

# Surendar Chandra

Visiting Research Scientist, FX Palo Alto Laboratory, Inc., Palo Alto, CA  
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## Interests

Experimental system topics in multimedia, mobile collaboration, storage, sensor systems, security

## Experience

- Industry:
  - Principal Software Engineer, EMC Backup Recovery Systems, Santa Clara, CA. *September 2012 -*
  - Visiting Research Scientist, FX Palo Alto Labs., Palo Alto, CA. *August 2010 – August 2012*
    - \* Solely built and deployed a high performance screen sharing system for corporate intranets. First prototype was written in Java for Windows, Mac and Linux. Second high performance prototype was written in C#.Net for Windows 7 and Objective-C for Mac OSX and iOS. This prototype is open-sourced: <https://github.com/DisplayCast>.
    - \* Built an iOS app that re-purposed flocks of iPhone 4S to stream HD video in real-time for a 3D tele-immersive teleconferencing system.
  - Software Engineer, Hindustan Computers Ltd., Madras, India. July 1988 – December 1990
    - \* Part of a group that built an ANSI COBOL compiler in C for Sys V UNIX
  - Software Consultant, Sybase Inc., Emeryville, CA. July 1989 – January 1990
    - \* Port Sybase database server to Prime computer
- Internships:
  - IBM T. J. Watson Research Center, June 1997 – August 1998, Summer 1999 (Metis thin client application framework, Web hoarding)
  - Glaxo Wellcome Inc., August 1995 – May 1997 (web portal builder using Tcl/Tk)
  - Xerox Palo Alto Research Center, Summer 1995 (Bayou disconnected collaboration system)
  - WPI Center for High Performance Computing, Summer 1992 and 1993 (Mach SCSI dump driver)
- Academia:
  - Assistant Professor, Comp. Sci. and Engg., Univ. of Notre Dame, August 2002 – July 2009
  - Assistant Professor, Comp. Sci., Univ. of Georgia, August 2000 – August 2002
- Programming Languages: C, Objective C, Java and C#

## Education

- Ph.D., Computer Science, July 2000  
Duke University, Durham, NC  
Dissertation: “Quality Aware Transcoding: An Application Level Technique to Dynamically Adapt Multimedia Content”, supervised by Carla Schlatter Ellis.
- M.S., Computer Science, August 1993  
Worcester Polytechnic Institute, Worcester, MA  
Thesis: “Adaptive Resource Management”, supervised by Craig Wills.
- B.E., Computer Science and Engineering, May 1988  
Anna University, Madras, India

## Honors and Awards

- **National Science Foundation Early CAREER Award (2004)**
- **Senior member of ACM**
- Certificate of appreciation, IEEE Computer Society (conference activity, 2004)
- North Carolina Networking Initiative Graduate Fellowship ('99-'00)
- IBM Research Dissertation Graduate Fellowship ('97-'98)
- Duke University, Department of Computer Science Fellowship ('93-'94)

## Supervision

- **Visitors:** Prof. Cheul Woo Ro, Silla University, Korea (Jul '06 - Jul '07)
- **Postdoctoral associate:** Dr. Ashish Gehani (Mar '05 - Jun '06) (Senior Computer Scientist, SRI)
- **Ph.D. dissertation:**
  - Xuwen Yu (Ph.D., June 2009)  
Thesis: "A Comprehensive Analysis of the Behavior of Wireless Group Communication Systems" (Member of Technical Staff, VMware)
  - William Felix Acosta Negrin (Ph.D., July 2008)  
Dissertation: "Improving Search in Unstructured Peer-to-Peer Systems" (Asst. Professor, University of Toledo)
- **M.S. theses: (Notre Dame does not offer terminal MS degree)**
  - Nathan Regola (M.S., January 2009)  
Thesis: "Flockfs: A Moderated Collaboration System for Weakly Connected Workgroups" (continuing Ph.D. at Notre Dame)
  - William Acosta (M.S., May 2005)  
Thesis: "Constructing Efficient and Fault-Tolerant Unstructured Peer-to-Peer Networks"
  - Raghunath Gannamaraju (M.S., Nov 2001)  
Thesis: "Palmist: A Tool to Log Palm System Activity" (Current position: Senior Technical Specialist, NXP Semiconductors, Bangalore, India)

