

# Nalini Venkatasubramanian

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## Research Interests

Distributed Systems Middleware, Multimedia Systems and Applications, Mobile and Pervasive Computing, Formal Methods, Data Management, Grid Computing

## Education

### **Ph.D. - Computer Science**

University of Illinois at Urbana-Champaign, 1998

Thesis Title - *An Adaptive Resource Management Architecture for Global Distributed Computing*

Advisor: Prof. Gul A. Agha.

### **M.S. - Computer Science**

University of Illinois at Urbana-Champaign, 1991

Thesis Title - *Hierarchical Garbage Collection in Scalable Distributed Systems*

### **B.E. - Computer Science and Engineering**

University Visvesvaraya College of Engineering, Bangalore University, 1989

## Employment

*1998 – Present*

### **Professor (2008 – present)**

School of Information and Computer Sciences, University of California, Irvine

### **Associate Professor (2004-2008)**

School of Information and Computer Sciences, University of California, Irvine

### **Assistant Professor (1998-2004)**

School of Information & Computer Sciences, University of California, Irvine

**Director**, IoTSity NSF Site REU Program (2017 - present)

**Director**, Networked Systems Program (2015-2017)

**Co-Director**, Networked Systems Program (2010-2011, 2013-2014)

**Equity Advisor**, School of ICS (2014-2017)

**Decade Graduate Mentor**, Graduate Programs in Computer Science/Networked Systems/Transportation Science (2018- present)

**Faculty**, Center for Emergency Response Technologies (CERT)

*Fall Quarter, 1997*

### **Visiting Lecturer**

Department of Computer Science, University of Illinois at Urbana-Champaign, (on leave of absence from HP Labs).

*1994 – 1998*

### **Member of Technical Staff**

Hewlett-Packard Laboratories, Palo Alto. Media Server Research Group, Broadband Information Systems Lab and E-Services Research Group, Future Systems Department.

1991 – 1994

**Software Design Engineer**

Hewlett-Packard, Cupertino

Object-Oriented Database Lab, Cooperative Computing Systems Lab

Spring, 1991

**Research Assistant**

Open Systems Laboratory, Dept. of Computer Science, University of Illinois at Urbana-Champaign

Spring and Fall,  
1990

**Head Teaching Assistant**

Dept. of Computer Science, University of Illinois at Urbana-Champaign

Summer, 1990

**Summer Intern**

IBM T.J. Watson Research Center

Fall, 1989

**Teaching Assistant**

Dept. of Computer Science, University of Illinois at Urbana-Champaign, for a grad/senior UG course on advanced computer architectures

**Awards**

- National Science Foundation Career Award, Networking Research Program, 1999.
- Teaching Excellence Award, Division of Undergraduate Education, University of California, Irvine, 2002.
- Best Paper Award, IEEE Consumer Communications and Networking (CCN) Conference, Las Vegas, Jan 8th - 10th, 2006.
- Best Student Paper Award, IEEE Workshop on Multimodal Sentient Computing: Sensors, Algorithms and Systems (WMSC 2007) held in conjunction with IEEE CVPR (Computer Vision and Pattern Recognition) 2007.
- Best Overall Idea Award & Best System Architecture Award at IEEE RTSS '07 Ph.D. Forum, for Minyoung Kim, Nikil Dutt, Nalini Venkatasubramanian, Carolyn Talcott. *xTune: Online Verifiable Cross-Layer Adaptation for Distributed Real-Time Embedded Systems*, SIGBED Review, Volume 5, Number 1, January 2008, Special Issue on the RTSS Forum on Deeply Embedded Real-Time Computing.
- Best Student Poster Award, in the IEEE/ACM 11th International Symposium on Cluster, Cloud and Grid Computing (CCGRID2011) Newport Beach, May 2011, USA. *Cloud Based Framework for Rich Content Mobile Applications*
- Dean's Award for Undergraduate Teaching, University of California, Irvine, 2014.
- Dean's Award for Service, University of California, Irvine, 2015
- US IGNITE Extreme Software Defined Networking (SDN) Challenge - 1st Prize, Team DSM, 2015
- 2016 NCWIT Extension Services Transformation (NEXT) Award for Excellence in Promoting Women in Undergraduate Computing. With Drs. Artis, Blackwell, Regan, Richardson, Venkatasubramanian, and Ms. Rewal.

- Best Paper Nominee, IEEE Intl. Conf. on Smart Computing (SMARTCOMP) 2016
- Best Paper Award, IEEE Intl. Conf. on Cloud Computing Technology and Science (CloudCOM) 2017.
- Best-in-Session Presentation Award, IEEE InfoCOM 2018.
- Best Paper Award, IEEE Symposium on Reliable Distributed Systems (SRDS), 2018.

### **Selected Professional Activities and Invited Talks**

- Steering Committee Member: IEEE/ACM Cluster, Cloud and Grid Computing(CCGRID), ACM Mobile Video Workshop Series (MoVid), ACM Distributed Event Based Systems (2017- 2020), ACM/IFIP/USENIX Middleware (2007-2010), ACM Adaptive and Reflective Middleware (ARM) Workshop Series.
- Area Track co-Chair, Web of Things, Ubiquitous, and Mobile Computing, The WebConf 2019.
- Test-of-Time Awards Chair, ACM Middleware (2017, 2018, 2019).
- Invited talk and panelist, Workshop on Data-Driven Decision Making - Managing Stormwater in the Data Digital Age, Annual Meeting of the California Stormwater Quality Association (CASQA) 2018, Talk Title: - “ *Exploring Resilience of Community Water Systems - A Data Driven Approach*”, 2018.
- Invited Panelist, American Association for the Advancement of Science (AAAS) Annual Meeting, 2018 - "Intelligent Infrastructure for Disaster Management and Public Safety”, Feb 2018.
- General co-chair, IEEE SMARTCOMP 2018, Taormina, Italy, June 2018.
- Plenary Panel Co-chair and Moderator, “*Challenges in Enabling Effective Smart Cities and Communities: Global Perspectives*”, IEEE Smart Computing Conference, 2018.
- Track Organizer and Co-Chair, Special Session on IoT Connectivity and Infrastructure (IoTCon), ACM Intl. Conference on Multimedia Systems (MMSys) 2018
- Keynote Talk, ACM Workshop on Adaptive and Reflective Middleware, ACM Middleware 2017.
- Invited introductory talk, Smart and Connected Communities Researchers' Summit, US IGNITE Smart Cities Meeting, Austin, June 2017.
- Invited talk and participant, US-INRIA Joint Workshop , UC Berkeley, June 2017
- Invited talk and participant, US-Japan Joint Workshop, Atlanta, June 2017
- Track co-Chair, Multimedia and Real-time Networking Track, IEEE ICCCN 2017
- Track Organizer and Co-Chair, Special Session on IoT Connectivity and Infrastructure (IoTCon), ACM Multimedia Systems (MMSys) 2017
- Invited Speaker, CalState Los Angeles NASA Direct-STEM Multidisciplinary Seminar Speaker, 2017
- Invited Speaker, Women in Data Science and Engineering, IEEE Intl. Conference on Data Engineering (ICDE) 2017
- Program Co-chair, ACM Symposium on Distributed Event Based Systems (DEBS) 2016
- Invited Participant and Speaker, JST-NSF International Joint Symposium on Big Data, AI, IoT, Cyber Security for a New Society, Tokyo, Nov 2016 Talk Title: “Enabling Resilient Smart Community Infrastructure – A Middleware Approach”.

