Three DIMACS Special Focus Programs Draw to a Close

[October, 2017] Three long-running DIMACS special focus (SF) programs drew to a close with the end of the summer. Each DIMACS SF is a multi-year program of coordinated activities addressing a broad topic and comprising activities such as workshops, research working groups, tutorials, and research visitors. Each SF concentrates on an area with high potential for impact that is likely to spawn continuing collaborations and lasting research activities. The three that ended are the: 1) SF on Cybersecurity; 2) SF on Energy and Algorithms; and 3) SF on Information Sharing and Dynamic Data Analysis.

The SF on Cybersecurity explored issues related to providing security and privacy in a world where everything is connected. Themes of the SF included: security of critical infrastructure systems; security for new paradigms like cloud computing; fundamental cryptographic services like hash functions; and basic mathematical topics (such as coding theory) that underlie modern communication protocols. The SF on Energy and Algorithms highlighted modeling and algorithmic challenges in energy systems. Important themes included: optimization methods; new energy sources; and uncertainty, risk and reliability. The SF on Information Sharing and Dynamic Data Analysis looked at complex challenges in the use of data, particularly "big data." These included: privacy and security; continual and distributed processing; and bringing together diverse sources of information to draw conclusions and make decisions.

These three SFs combined to sponsor 53 events that engaged nearly 2800 people and to host a total of 30 visitors at DIMACS and its partner institutions. Among these events were the 2014 Implementation Challenge on Steiner Trees and the two most recent Reconnect workshops – on Mathematical and Computational Tools for Energy Efficiency and Reliability of Data Centers and the Electrical Grid in 2017 and on Cybersecurity in 2016. The Reconnect workshops and the Implementations Challenges are long-standing "signature" events of DIMACS. The three SFs also laid the foundation for new DIMACS programs, such as the ongoing Big Data Initiative on Privacy and Security and the SF on Cryptography, as well as the upcoming SF on Bridging Continuous and Discrete Optimization that begins in 2018.

SF events, with letters in parentheses indicating the associated SF (C = Cybersecurity; E = Energy; I = Information Sharing), were as follows:

1) China-US Software Workshop (C)
2) Workshop on Stochastic Networks: Reliability, Resiliency, and Optimization (C)
3) Workshop on Green High Performance Computing (E)
4) Workshop on Systems and Networking Advances in Cloud Computing (C)
5) China-US Software Workshop 2 (C)
6) Workshop on Connectivity and Resilience for Large-Scale Networks (C)
7) Privacy-Oriented Cryptography - Dagstuhl Seminar 12381 (C)
8) NSF/DIMACS Workshop for Aspiring PIs in Secure and Trustworthy Cyberspace (C)
9) Workshop on Recent Work on Differential Privacy across Computer Science (C, I)
10) Workshop on Information-Theoretic Network Security (C)
11) Workshop on Geological Data Fusion (I)
12) Workshop on Economic Aspects of Information Sharing (I)
13) Workshop on Energy Infrastructure: Designing for Stability and Resilience (E)

14) Workshop on Cascading Failures of Power Transmission Systems: Models & Algorithms (E)
15) Workshop on Current Trends in Cryptology (C)
16) Workshop on Analysis of Information from Diverse Sources (I)
17) Working Group on Measuring Anonymity (C)
18) DIMACS/BIC/A4Cloud/CSA International Workshop on Trustworthiness, Accountability and Forensics in the Cloud (C)
19) Workshop on Big Data Integration (I)
20) Workshop on Algorithmic Information Fusion and Data Mining (I)
21) Brainstorming Workshop on Cybersecurity Education (C)
22) Workshop on Statistical Analysis of Network Dynamics and Interactions (I)
23) Working Group on Algorithms for Green Data Storage (E)
24) Workshop on Algorithms for Green Data Storage (E)
25) DIMACS/RUCIA Workshop on Information Assurance in the Era of Big Data (C)
26) Workshop on Systems and Analytics of Big Data (I)
27) Workshop on Secure Cloud Computing (C)
28) Workshop on Building Communities for Transforming Social Media Research Through New Approaches for Collecting, Analyzing, and Exploring Social Media Data (I)
29) Workshop on Multicore and Cryptography (C)
30) NSF/DIMACS Workshop for Aspiring PIs in Secure and Trustworthy Cyberspace (C)
31) MPE 2013+ Workshop on Data-aware Energy Use (E)
32) CERI/DIMACS Workshop on Streaming Graph Algorithms (I)
33) DIMACS Implementation Challenge: Steiner Tree Problems (I)
34) Workshop on Mathematics of Post-Quantum Cryptography (C)
35) Workshop on Coding-Theoretic Methods for Network Security (C)
36) Workshop on Social and Collaborative Information Seeking (I)
37) DIMACS/IEEE Working Group on Efficient and Scalable Cybersecurity using Algorithms Protected by Electricity (C,E)
38) Workshop on Big Data through the Lens of Sublinear Algorithms (I)
39) DIMACS/Columbia Data Science Institute Workshop on Cryptography for Big Data (I)
40) Workshop on Network Coding: the Next 15 Years (C,I,E)
41) DIMACS/Statistics Workshop on Fusion Learning, BFF Inferences, and Statistical Foundations (I)
42) NSF Algorithms in the Field (AitF) Workshop on Algorithms for Software-Defined Networking (I)
43) Reconnect 2016: Mathematical and Computational Tools for Cybersecurity (C)
44) Workshop on Cryptography and its Interactions: Learning Theory, Coding Theory, and Data Structures (C)
45) Workshop on Distance Geometry: Theory and Applications (I)
46) DIMACS/Northeast Big Data Hub Workshop on Privacy and Security for Big Data (C)
47) IMS/ASA Spring Research Conference 2017 (I)
48) Workshop on Algorithms for Data Center Networks (I)
49) Workshop on Complexity of Cryptographic Primitives and Assumptions (C)
50) Reconnect 2017: Mathematical and Computational tools for Energy Efficiency and Reliability of Data Centers and the Electrical Grid (E)
51) Workshop on Outsourcing Computation Securely (C)
52) ICERM Women in Data Science and Mathematics Research Collaboration Workshop (I)
53) Workshop on Distributed Optimization, Information Processing, and Learning (I)

Related Links:

- SF on Information Sharing and Dynamic Data Analysis: http://dimacs.rutgers.edu/SpecialYears/2012_Data/
- SF on Energy and Algorithms: http://dimacs.rutgers.edu/SpecialYears/2012_Energy/
- SF on Cybersecurity: http://dimacs.rutgers.edu/SpecialYears/2011_Cyber/