## Grants and Sponsored Programs (\$1.37M)

- VMware Academic Program. *VMware Technology Network Subscription* donation for research.
- ND Faculty Research Program. *On the feasibility of temperature aware storage systems*, Jan 2007 - Dec 2007 (\$10,000)
- National Science Foundation. *CAREER: Scalable Self Managing Multimedia Storage*, Feb 2005 - Jan 2010 (\$463,229)
- Defense Intelligence Agency (DIA-MASINT). *Hydra: A Robust and Self Managing Video Sensing System for Retrospective Surveillance*, (PI Surendar Chandra, co-PI Pat Flynn) Mar 2005-Mar 2006 (\$ 238,414)
- HP Mobility Technology for Teaching grant, (PI John Uhran, Co-PI Steve Silliman, Surendar Chandra, Jeff Talley, Michael Lemmon), May 2004 (\$90,000) with additional software donation from Microsoft

- HP Philanthropy and Education. *Server resources for Experimental Systems Lab*, (PI Surendar Chandra), Apr 2004 (\$110,316) with additional \$1,000 supplement (acceptance: 12%)
- Yamacraw Research Initiative, State of Georgia. *An Integrated Scalable Client-Server System for Energy Aware Computing*, (PI's Surendar Chandra and David Lowenthal. Co-PIs Benjamin Bishop, Suchendra Bhandarkar and Scott Watterson), Sep 2000-Jul 2003 (\$460,296)

## Publicly released artifacts

- DisplayCast: a High Performance Intranet Screen Sharing System (<https://github.com/DisplayCast>)
- Quality aware JPEG transcoder (<http://surendar.chandrabrown.org/publications.html>)
- NetCP - educational Computer Networks project environment (<http://surendar.chandrabrown.org/source/netcp.tgz>)
- flockfs - <http://flockfs.sourceforge.net/>
- GDB video tutorial - YouTube: 35K access
- Lecture videos in YouTube (272K access), Google video, iTunes U, podcast and web

## Refereed Publications(h-index:14)

### • Journals and book chapters

50. *Surendar Chandra*, "Moderated group authoring system for campus-wide wireless workgroups". In *IEEE Transactions on Mobile Computing*, vol. 11, no. 6, June 2012.
49. *Surendar Chandra* and *Xuwen Yu*, "A Trace-Driven Analysis of Wireless Group Communication Mechanisms". In *ICST Mobile Communications and Applications Journal* (to appear).
48. *Surendar Chandra* and *William Acosta*, "Implications of the shared filenames and user requested queries on Gnutella performance". In *Springer Peer-to-Peer Networking & Applications Journal*, vol. 5, no. 1, pp 14–29, 2012.
47. *Surendar Chandra*, "Experiences in Personal Lecture Video Capture". In *IEEE Transactions on Learning Technologies*, vol. 4, no. 3, pp. 261-274, July-Sept. 2011
46. *Surendar Chandra* and *Xuwen Yu*, "An empirical analysis of serendipitous media sharing among campus-wide wireless users". In *ACM Transactions on Multimedia Computing, Communications and Applications (TOMCCAP)*, Volume 7(1), Article 6, January 2011. (citation: 3<sup>1</sup>)
45. *Yong Wei*, *Suchendra M. Bhandarkar* and *Surendar Chandra*, "A Client-Side Statistical Prediction Scheme for Energy Aware Multimedia Data Streaming". In *IEEE Transactions on Multimedia*, Volume 8(4), pages 866–874, August 2006. (citations: 16)
44. *Surendar Chandra*, "The Practical Handbook of Internet Computing" (invited), *Chapter 42. Content Adaptation and Transcoding*, Chapman Hall & CRC Press, Baton Rouge, June 2004. (citations: 44)
43. *Surendar Chandra*, "Wireless Network Interface Energy Consumption: Implications for Popular Streaming Formats" (invited). In *ACM Multimedia Systems Journal* 9(2), pages 185–201, Springer-Verlag Heidelberg, August 2003. (citations: 95/2)
42. *Surendar Chandra*, *Carla Schlatter Ellis* and *Amin Vahdat*, "Application-Level Differentiated Multimedia Web Services Using Quality Aware Transcoding". *IEEE JSAC - Special Issue on QoS in the Internet*, Vol 18, No. 12, pages 2544–2565, December 2000. (citations: 88)