- Invited Participant and Speaker, Japan/US Trustworthy Networking Workshop, San Francisco, Mar 2016, Talk Title: Multinetworking for IoT Based Resilient Communities,
- Invited Participant and Speaker, NII Shonan Meeting on “Big Data: Challenges and Opportunities for Disaster Recovery”, Shonan Village Center, Japan, March 2016, Talk Title: “Resilience and Dependability in Challenged Environments”
- Invited Panel Speaker, US-Europe Joint Workshop on Next Generation Internet-of-Things, USC, March 2016, Panel on Middleware and Software Engineering, Talk Title:
- Invited Participant and Speaker: 2016 NSF Visioning Workshop on Smart and Connected Communities Research and Education, January 2016, Seattle, USA. Talk Title:
- Invited Participant, US-German Joint Workshop on the Internet of Things (IoT) and Cyber-Physical Systems (CPS), January 2016.
- Invited Speaker, NSF Cyber-Physical Systems PI Meeting, October 2016
- Featured Speaker, ICS Leadership Council, UC Irvine, Nov 2016
- Invited Speaker, IEEE SmartCOMP 2016, Jun 2016
- Invited Speaker, NSF/Morocco Workshop on Smart Cities, 2016
- Invited Panelist, ACM Adaptive and Reflective Middleware Workshop Series, 2015.
- Invited Speaker, NSF Cyber-Physical Systems PI Meeting, November 2015
- Invited Participant and Member of NIST Community Resilience Panel, November 2015
- Invited Panelist, NIST/NFPA Smart Home Workshop, October 2015
- Program co-chair, IEEE Symposium in Reliable Distributed Systems (SRDS) 2015, Oct 2015.
- Invited Panelist, Doctoral Symposium, IEEE Symposium on Reliable Distributed Systems (SRDS) 2015
- Editorial Board – INFORMS Service Science Journal, 2015-present
- Invited Speaker, US IGNITE Application Summit, 2015
- Invited Participant, NIST Disaster Resilience Workshop Series, April 2014 – March 2015
- Invited Speaker, NIST/US IGNITE Global Cities Challenge, Washington D.C. June 2015 Talk title: Project SCALE: Smart Community Awareness and Alerting
- Invited Panelist, Technology Innovators Forum, May 2015
- Area Chair, Distributed OS and Middleware Track – ICDCS 2015
- Featured Speaker: Bay Area Alumni Event for UCI , March 2015
- Tutorials Co-Chair, ACM DEBS 2015
- Invited Graduate Program Reviewer, Dept. of Computer Science, University of Saskatchewan, Canada, March 2015
- Invited Speaker, Workshop on Adaptive and Reflective Middleware, December 2014
- Coordinator, Roundtable discussion on Smart Communities, Workshop on Adaptive and Reflective Middleware Workshop, December 2014

- Invited Panelist, Panel on “Transdisciplinary Fundamental Research Problems: examples of Rigor in Service Science Research and Convergence of Cognitive/Behavioral Science and Computer Science with Engineering, MIT-NSF Workshop: Smarter Service Systems through Innovation Partnerships and Transdisciplinary Research, Boston, November 2014
- Invited Working Group Member, Special Group on Directions for EFRI, NSF Smart Service Systems, Jan 2015. Invited to participate as a thought-leader in Smart Cities at a closed event at MIT on Future Interdisciplinary Research towards setting a Smart Service Systems Fundamental Research agenda, November 2014
- Invited Participant, NIST Global Smart Cities Challenge Kickoff event, September 2014.
- Invited Panelist, Panel on Global SmartCities, NSF CyberPhysical Systems PS PI Meeting, Washington, D.C., November 2014
- Invited Participant, NSF Workshop on Extensible Distributed Systems, Washington D.C. 2014
- Invited speaker, US IGNITE Application Summit 2014, Silicon Valley, June 2014. US Ignite was established by the WhiteHouse Office of Science and Technology Policy and the National Science Foundation to foster the creation of next generation Internet applications that provide transformative public benefit.
- Invited Panel Organizer and Panel Speaker, Panel Title: “*Internet of Broken Things*”, USENIX Workshop on Hot Areas in Dependability (HotDep 2014), held in conjunction with USENIX OSDI (Operating Systems Design and Implementation), October 2014
- Invited Speaker, Restricted White House Preview on SmartAmerica Projects (selected projects), June 2014. Discussed issues with policy experts in WhiteHouse and Congressional Staff.  
[https://www.ics.uci.edu/community/news/spotlight/spotlight\\_nalini\\_smartamerica.php](https://www.ics.uci.edu/community/news/spotlight/spotlight_nalini_smartamerica.php)
- Invited Panelist and Speaker, NIST Workshop on Smart Firefighting, March 2014 and Oct 2014. This is an event involving members of the fire practice and invited experts in cyberphysical systems to develop and agenda for next generation firefighting systems. Also invited to co-author a book chapter on “Use of Data for the Fire Practice” in a NIST book with Fire Chief Paul Siebert, City of Frisco, Texas.
- Invited participant, White House/NIST SmartAmerica Tech Jam, February 2014
- Invited participant, White House/NIST Workshop on SmartAmerica, December 2013
- Invited moderator, NSF Workshop on CyberPhysical Transportation Systems, January 2014
- Invited Session coordinator and Speaker – Special Session on Mobile Crowdsensing, ACM Design Automation Conference, 2014
- Invited Speaker, IEEE ICNC 2014, ***Talk Title: Software Defined Cyberphysical Multinetworks.***
- Invited Panelist. NSF Workshop on CPS Cloud, 2013
- Doctoral Symposium co-Chair – ACM DEBS 2014
- Workshops Co-Chair, IEEE International Conference on Distributed Computing and Networking 2013
- Work-in-Progress Chair, IEEE International Conference on CyberPhysical Systems (ICCPS) 2013
- Keynote Speaker, IEEE Globecom Workshop on Rural Communications, 2013. ***Talk Title: Resilient Multinetwork Communications in Challenged Environments: A Middleware Approach***

