis:

- Tutorials, September 9-12, 2008
- Workshop 1: Multiscale Representation, Analysis and Modeling of Internet Data and Measurements, September 22-26, 2008
- Workshop 2: Applications of Internet MRA to Cyber-Security, October 13-17, 2008
- **Workshop 3: Beyond Internet MRA: Networks of Networks, November 3-7, 2008**
- Workshop 4: New Mathematical Frontiers in Network Multi-Resolution Analysis, November 17-21, 2008

● Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

● www.ipam.ucla.edu/programs/mraws3



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