<sup>1</sup>Google scholar: <http://scholar.google.com/citations?user=6SV908UAAAAJ>

41. *Surendar Chandra, Carla Schlatter Ellis and Amin Vahdat*, “Differentiated QoS through Quality Aware Transformation of Web Content”. In *ACM SIGOPS Operating Systems Review*, Volume 34, Issue 2, April 2000.

• **Conferences and other refereed venues**

40. *Surendar Chandra and Maribeth Back*, “Faunus: a flexible middleware for specifying and managing multimodal, multiparty collaborations”. In *ACM/IFIP/USENIX Middleware*, Montreal, Canada, December 2012 (acceptance: 27%)
39. *Surendar Chandra, Jacob Biehl, John Boreczky, Scott Carter and Lawrence A. Rowe*, “Understanding screen contents for building a high performance, real time screen sharing system”. In *ACM Multimedia 2012*, Nara, Japan, October 2012 (acceptance: 20%)
38. *Surendar Chandra and Lawrence A. Rowe*, “DisplayCast: a High Performance Screen Sharing System for Intranets”. In *ACM Multimedia 2012*, Nara, Japan, October 2012
37. *Surendar Chandra and Xuwen Yu*, “An analysis of distributed and asynchronous wireless group communication mechanisms” (invited). In *Fourth IEEE WoWMoM Workshop on Autonomic and Opportunistic Communications (AOC 2010)*, Montréal, Canada, June 2010
36. *Surendar Chandra*, “Wireless Network Interface Energy Conservation for Bottlenecked First Mile Networks”. *ACM 20th International Workshop on Network and Operating Systems Support for Digital Audio and Video (NOSSDAV '10)*, Amsterdam. June 2010 (acceptance: 41%) (citations: 6)
35. *Surendar Chandra and William Acosta*, “ Using query transformation to improve Gnutella search performance”. *IEEE Seventh International Workshop on Hot Topics in Peer-to-Peer Systems (HotP2P '10)*, Atlanta, GA, April 2010
34. *Xuwen Yu and Surendar Chandra*, “Designing an Asynchronous Group Communication Middleware for Wireless Users”. *ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM 09)*, pages 274–279, Tenerife, Canary Islands, Spain, October 2009. (acceptance: 30%) (citations: 3)
33. *Surendar Chandra and Nathan Regola*, “flockfs, a moderated group authoring system for wireless workgroups”. *ICST/IEEE Sixth Annual International Conference on Mobile and Ubiquitous Systems: Computing, Networking and Services (MobiQuitous 09)*, Toronto, Canada, July 2009. (acceptance: 22%)
32. *Ashish Gehani and Surendar Chandra*, “Parameterized Access Control: From Design To Prototype”. *ICST/ACM Security and Privacy for Communication Networks (SECURECOMM '08)*, Istanbul, Turkey, September 2008. (citation: 2)
31. *William Acosta and Surendar Chandra*, “On the need for query-centric unstructured peer-to-peer overlays”. *IEEE Fifth International Workshop on Hot Topics in Peer-to-Peer Systems (HotP2P '08)*, Miami, FL, April 2008. (citation: 7)
30. *Xuwen Yu and Surendar Chandra*, “Delay tolerant collaborations among campus-wide wireless users”. *IEEE INFOCOM '08: Mini-symposium*, Phoenix, AZ, April 2008. (acceptance: 27%, citations: 2)
29. *William Acosta and Surendar Chandra*, “Exploiting the Properties of Query Workload and File Name Distributions to Improve P2P Synopsis-based Searches”. *IEEE INFOCOM '08: Mini-symposium*, Phoenix, AZ, April 2008. (acceptance: 27%, citations: 5)
28. *William Acosta and Surendar Chandra*, “Understanding the Practical Limits of the Gnutella P2P System: An Analysis of Query Terms and Object Name Distributions”. In *Fifteenth ACM/SPIE Multimedia Computing and Networking (MMCN '08)*, San Jose, CA, January 2008. (acceptance: 26%, citations: 13)