- Invited Speaker. IEEE Advanced Networking Technologies and Systems (ANTS 2012)
- Program Co-Chair, 1<sup>st</sup> IEEE Workshop on Reliable CyberPhysical Systems held in conjunction with 31<sup>st</sup> IEEE Symposium on Reliable Distributed Systems (SRDS 2012)
- Area Chair, ACM Multimedia 2012
- Program Co-Chair, 13th International Conference on Mobile Data Management (MDM 2012)
- Publications Chair, IEEE Intl. Conference on CyberPhysical Systems (ICCPS), 2012
- Invited Speaker, ACM Multimedia Women, 2011
- Invited Speaker, Future of Middleware Event, ACM/IFIP/USENIX Middleware 2011, ***Talk Title: Resilience in CyberPhysical Systems***, Lisbon, Portugal, December 2011
- Invited Panelist, National Academy of Sciences Workshop on National Resilience to Hazards and Disasters, May 2011
- Program Co-Chair, NSF Indo-US Workshops on Pervasive Communications and Computing (PC3) – March 2011, New Delhi; July 2011, Washington D.C.
- Invited Speaker, Schools on Formal Methods (SFM) Series, Interoperability in Complex Distributed Systems, ***Talk Title: Interoperability in CyberPhysical Spaces***, Bertinoro (Italy), June 2011
- Keynote Speaker, ACM Middleware Doctoral Dissertation Symposium, December 2010
- Invited Speaker, Networking Networking women held in conjunction with ACM MobiCOM/MobiHOC 2010
- Editorial Board – Elsevier Journal on Sustainable Computing: Informatics and Systems, 2011-present
- General Co-Chair, 11th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGrid 2011).
- Program Co-Chair, Third International ICST Conference on MOBILE Wireless MiddleWARE, Operating Systems, and Applications (MobilWare 2011).
- Co-editor, Special Issue of Springer Journal on Internet Systems and Applications (JISA) on Networking and Distributed Computing Challenges in CyberPhysical Systems, 2011.
- Co-editor, Special Issue of IEEE Communications on Middleware for Communication Networks, to appear 2011.
- Invited Panelist, National Academy of Sciences Workshop on Mobile Alerting, April 2010.
- Program Co-chair, 9<sup>th</sup> Workshop on Adaptive and Reflective Middleware to be held with ACM Middleware 2010 (ARM 2010).
- Program Co-chair, ACM MOVID 2010, 2<sup>nd</sup> Workshop on Mobile Video Delivery to be held in conjunction with ACM Multimedia 2010.
- Program Co-chair, IEEE International Conference on Service-Oriented Computing and Applications 2010 (SOCA 2010).
- Panel Co-chair, 11th International Conference on Mobile Data Management (MDM 2010).
- Breakout Session Co-Chair, Community Response, DHS Emergency Management Workshop (EMWS 2009).

- Area Co-Chair, Networks and Protocols track, IEEE International Conference on Distributed Computing Systems (ICDCS 2010).
- Panel Chair, Adaptive Middleware for Cyberphysical Systems, Workshop on Adaptive and Reflective Middleware at ARM 2009 held with ACM Middleware 2009.
- Program Co-Chair, IEEE Symposium on World of Wireless and Mobile Multimedia 2008 (WoWMoM 2008).
- General Chair, ACM/IFIP/USENIX Middleware 2007.
- Workshop Co-Organizer, Workshop on Reflective and Adaptive Middleware held with ACM Middleware - 2007, 2008, 2009
- Associate Editor, IEEE Transactions on Mobile Computing, 2008-2011.
- Commercial Tracks Co-chair, IEEE International Parallel and Distributed Processing Symposium, IPDPS 2007.
- Calit2 Igniting Technology Series Talk, “Customized Dissemination in the Large”, March 2007.
- Program Co-Chair, Workshop on Adaptive and Reflective Middleware, ACM Middleware 2006.
- Workshop Co-Organizer, Workshop on Reflective and Adaptive Middleware, ACM Middleware 2005.
- Workshop Co-Organizer, Workshop on Reflective and Adaptive Middleware, ACM Middleware 2004.
- Short Papers Chair, ACM Multimedia 2006.
- Invited Talk, Mobiquitous 2005. “Role of Mobile and Ubiquitous Computing in Emergency Response”
- Program Co-Chair, ACM/SPIE Conference on Multimedia Computing and Networking, 2005 (MMCN 2005).
- UCI TechTalk Series, “Multimedia Support for the Homeland Security Domain”, 2004.
- Program Chair, ACM/SPIE Conference on Multimedia Computing and Networking, 2004 (MMCN 2004).
- Invited Talk, Hewlett-Packard Laboratories, “*Composability Issues for Mobile Middleware*”, 2003.
- Invited Talk, UC Mexus Program, “*MIRO: Adaptive Middleware for Mobile Internet Robots*”, 2003.
- Workshop Co-Organizer, Workshop on Reflective and Adaptive Middleware, ACM Middleware 2003.
- Plenary Panel Chair, Panel on Middleware for Sensor Applications, IEEE International Conference on Distributed Computing Systems (ICDCS 2003).
- Tutorial Speaker, Systems Support for Sensor Applications, IEEE High Performance Computing 2003.
- Tutorial Speaker, Platforms and Tools for Multimedia Applications, IEEE DATE 2004.
- Workshop Co-Organizer, Cal-(IT)<sup>2</sup> Workshop on Crisis Response, 2002.
- Program Vice-Chair, IEEE International Conference on Cluster Computing 2001.
- Publications Chair, IEEE International Conference on High Performance Computing 2001 (HiPC 2001).
- Associate Chair, Systems Track of the ACM Multimedia Conference, 2000.
- Invited Talk, OPENSIG 2000 “*CompOSE|Q – A Safe Middleware Framework for Large Scale Distributed Systems*”, October 2000.

