



INTERNET MULTI-RESOLUTION ANALYSIS: FOUNDATIONS, APPLICATIONS & PRACTICE

September 8 – December 12, 2008

ORGANIZING COMMITTEE: PAUL BARFORD (UNIVERSITY OF WISCONSIN), JOHN DOYLE (CALTECH), ANNA GILBERT (UNIVERSITY OF MICHIGAN), MAURO MAGGIONI (DUKE UNIVERSITY), CRAIG PARTRIDGE (BBN), MATTHEW ROUGHAN (UNIVERSITY OF ADELAIDE), WALTER WILLINGER (AT&T LABS-RESEARCH)

Scientific Overview

This program will focus on innovations and breakthroughs in both theory and implementation of a network-centric multi-resolution analysis (MRA). It will take a structured and interdisciplinary approach to dealing with vertical and horizontal decompositions of Internet-like architectures (e.g., layers and domains) and to representing, analyzing, and visualizing complex datasets from highly engineered networked systems. While retaining some of the mathematical elegance of traditional MRA schemes, the envisioned network MRA - the envisioned Internet MRA in particular - will support the multiscale representations of very large and diverse network-specific annotated graph structures, the development of novel techniques for the study of the dynamics of and dynamic processes over these structures, and the design of new methods and tools for dealing with aggregated spatio-temporal-functional network data representations. Firmly grounded in a number of key Internet MRA target problems (e.g., cyber-security, traffic/network engineering, network control), this program will establish close ties with the NSF-led initiative Global Environment for Networking Innovations, or GENI, and will also benefit from successful multiscale approaches in other scientific disciplines.

Workshop Schedule

- Tutorials. September 9 - 12, 2008
- Workshop 1: Multiscale Representation, Analysis and Modeling of Internet Data. September 22-26, 2008
- Workshop 2: Application 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 MRA. November 17-21, 2008
- Culminating Workshop at Lake Arrowhead. December 8-12, 2008

Participation

This long program will involve a community of senior and junior researchers. The intent is for participants to have an opportunity to learn about new mathematical developments in the area of multi-resolution analysis, to meet a diverse group of people, and have ample opportunities to form new collaborations.

Full and partial support for long-term participants is available. We are especially interested in applicants who intend to participate in the entire program (September 8 - December 12, 2008), but will consider applications for shorter periods. Funding is available for participants at all academic levels, though recent PhDs, graduate students, and researchers in the early stages of their careers are especially encouraged to apply. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission and we welcome their applications. More information and an application is available online.

www.ipam.ucla.edu/programs/mra2008



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