27. Xuwen Yu and Surendar Chandra, "Campus-wide asynchronous lecture distribution using wireless laptops". In *Fifteenth ACM/SPIE Multimedia Computing and Networking (MMCN '08)*, San Jose, CA, January 2008. (acceptance: 42%, citation: 1)
26. Adam Lusch, Adele Fleury and Surendar Chandra, "Do Nintendo handhelds play nice? An analysis of its wireless behavior". In *6th ACM Annual Workshop on Network and Systems Support for Games (Netgames '07)*, pages 87–92, Melbourne, Australia, September 2007. (citations: 1)
25. Ashish Gehani and Surendar Chandra, "Parameterizing Access Control for Heterogeneous Peer-to-Peer Applications". In *3rd IEEE Security and Privacy in Communication Networks (SECURECOMM '07)*, Nice, France, September 2007. (acceptance: 26%, citation: 1)
24. William Acosta and Surendar Chandra, "Improving Search Using a Fault-Tolerant Overlay in Unstructured P2P Systems". In *International Conference on Parallel Processing (ICPP'07)*, XiAn, China, September 2007. (acceptance: 27%, citations: 13)
23. Surendar Chandra, Ashish Gehani and Xuwen Yu, "Automated Storage Reclamation Using Temporal Importance Annotations". In *27th IEEE International Conference on Distributed Computing Systems (ICDCS 2007)*, pages 12–24, Toronto, June 2007. (acceptance: 13%, citations: 3)
22. Surendar Chandra, "Lecture video capture for the masses". In *ACM 12th Annual conference on Innovation and Technology in Computer Science Education (iTiCSE 2007)*, pages 276–280, Dundee, Scotland, June 2007. (acceptance: 28%, citation: 24)
21. Chris Boehnen, Allison Regier, Deborah Thomas, Surendar Chandra and Patrick Flynn, "Mosaicing videos to stream over multiple independent channels". In *17th ACM Workshop on Network and Operating Systems Support for Digital Audio & Video (NOSSDAV '07)*, pages 3–8, Urbana-Champaign, IL, June, 2007. (acceptance: 33%, citation: 1)
20. William Acosta and Surendar Chandra, "Trace Driven Analysis of the Long Term Evolution of Gnutella Peer-to-Peer Traffic". In *Eighth Passive and Active Measurement conference (PAM 2007)*, Louvain-la-neuve, Belgium, April 2007. (acceptance: 26%, citations: 26)
19. Surendar Chandra and Xuwen Yu, "Share with Thy Neighbors". In *ACM/SPIE Multimedia Computing and Networking (MMCN '07)*, San Jose, January 2007. (acceptance: 25%, citations: 7)
18. Ashish Gehani and Surendar Chandra, "PAST: Probabilistic Authentication of Sensor Timestamps". In *22nd Annual Computer Security Applications Conference*, pages 439–448, Miami, FL, December 2006. (acceptance: 26%, citation: 4)
17. Srinivas Sridharan, Brett Keck, Richard C. Murphy, Surendar Chandra and Peter M. Kogge, "Thread Migration to Improve Synchronization Performance". In *IEEE/ACM Workshop on Operating System Interference In High Performance Applications (OSIHPA '06)*, (held in conjunction with PACT '06), Seattle, WA, September 2006. (citations: 15)
16. Peng Xue and Surendar Chandra, "Revisiting multimedia streaming in mobile ad hoc networks". In *ACM Network and Operating Systems Support for Digital Audio and Video (NOSSDAV '06)*, Newport, RI, USA, May 2006. (acceptance: 31%, citation: 4)
15. Ashish Gehani, Surendar Chandra and Gershon Kedem, "Augmenting Storage with an Intrusion Response Primitive to Ensure the Security of Critical Data". In *ACM Symposium on Information, Computer and Communications Security (ASIACCS '06)*, pages 114–124, Taipei, Taiwan, March 2006. (acceptance: 17%, citation: 3)
14. Michael Gundlach, Sarah Doster, Haijin Yan, David K. Lowenthal, Scott A. Watterson and Surendar Chandra, "Dynamic, Power-Aware Scheduling for Mobile Clients Using a Transparent Proxy". In *International Conference on Parallel Processing (ICPP '04)*, pages 557–565, Montreal, Canada, August 2004. (acceptance: 34%) (citations: 14)
13. Yong Wei, Surendar Chandra and Suchendra M. Bhandarkar "A Statistical Prediction-based Scheme for Energy Aware Multimedia Data Streaming". In *IEEE Wireless Communications and Networking Conference (WCNC '04)*, Atlanta, GA, March 2004. (acceptance: 30%) (citations: 14)