- Conference Co-organizer and Program Committee Member IFIP Conference on Formal Methods in Object Based Open Distributed Systems 2000 (FMOODS'2000).
- Publications Chair, IEEE International Conference on High Performance Computing 2000 (HiPC 2000).
- Invited Talk, Digital Media Innovations, UC Santa Barbara, “*A Virtual Reality Enhanced Digital Surveillance System*”, 1999.
- Invited Talk, Novell Chairman Meeting, “*Flexible Middleware for Large Scale Distributed Computing*”, April 1999.
- Publications Chair, IEEE International Conference on High Performance Computing 1999 (HiPC 1999).
- Invited Talk, HRL Colloquium Series, “*Multimedia in Global Distributed Systems*”, February 1999.
- Panelist, “Java and Middleware for High Performance Computing”, IEEE International Parallel and Distributed Processing Symposium (IPDPS 99), “*Middleware Support for High Performance Computing*”, April 1999.
- Invited Talk, Hewlett-Packard Research Laboratories, “*QoS-enabled Customizable Middleware for Global Distributed Computing*”, December 1998.
- Program Co-chair, Mini-track on Distributed Multimedia and Web Collaborations at HICSS '97 with Klara Nahrstedt, UIUC and Atul Prakash, University of Michigan, Ann Arbor.
- Executive Committee Member, University of California Digital Media Innovations (DiMI) program.
- Editorial Review Board Member, Journal of Database Management (JDM).
- NSF Panels and Workshops on Networking Research, Operating Systems and Compilers, CISE Infrastructure, Residential Broadband.
- Member of International Taskforce on “Local Distributed Computing: Technology Assessment, and a Look at What Lies Ahead”, combining academic and industry perspectives on the future of local distributed computing - January 1996.
- Hewlett-Packard representative on technical visits, university research reviews and trade shows.
- Reviewer (journals and conferences): IEEE Transactions on Software Engineering, IEEE Concurrency, ACM Computing Surveys, ACM Multimedia Systems, IEEE Transactions on Parallel and Distributed Technology, Journal of Theory and Practice of Object Systems, ACM Multimedia, EUROPAR, PODC, ICMCS, ICDCS, FMOODS, Parallel Architectures and Languages - Europe.
- NSF/DARPA Next Generation Internet Meeting, “*QoS-enabled Customizable Middleware for Global Distributed Computing*”, October 1999.

### **Outreach talks and activities**

- NASA DIRECT STEM Project with CalState Los Angeles, Summer School Speaker, Workshop Participant
- INSPIRES/ASPIRES invited talk to underrepresented minorities on Research Challenges in IoT and Resilient Communities , UCI
- Roundtable session on graduate school/admissions - [GO-UCI](#) event for under-represented minority students.



- Graduate Women Coffee Roundtable Events – networking graduate students with distinguished faculty speakers.
- Co-organizer, Women Researchers in Technology (WRIT) events - May 2016, Nov 2016
- Invited Speaker, Calit2 Summer Undergraduate Research Fellows Program, UC Irvine.

### **Program Committee Member**

- IEEE Intl. Conference on Distributed Computing Systems 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
- ACM/IFIP/USENIX Middleware 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018
- ACM DEBS 2015, 2016, 2017, 2018
- IEEE IoT Design and Implementation 2016, 2017, 2018
- IEEE SmartComp 2016, 2017, 2018
- IEEE ICDE 2018
- IEEE PerSysT, First International Workshop on Pervasive Systems Integration, to be held in conjunction with The 16th IEEE International Conference on Pervasive Computing and Communications (PerCom 2018)
- IEEE ISORC 2018
- IEEE MDM 2017
- ACM EuroSys 2017, 2019
- IEEE WoWMoM 2015
- IEEE IQ2S 2014, 2016
- 10th ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS) 2019
- IEEE Intl Conf on Pervasive Computing and Communications (PERCOM) 2012, 2013, 2014, 2015, 2016
- ACM PECS
- IEEE WoWMoM 2014
- IEEE IQ2S 2014.
- IEEE Intl. Conference on Distributed Computing Systems and Networks (ICDCN) 2014.
- ACM Multimedia 2011, 2013, 2017
- IEEE Intl. Symposium on Reliable Distributed Systems (SRDS) 2013
- ACM Workshop on Adaptive and Reflective Middleware (ARM) 2013
- IEEE Intl. Symposium on Reliable Distributed Systems 2012
- IEEE SESA 2012
- IEEE CPSCoM 2012
- IEEE ANTS 2012

- ACM COMSNETS 2012
- ACM Workshop on Adaptive and Reflective Middleware (ARM) 2011, held in conjunction with ACM/IFIP/USENIX Middleware
- IEEE 2<sup>nd</sup> International Green Computing Conference (IGCC 2011)
- 12th International Conference on Mobile Data Management, MDM 2011
- International Conference on Body Sensor Networks, BSN 2011
- Workshop on Sensor Enabled Situational Awareness (SESA) to be held in conjunction with the 12th International Conference on Distributed Computing and Networking (ICDCN), 2011.
- Ninth Annual IEEE Intl. Conf on Pervasive Computing and Communications (PERCOM 2011)
- Third International Workshop on “Emergency Management: Communication and Computing Platforms” will be held in conjunction with IWCMC 2011.
- Eighth Annual IEEE Intl Conf on Pervasive Computing and Communications (PERCOM 2010)
- 2010 International Conference on Body Sensor Networks (BSN 2010)
- IEEE 11<sup>th</sup> International Conference on Mobile Data Management (MDM 2010)
- The 6th International Wireless Communications and Mobile Computing Conference(IWCMC 2010)
- The Second International Workshop on Information Quality and Quality of Service for Pervasive Computing (IQ2S 2010), in Conjunction with IEEE PERCOM 2010
- ACM SIGKDD Workshop on Intelligence and Security Informatics (ISI-KDD 2010) held in conjunction with ACM KDD 2010
- IEEE 1<sup>st</sup> International Green Computing Conference (IGCC 2010)
- ACM Multimedia 2009
- 2<sup>nd</sup> Workshop on Mobile Video Delivery, MoVID 2009 (held in conjunction with InfoCOM 2009)
- ACM/SPIE Intl. Conf. on Multimedia Computing and Networking (MMCN 2009),
- ACM SIGKDD Workshop on CyberSecurity and Intelligence Informatics (CSI-KDD 2009) held in conjunction with ACM KDD 2009
- Workshop on Context-aware Adaptation Mechanisms for Pervasive and Ubiquitous Services" (CAMPUS'08), DisCoTec Federated Series, 2008.
- IEEE Estimedia 2008
- IEEE International Conference on Distributed Computing Systems, ICDCS 2008
- ACM/SPIE Conference on Multimedia Computing and Networking MMCN 2008
- Fourth IEEE International Workshop on Sensor Networks and Systems for Pervasive Computing (PerSenS 2008), held in conjunction with IEEE Percom 2008
- IFIP 2008 International Conference on Embedded and Ubiquitous Computing 2008 (EUC-08)
- IEEE Information Security Informatics (ISI) 2007
- ACM/SPIE Conference on Multimedia Computing and Networking MMCN 2007

- IEEE International Conference on High Performance Computing HiPC 2007
- Sixth IEEE Workshop on Adaptive and Reflective Middleware 2007 in conjunction with ACM Middleware 2007
- IEEE Estimedia 2007 Workshop in conjunction with the IEEE/ACM/IFIP CODES+ISSS 2007 Conference
- IEEE Information Security Informatics (ISI) 2006
- ACM/SPIE Multimedia Computing and Networking 2006 (MMCN'06), San Jose, California
- First IEEE International Workshop on Services and Infrastructure for the Ubiquitous and Mobile Internet (SIUMI 2006) in conjunction with IEEE Intl. Conference on Distributed Computing (ICDCS 2006)
- ACM SAC 2006, Track on Programming for Separation of Concerns
- IEEE International Conference on eScience and Grid Technologies 2005
- IEEE International Conference on Real Time Applications and Systems, Work in Progress Session, RTAS 2005
- ACM Workshop on End-to-End, Sense-and-Respond Systems, Applications, and Services in conjunction with MobiSys '05
- IEEE International Workshop on Next Generation Wireless Networks 2005 (WonGEN) in conjunction with International Conference on High Performance Computing (HIPC 2005)
- Fourth Workshop on Adaptive and Reflective Middleware 2005 in conjunction with ACM Middleware 2005.
- First International Workshop on Services and Infrastructure for the Ubiquitous and Mobile Internet (SIUMI 2005) in conjunction with IEEE Intl. Conference on Distributed Computing (ICDCS 2005)
- IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS 2005) in conjunction with IEEE International Parallel and Distributed Processing Symposium 2004 (IPDPS 2005)
- First International Workshop on Multimedia Service Composition in conjunction with ACM Multimedia 2005 (ACM MM 2005)
- ACM/IFIP/USENIX International Middleware Conference (Middleware) 2004
- IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS 2004) to be held as a part of the IEEE International Parallel and Distributed Processing Symposium 2003 (IPDPS 2004)
- IEEE International Real-Time Systems Symposium (RTSS 2003)
- IFIP International Conference on Formal Methods for Open Object-Based Distributed Systems (FMOODS 2003)
- IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS 2003) to be held as a part of the IEEE International Parallel and Distributed Processing Symposium 2003 (IPDPS 2003)
- International Symposium on Distributed Objects and Applications (DOA) 2003
- ACM Multimedia Conference, 2003
- IEEE International Conference on Distributed Computing Systems (ICDCS), 2003
- ACM/IFIP/USENIX International Middleware Conference (Middleware) 2003
- International Symposium on Distributed Objects and Applications (DOA) 2002
- IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS 2002) to be held as a part of the IEEE International Parallel and Distributed Processing Symposium 2002(IPDPS 2002).
- IEEE International Conference on Distributed Computing Systems (ICDCS), 2002.

- ACM/SPIE Multimedia Computing and Networking 2002 (MMCN'02), January 18-25, 2002, San Jose, California.
- IFIP International Conference on Formal Methods for Open Object-Based Distributed Systems (FMOODS 2002), March 20-22, 2002, University of Twente.
- 9th IEEE International Conference on Network Protocols (ICNP 2001), Mission Inn, November 11 - 14, 2001, Riverside, California.
- Workshop on Optimizing Middleware, ACM Programming Language Design and Implementation (PLDI 2001).
- International Symposium on Distributed Objects and Applications (DOA) 2001.
- IEEE International Workshop on Parallel and Distributed Real-time Systems (WPDRTS 2001) to be held as a part of the IEEE International Parallel and Distributed Processing Symposium 2001 (IPDPS 2001).
- IEEE International Conference on Distributed Computing Systems (ICDCS), 2001.
- IEEE International Symposium on Cluster Computing and the Grid, 2001.
- ACM Multimedia Conference, 2000.
- Workshop on Parallel and Distributed Real-time Systems, International Parallel and Distributed Processing Symposium 2000 (IPDPS 2000).

## **Funding**

- Co-I, CREDENCE: Collaboration Network for Excellent Education and Research in Dependable and Secure Distributed Systems funded by Research Council of Norway (RCN), 5,856,000NOK (Norwegian krone; ~700K USD), 2019-2021.
- PI, NIST MSE Firefighting Grant, “Enabling Infrastructure and Information Resilience for Smart Firefighting – Phase 2”, \$100K, 2018-2019.
- PI, NIST MSE Firefighting Grant, “Enabling Infrastructure and Information Resilience for Smart Firefighting”, \$100K, 2017-2018.
- PI, MINES INRIA Associate Team Grant, Adaptive Communication Middleware for Resilient Sensing & Actuation In Emergency Response Scenarios, \$12K, 2018-2021.
- PI, NSF REU Site: Cultivating the IoT-enabled Smart Community (IoT-SITY), \$280K, 2017 – 2020.
- Co-PI, Toshiba - “Benchmarking IoT Data Management Systems”, \$ 150K, 2017-2019.
- PI, DEBS 2016 Student Travel Grant Award, \$15K, 2016.
- Co-PI, DARPA Brandeis award for the installation of a “A Privacy Cognizant IoT Environment” at UC, \$4.9 M, 2015-2020.
- PI, SRDS 2015 Student Travel Grant Award, \$15K, 2015.
- PI, EAGER: “Global SmartCities Program, Project AquaSCALE: Exploring Resilience in SmartCity Water Infrastructures”, \$250K, 2015-2017.
- Co-PI, NASA DIRECT STEM Project with CalStateLA - \$1.25M, 2015-2020.
- Co-PI, NSF “BigData Program, Making Big Active Data: From PetaBytes to MegaFolks in Milliseconds” \$784,380, 2014-2019.
- PI, EAGER: SCALE 2 (Safe Community Awareness and Alerting) - Extending a SmartAmerica Challenge Project, \$300,000, 2014-2018.
- PI, NSF PC3 supplement to “Collaborative Research: Pervasive Computing for Disaster Response”, \$25K, 2013-2014.
- PI, NSF PC3, “Collaborative Research: Pervasive Computing for Disaster Response”, \$300K, 2011-2013.
- Co-PI, DHS “Social Media Alert and Response to Threats to Citizens (SMART-C)”, \$600K, 2012-2014.
- Co-PI, NSF, “II-EN: UCI Irvine Sensorium”, \$373K, 2011-2015.
- PI, NSF, “CCGrid 2011: The 11<sup>th</sup> Int’l Symposium on Cluster, Cloud and Grid Computing”, \$20K, 2011-2012.
- PI, NSF CPS, “CPS: Medium: Collaborative Research: Dependability Techniques for Instrumented CyberPhysical Spaces”. Co-PI: Sharad Mehrotra, Nikil Dutt; Collaborators: SRI International, \$700K, 2010-2014.
- PI, NSF Nets, “Nets: EAGER: GeoSocial Alerting: An Exploratory Case Study in SocioTechnical Alerting”, \$205K, 2010-2012.
- Co-PI, DARPA, “Speech-Based Situational Awareness for Event Response” \$430K, 2010-2013.
- Co-PI, NSF, “Collaborative Research: Dispatcher’s Assistant for Emergency First Response” \$120K, 2008-2010.