12. *Surendar Chandra*, “Energy Conservation in Ad Hoc Multimedia Networks using Traffic-Shaping Mechanisms”. In *SPIE Multimedia Computing and Networking '04 - (MMCN '04)*, pages 40–54, San Jose, CA, January 2004. (acceptance: 23%) (citations: 4)
11. *Surendar Chandra*, “Beacon: A Peer-to-Peer System to Teach Ubiquitous Computing”. *ACM SIGCSE Technical Symposium on Computer Science Education*, pages 257–261, Reno, NV, February 2003. (acceptance: 32%) (citations: 5)
10. *Surendar Chandra* and *Amin Vahdat*, “Application-specific network management for energy-aware streaming of popular multimedia formats”. In *USENIX Annual Technical Conference*, pages 329–342, Monterey, CA, June 2002. (acceptance: 23%) (citations: 125)
9. *Surendar Chandra*, “Wireless Network Interface Energy Consumption Implications of Popular Streaming Formats”. In *SPIE Multimedia Computing and Networking - 2002 (MMCN '02)*, Vol 4673, pages 85–99, San Jose, CA, January 2002. (acceptance: 27%, citation: 95/2)
8. *Raghunath Gannamaraju* and *Surendar Chandra*, “Palmist: A Tool to log Palm System Activity”. In *IEEE 4th Annual Workshop on Workload Characterization (WWC4)*, pages 111–119, Austin, TX, December 2001. (acceptance: 50%) (citation: 1)
7. *Surendar Chandra*, *Ashish Gehani*, *Carla Schlatter Ellis* and *Amin Vahdat*, “Transcoding Characteristics of Web Images”. In *SPIE Multimedia Computing and Networking - 2001 (MMCN '01)*, Vol 4312, pages 135–149, San Jose, CA, January 2001. (citations: 70)
6. *Surendar Chandra*, *Carla Schlatter Ellis* and *Amin Vahdat*, “Managing the Storage and Battery Resources in an Image Capture Device (Digital Camera) using Dynamic Transcoding”. In *Third ACM International Workshop on Wireless and Mobile Multimedia (WoWMoM'00)*, pages 73–82, Boston, MA, August 2000. (citations: 13)
5. *Surendar Chandra*, *Carla Schlatter Ellis* and *Amin Vahdat*, “Differentiated Multimedia Web Services Using Quality Aware Transcoding”. In *Nineteenth Annual Joint Conference of the IEEE Computer And Communications Societies (INFOCOM '00)*, pages 961-969, Tel Aviv, Israel, March 2000. (acceptance: 26%) (citations: 109)
4. *Surendar Chandra* and *Carla Schlatter Ellis*, “JPEG Compression Metric as a Quality Aware Image Transcoding”. In *Second Usenix Symposium on Internet Technologies and Systems (USITS '99)*, pages 81–92, Boulder, CO, October 1999. (acceptance: 33%) (citations: 110)
3. *Surendar Chandra*, *Carla Schlatter Ellis* and *Amin Vahdat*, “Multimedia Web Services for Mobile Clients Using Quality Aware Transcoding”. In *Second ACM International Workshop on Wireless and Mobile Multimedia (WoWMoM'99)*, pages 99-108, Seattle, WA, August 1999. (acceptance: 38%) (citations: 36)
2. *Craig E. Wills* and *Surendar Chandra*, “Adaptive Resource Management”. In *IEEE Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MASCOTS)*, pages 173–177, Durham, NC, January 1995. (citations: 1)
1. *David Finkel* and *Surendar Chandra*, “NetCp - A Project Environment for an Undergraduate Computer Networks Course”. In *Twenty-fifth annual ACM Technical Symposium on Computer Science Education*, pages 174–177, Phoenix, AZ, March 1994. (citations: 8)