- Co-PI, DHS-FEMA Firefighter Safety Grant “SAFIRE: Situational Awareness for Firefighters”, \$1 million, 2008-2010.
- Industry Gift, Nokia Research Labs, \$8K, 2008.
- Industry Gift (joint with Sharad Mehrotra), The School Broadcasting Company Inc., \$50K, 2007.
- Industry Gift, Nokia Research Labs, \$5K, 2007.
- Principal Investigator, “Collaborative Research: CSR-EHS: Modeling and Exploiting Cross-Layer Timing in Distributed Embedded Systems”, NSF, Total award: \$200,000, 2006-2009.
- Co-PI, NSF, “Responsphere: An IT Infrastructure for Responding to the Unexpected”, total award \$1.8 million, 2004-2009.
- Co-PI,NSF, “Disaster Portal”, total award \$102K, 2005-2006.
- Co-PI, NSF Large ITR, “Responding to the Unexpected”, total award \$12.5 million, 2003-2008.
- Co-PI, ONR, “Adaptive Systems Interoperability”, total award \$5 million (\$890,000 – UCI) , 2002 – 2007.
- Principal Investigator, “QoS-enabled Customizable Middleware for Global Distributed Computing”, NSF Career Award, total award \$402,656, 1999 – 2003.
- Co-Investigator, UC Mexus Program, “MIRO: Adaptive Middleware for a Mobile Internet Robot Laboratory”, total award \$40,000, 1999 – 2000. With Alfredo Witzenfield (PI).
- Principal Investigator, Hewlett Packard, “Agent Based Middleware for Flexible Global Distributed Computing”, total award \$40,000, 2000 – 2003.
- Co-Investigator, DARPA / AFOSR, “Time Based Coordination of Network Embedded Nodes”, total award \$1,455,560, 2001 – 2005. With Kane Kim (PI).
- Principal Investigator, NSF, “Workshop on Formal Methods for Open Object-Based Distribution Systems (FMOODS2000)”, total award \$10,000, 2000 – 2001.
- Principal Investigator, Novell Inc., total award \$160,000, 1999 – 2001.
- Principal Investigator, Hewlett Packard, “E-speak Pilot”, total award \$12,000, 2000.
- Equipment Awards for the Responsphere Infrastructure (approx \$250K value) -- Microsoft, IBM, Nokia, Motorola, The School Broadcasting Company, Canon, D-Link, Printronix, CDW-G, Walker Wireless, ViaSat, AMD, 5G Wireless, Ether2, NetPhone, Alliance of Foam Packaging Recyclers.
- Equipment Award, Hewlett Packard Company.
- Equipment Award, Novell Corporation.
- Equipment Award (ixMicro).
- Distance Learning Equipment Award.

### **Student Advising and Advised:**

#### **Postdoctoral Scholars and Research Scientists**

- Dr. Wooyoung Kim, Fall 1998
- Dr. Kyungbaek Kim, Oct. 2008 – Feb. 2012 (currently Asst. Professor. Chonnam National University, Korea)
- Dr. Yusuf Sarwar Uddin (Summer 2015 - current )
- Dr. Georgios Bouloukakis (Ph.D. INRIA, Fall 2017 -- present)

#### **Ph.D. advisees (with first position after graduation)**

- Fanqi Han (Ph.D. 2022)
- Praveen Venkateshwaran (Ph.D. 2021)
- Hang Nguyen (Ph.D. 2021)
- Guoxi Wang (Ph.D. 2020)
- Nailah Alhassoun (Ph.D. 2019)
- Ranga Raj (Ph.D. 2020) - on leave
- Qing Han (Ph.D. 2019)
- Qiuxi Zhu (Ph.D. 2019)
- Kyle Benson (Ph.D. 2018) – Research Scientist, RTI Inc.
- Zhijing Qin (Ph.D. 2015) – Senior Software Engineer, Pinterest Inc., currently Google Inc.
- Do Minh Ngoc (Ph.D. 2014) – Senior Staff Member, Arista Networks Inc.
- Reza Rahimi (Ph.D. 2014) – Research Staff Member, Samsung Research Labs.
- Ye Zhao (Ph.D. 2014) – Research Staff Member, Google Inc.
- Leila Jalali (Ph.D. 2012) – Research Staff Member, IBM Research Labs.
- Jehan Wickramasuriya (Ph.D. candidate ) – Principal Research Engineer, Motorola Research Labs.
- Bo Xing (Ph.D., Fall 2009) – Research Staff Member, Ericsson Research.
- Daniel Massaguer (M.S. 2005, Ph.D. Fall 2009) – Amazon Web Services.
- Minyoung Kim (co-advised with Nikil Dutt, Ph.D. 2008) – Research Scientist, SRI International.
- Kyoungwoo Lee (co-advised with Nikil Dutt, Ph.D 2008) – Assistant Professor, Yonsei University, Korea.
- Vidhya Balasubramanian (Ph.D. Fall 2008) – Assistant Professor, Amrita University, India.
- Yun Huang (Ph.D. , Summer 2008) – Research Assistant Professor, Syracuse University.
- Mayur Deshpande (Ph.D. Spring 2007) – Google Inc.
- Sebastian Gutierrez-Nolasco, (Ph.D. Summer 2007) – Scientist, NASA Ames Research Center.
- Qi Han (Ph.D., Summer 2005) – Associate Professor, Colorado School of Mines.
- Shivajit Mohapatra (Ph.D., Summer 2005) – Principal Research Scientist, Motorola Research Labs.

#### **M.S. advisees**

- Puvi Kaul (M.S. 2017)
- Syed Shahbaaz Safir (M.S 2017)
- Guoxi Wang (M.S. 2016)

- Balaji Venkatesh (M.S. 2016)
- Phu Nguyen (M.S. 2015)
- Jikai Cin (M.S. 2015)
- Ranga Raj (M.S. 2014)
- Mahnaz Roshanei (M.S. 2012)
- Xiujuan Yi (M.S. 2012)
- Yunho Huh (M.S. 2012)
- Myung-Guk Lee (M.S. 2012)
- Caitlin Lustig (M.S. 2011)
- Jinsu Wang (M.S. 2007)
- Jonathan Cristoforetti (M.S. 2007) – Google Inc.
- Suraj Nagasrinivasa (M.S. 2005)
- Humeyra Altintas (M.S. 2005)
- Xing Zheng (M.S. 2004)
- Mark Panahi (M.S. 2004)
- Henry Yan, (M.S. 2003)
- Bhaskar Chatterjee (M.S. 2002)
- Zhenghua Fu (M.S. 2001)
- Xiaoping Wei (M.S. 2001)

#### **International Exchange Research Students (M.S. thesis)**

- Luca Clementi, Marco Domenichini, Jonathan Cristoforetti, Alessandro Ghighi, Alessio Della Motta, Luca Iannario, Luca Scalzotto.
- Shu-Ting Wang, Meng-Wei, Laura Hwang, Sungmin Hwang.

#### **Selected Undergraduate Researchers**

- Andrew Chio, Taylor Caulfield (UCI Honors thesis), Kelly Pham, Andrew Yang (UCI Honors thesis), Amit Abhishek(UCI Honors thesis), Alfred Anguiano, Samuel Mandell, Christopher Bell, Jason Collins, Sadullah Nader, Michael Philpott, Preethi Srinagesh
- Sanket More (UCSB), Varun Raj (UC Berkeley), Moyosore Akinranmede (UT San Antonio), Sharika Hegde (CMU), Jaelin Jordan (Hampton University), Emilia Dyrenkova (Mira Costa College), Evanjin Mahmoodi (UC Santa Cruz)

#### **High School Research Scholars**

- Samuel Martinez, Lance Lew, Kushagra Pandey, Ashwin Tripathi, Divya Kameti



## **Publications**

### **Book Chapters**

- BC-12 Gaurav Jain, Sarath Babu, Kyle Benson, B. S. Manoj, Yusuf Sarwar and Nalini Venkatasubramanian. “*On the characterization of routing protocols for sensed data transfer in disconnected sensor networks*” In *The Philosophy of Mission-Oriented Wireless Sensor Networks*, Springer, to appear, (Invited chapter).
- BC-11 Cheng-Hsin Hsu, Hua-Jun Hong, Tarek Elgamal, Klara Nahrstedt, Nalini Venkatasubramanian. “*Multimedia Fog Computing: Minions in the Cloud and Crowd*”, in *Frontiers of Multimedia Research*, 255-286, 2017.
- BC-10 Zhijing Qin, Qi Han, Sharad Mehrotra, Nalini Venkatasubramanian. *Quality Aware Sensor Data Management*, *The Art of Wireless Sensor Networks*, Ed. Habib M. Ammari, Springer Verlag, pages 429-464. 2014.
- BC-9 Nga Dang, Eli Bozorgzadeh, Nalini Venkatasubramanian. *Energy Harvesting for Sustainable Smart Spaces*, *Advances in Computers*, Vol. 87, Elsevier Press. Ed. Ali Hurson, pages 203-251, 2012.
- BC-8 Shivajit Mohapatra, Reza Rahimi, Nalini Venkatasubramanian. *Power-Aware Middleware for Mobile Applications*, *Handbook of Energy-Aware and Green Computing*, eds. Sanjay Ranka and Ishfaq Ahmed, Chapman and Hall/CRC Press, pages 193-224, 2011.
- BC-7 Sharad Mehrotra, Nalini Venkatasubramanian, Mark-Oliver Stehr, Carolyn Talcott. *Pervasive Sensing, Event Detection and Situational Awareness*, *Securing Cyber-Physical Infrastructures: Foundations and Challenges*, Eds. Sajal Das, Krishna Kant, Nan Zhang, pages 505-535, 2011.
- BC-6 Daniel Massaguer, Sharad Mehrotra, Ronen Vaisenberg and Nalini Venkatasubramanian. *SATWARE: A Semantic Approach for Building Sentient Spaces*, *Distributed Video Sensor Networks*, Springer, Eds. Bir Bhanu, Chinya Ravishankar, Amit Roy Chowdhury, Demetri Terzopoulos, and Hamid Aghajan, 2010.
- BC-5 Jehan Wickramasuriya, Sharad Mehrotra and Nalini Venkatasubramanian. *RFID-Enabled Privacy-Preserving Video Surveillance: A Case Study*, *RFID Handbook: Applications, Technology, Security and Privacy*, CRC Press, Chapter 25, pages 456-466, Ed. Syed A. Ahson, Mohammad Ilyas, 2008.
- BC-4 B. Hore, H. Jafarpour, R. Jain, S. Ji, D. Massaguer, S. Mehrotra, N. Venkatasubramanian and U. Westermann. *SATware: Middleware for Sentient Spaces*, *Multimodal Surveillance: Sensors, Algorithms and Systems*, Ed. Zhigang Zhu and Thomas S. Huang, 2007.
- BC-3 Naveen Ashish, Rajesh Hegde, Charles Huyck, Dmitri Kalashnikov, Sharad Mehrotra, Padhraic Smyth and Nalini Venkatasubramanian. *Situational Awareness Technologies for Disaster Response*. *Terrorism Informatics: Knowledge Management and Data Mining for Homeland Security* (Chen et al Eds), Springer, September 2007.
- BC-2 Yun Huang, Shivajit Mohapatra, Qi Han and Nalini Venkatasubramanian. *QoS Aware Resource Discovery in Mobile Environments*, Chapter VI, *The Handbook of Mobile Middleware* (ISBN: 0849338336), Eds. A. Corradi and P. Bellavista, Chapman and Hall/CRC Press, September 2006.
- BC-1 S. Mohapatra, C. Periera, N. Dutt, R. Gupta and N. Venkatasubramanian. *Energy-Aware Adaptation for End-to-end Video Streaming to Mobile Handheld Devices*. *Ultra-Low Power Electronics and Design*. Chapter 14. Kluwer Academic Publishers, 2004.

### **Edited Volumes**

- E-8 Vana Kalogeraki and Nalini Venkatasubramanian, *Proceedings of the ACM International Conference on Distributed Event Based Systems (DEBS 2016)*. June 2016, ACM Press.