## Invited Lectures and Addresses

- *Secure ubiquitous storage*, ONR, August 2009
- *flocks: a moderated group authoring system for wireless workgroups*: Portland State University, Portland, OR, April 2009
- *Automated Storage Management using Temporal Importance Annotations, NSF Bridges to Engineering Research 2020*, North Carolina A&T, Greensboro, NC, March 2008

- *Mobile group communication systems*: IBM T. J. Watson Research Center, NY, January 2008; Texas A&M University, TX, November 2007; University of North Carolina at Chapel Hill, NC, November 2007; University of California at Davis, CA, October 2007; Purdue University, IN, October 2007; University of California at Santa Cruz, CA, October 2007; FX Palo Alto Labs, CA, October 2007; University of California at Santa Barbara, CA, October 2007; University of California at Irvine, CA, September 2007
- *Podcasting - How does it work and can I use it in my course?* (with Chris Clark), Kaneb Center for teaching and learning, University of Notre Dame, IN, March 2007
- *Getting in touch with the real world*, panelist, ACM/SPIE MMCN, January 2007
- *Collaborative Multimedia Storage in a Campus Environment*, Multimedia Workshop (held in conjunction with ACM Multimedia TPC meeting), Microsoft Research, Redmond, WA, June 2006
- *Roles for Optical and Wireless in Tomorrow's Broadband Service Networks*, academic panel, IEEE Broadnets, October 2005
- *Wireless Broadband*, industry panel with Craig J. Mathias (Farpoint), Dev Gupta (NewLANS), Fanny Mlinarsky (Azimuth), Pierre Humblet (Airvana) and Asa Kalavade (Tatara), IEEE Broadnets, October 2005
- *Hydra: A robust and self managing video sensing system for retrospective surveillance*, National Consortium for MASINT Research, Pacific Northwest National Lab., Sequim, WA, August 2005
- *Efficiently searchable overlay for multimedia sensor storage*, Michigan State, MI, April 2005
- *Multimedia Sensor Research*: Western Michigan University, MI, April 2005; DIA MASINT consortium meeting, Maui, HI, March 2005
- *Energy Aware Mobile Multimedia*: HP Labs, Palo Alto, CA, March 2004; Stanford University, CA, March 2004
- *Energy Aware Mobile Information Access* Yamacraw Industry Affiliates Board, October 2001
- *Towards Energy Aware Mobile Multimedia*: Intel Multimedia Research laboratory, San Jose, CA, March 2001; Ricoh Innovations laboratory, Palo Alto, CA, March 2001
- *North Carolina Networking Initiative (NCNI) Symposium*, February 2000
- *Round table discussion with IBM Fellows on trends in Computer Technology*, IBM T. J. Watson Research Center, August 1999

## Professional memberships

- Senior member of ACM (SIG-OPS, SIG-Mobile and SIG-Multimedia)
- USENIX (since 1999)

## Professional External Service

- **Journal editorial board**
  - **Area editor** - ICST Transactions on Ubiquitous Environments 2009-
  - **Guest co-editor** - ACM/Springer Verlag Multimedia Systems Journal 2005, 2006
- **Conference organizing committee**
  - **TPC Area co-chair - Media Transport and Sharing** - ACM Multimedia 2011

- **TPC co-chair** - ACM/SPIE - Multimedia Computing and Networking (MMCN '05, MMCN '06)
- **Panel chair** - ACM MoVid 2012, ACM/SPIE MMCN 2004
  - \* *Hot Research Topics in Mobile Video*, ACM MoVid 2012. Panelists: Kevin Almeroth (UC Santa Barbara), Landon Cox (Duke), Klara Nahrstedt (Illinois), Nitya Narasimhan (Motorola).
  - \* *Power Aware P2P Multimedia Systems*, ACM/SPIE MMCN 2004. Panelists: Carsten Griwodz (Oslo), Rajesh Gupta (UCSD) and Alan Smith (Berkeley).
- **Session chair** - ACM MMSYS '12, ICST/IEEE Mobiquitous '09, IEEE INFOCOM '08, ACM Multimedia '06 and '03, IEEE Broadnets '04, ACM/SPIE MMCN '04 and '02, ACM WSNA '02
- **Registration chair** - IEEE Mobile Data Management (MDM 2004)
- **Publicity chair** - IEEE SECON 2004, Trusted Internet Workshop 2003, ACM WSNA 2002
- **Tutorials co-chair** - IEEE Broadnets 2004

- **Technical program committees**

2013: ACM Movid

2012: ACM MMSys, ACM Multimedia, ACM NOSSDAV, IEEE ICDCS, ACM/USENIX/IFIP Middleware, ACM NetGames, ACM MoVid, IEEE ICEBE, IEEE ANTS

2011: ACM MMSys, ACM Multimedia, ACM NOSSDAV, IEEE ICDCS, IEEE PerCom, COMSNETS, IEEE ICEBE, IEEE ANTS, IEEE PPcloud

2010: ACM MMSys, ACM Multimedia, ACM NOSSDAV, IEEE ICDCS, IEEE PerCom, COMSNETS, ACM MoViD, IEEE ANTS, IEEE ICEBE

2009: ACM Multimedia, ACM/SPIE MMCN, ACM NOSSDAV, IEEE ICDCS, IEEE INFOCOM, IEEE WoWMoM, COMSNETS, ARES, SIGMAP, WASA, IEEE ICEBE, IEEE ANTS

2008: ACM Multimedia ACM/SPIE MMCN, ACM NOSSDAV, IEEE ICDCS, IEEE INFOCOM, PAM, Netgames, IEEE WoWMoM, IEEE ICC, ARES, ICCCN, IEEE ICEBE

2007: ACM Multimedia, ACM/SPIE MMCN, ACM NOSSDAV, SPIE Multimedia on Mobile, IEEE WCNC, ARES, IEEE ICC, IWCMC, ICCCN, Chinacom, IEEE Broadnets, ICPP, Sensorcomm, IEEE ICEBE, IEEE Globecom

2006: ACM Multimedia, ACM/SPIE MMCN, SPIE Multimedia on Mobile, IEEE MDM, WSN, IEEE SECON, Broadnets, IEEE ICCCN, Chinacom

2005: ACM/SPIE MMCN, ACM NOSSDAV, SPIE Multimedia on Mobile, IEEE ICME, IEEE SECON, ICETE, Broadnets, IEEE ICEBE, IEEE MASS, TIW

2004: IEEE MDM, ACM/SPIE MMCN, IEEE SECON, Broadnets

2003: ACM Multimedia, ACM/SPIE MMCN, IEEE ICC, ACM WSNA, TIW

2002: ACM WSNA

- **Grant panels**

- Defense Intelligence Agency (DIA-MASINT)
- NSF - Global Environment for Network Innovations (GENI)
- National Research Foundation, Singapore
- National Science Foundation (twice in '04, twice in '05, twice in '06, thrice in '07, twice in '09, once in '10)
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Office of Research, National University of Singapore
- Science & Engineering Research Council (SERC) in Singapore
- US Civilian Research and Development Foundation (CRDF)

- **Reviewer** ACM, IEEE, USENIX conferences and journals. e.g., OSDI, SOSP, Mobicom, Mobisys