- E-7 Pascal Felber and Nalini Venkatasubramanian. Proceedings of the 34th IEEE International Symposium on Reliable Distributed Systems, Sept 28th - Oct 1st, 2015, Montreal, Quebec, Canada, IEEE Computer Society 2015.
- E-6 [Karl Aberer](#), [Anupam Joshi](#), [Sougata Mukherjea](#), [Dipanjan Chakraborty](#), [Hua Lu](#), Nalini Venkatasubramanian, [Salil Kanhere](#) (Eds.), 13th IEEE International Conference on Mobile Data Management, MDM 2012, Bengaluru, India, July 23-26, 2012. [IEEE Computer Society 2012](#), ISBN 978-1-4673-1796-2
- E-5 Jun Shen, Soo Dong Kim, Nalini Venkatasubramanian. Special issue: Service Oriented Computing and Applications. *Comput. Syst. Sci. Eng.* 27(2) (2012). Also Guest editorial notes for selected papers from SOCA 2010. *Service Oriented Computing and Applications* 6(2): 81-82 (2012)
- E-4 Special Issue of IEEE Communications Magazine on “Communications Middleware for Mobile Devices and Applications”, September 2011, Vol. 49, No. 9. (co-editors: Guru Banavar, Paolo Bellavista, Ravi Kothari)
- E-3 Nalini Venkatasubramanian, Vladimir Getov, Stephan Steglich (Eds.): *Mobile Wireless Middleware, Operating Systems, and Applications - 4th International ICST Conference, Mobilware 2011*, London, UK, June 22-24, 2011, Revised Selected Papers. Lecture Notes of the Institute for Computer Sciences, Social Informatics & Telecommunications Engineering 93, Springer 2012, ISBN 978-3-642-30606-8
- E-2 Giuseppe Anastasi, Nalini Venkatasubramanian . Proceedings of IEEE World of Wireless and Mobile Multimedia, June 2008, ISBN 978-1-4244-2100-8, Message from the technical program chairs Proceedings of WoWMoM 2008; Also Pervasive and Mobile Computing, Special Section of Selected Papers from IEEE WoWMoM 2008, Vol. 5, N. 5, October 2009.
- E-1 Surendar Chandra, Nalini Venkatasubramanian: Editor's Note. *Multimedia Syst.* 11(6): 495-496 (2006)

## Federal Strategic Reports

- FR-1 Nabil R. Adam, Larry Collins, Ronald T. Eguchi, Ramesh Kolluru, Paul Matheis, Shawn Matz, Sharad Mehrotra, Basit Shafiq, Shashi Shekhar, Max Shen, Lawrence E. Skelly II, Julie Swann, Ronald W. Tarr, Nalini Venkatasubramanian (Report's Core Writing Team). *Workshop on Emergency Management: Incident, Resource, and Supply Chain Management*. U.S. Dept. of Homeland Security. Eds. Nabil Adam, Chris Doyle and Lawrence Skelly.
- FR-2 Paul Siebert and Nalini Venkatasubramanian. *Use of Data During and Emergency Event, Chapter 10, NIST Special Publication 1191 Research Roadmap for Smart Fire Fighting Summary Report*, Edited by Casey Grant Fire Protection Research Foundation Anthony Hamins Nelson Bryner Albert Jones Galen Koepke National Institute of Standards and Technology, <http://dx.doi.org/10.6028/NIST.SP.1191>, pages 139-160, May 2015.
- FR-3 Frank Lavelle, David Mizzen, Royce Francis, David Mendonca, Nalini Venkatasubramanian. *Systems-Based Modeling of Communities*, Report to the National Institute of Standards, 2015.
- FR-4 Michael Dunaway, Robin Murphy, Nalini Venkatasubramanian, Leysia Palen, Daniel Lopresti. *"Research Agenda in Intelligent Infrastructure to Enhance Disaster Management, Community Resilience and Public Safety"*. Computing Community Consortium (CCC) white paper. <http://cra.org/ccc/resources/ccc-led-whitepapers/> 2017.
- FR-5 Co-author, Workshop Report, National Workshop on Transportation Cyber-Physical Systems, 2014.

## Journal Articles

- J-47 N. Alhassoun, M. Y. S. Uddin, and N. Venkatasubramanian. "Context-Aware Energy Optimization for Perpetual IoT-Based Safe Communities". Sustainable Computing: Informatics and Systems, (SUSCOM, 2019). (accepted for publication)..
- J-46 Mahmudur Rahman, Hua-Jun Hong, Amatur Rahman, Cheng-Hsin Hsu, Yusuf Sarwar, Li-Wen Pan, Nalini Venkatasubramanian. "Adaptive Sensemaking for Multi-Sensor IoT Platforms on Budgeted 3G Data Plans". Elsevier Journal of Systems Architecture, accepted for publication.
- J-45 Q. Zhu, M. Y. S. Uddin, Z. Qin, and N. Venkatasubramanian. "Data Collection and Upload under Dynamicity in Smart Community Internet-of-Things Deployments". Pervasive and Mobile Computing (2017), Vol. 42, pp 166-186, <https://doi.org/10.1016/j.pmcj.2017.10.003>.
- J-44 D. Wu, D. I. Arkhipov, M. Kim, C. L. Talcott, A. C. Regan, J. A. McCann, N. Venkatasubramanian. "ADDSEN: Adaptive Data Processing and Dissemination for Drone Swarms in Urban Sensing". in IEEE Transactions on Computers , 66 (2), 183-198, 2017.
- J-43 N. Do, Y. Zhao, C. Hsu; N. Venkatasubramanian. "Crowdsourced Mobile Data Transfer with Delay Bound". ACM Transactions on Internet Technology, Vol 16, No. 4, 2016, 29 pages
- J-42 D. Wu, Q. Liu, Y. Li, J. A. McCann, A. C. Regan and N. Venkatasubramanian, "Adaptive Lookup of Open WiFi Using Crowdsensing," in IEEE/ACM Transactions on Networking, vol. 24, no. 6, pp. 3634-3647, December 2016. doi: 10.1109/TNET.2016.2533399
- J-41 M. Reza Rahimi, Nalini Venkatasubramanian, Sharad Mehrotra, and Athanasios V. Vasilakos. *On Optimal and Fair Service Allocation in Mobile Cloud Computing*, IEEE Transactions on Cloud Computing, Vol 6, no. 3, pp. 815-828, 2015.
- J-40 Kyle Benson, Charles Fracchia, Guoxi Wang, Qiuxi Zhu, Serene Almomen, John Cohn, Luke D'Arcy, Daniel Hoffman, Matthew Makai, Julien Stamatakis, and Nalini Venkatasubramanian. *SCALE: Safe Community Awareness and Alerting Leveraging the Internet of Things*. IEEE Communications, pp. 27-34. December 2015.
- J-39 Debahuti Mishra, Magda El Zarki, Aiman Erbad, Chenghsin Hsu, Nalini Venkatasubramanian. *Clouds + Games: A Multifaceted Approach*", IEEE Internet Computing, Special Issue on Internet Games, Vol. 18, Issue 3, Pages 20-27, 2014.
- J-38 Leila Jalali, Sharad Mehrotra, Nalini Venkatasubramanian. *A Reflective Approach to Synchronization for Consistent Multisimulation*, Simulation Modeling: Practice and Theory, November 2014, vol. 90, no. 11, pp 1268-1289.
- J-37 Kyungbaek Kim, Sharad Mehrotra, Nalini Venkatasubramanian. *Efficient and Reliable Application Layer Multicast for Flash Dissemination*, IEEE Transactions on Parallel and Distributed Systems (TPDS), vol. 25, No. 10, pp. 2571-2582, 2014.
- J-36 Ngoc Do, Ye Zhao, Cheng-Hsin Hsu and Nalini Venkatasubramanian. *A Marketplace for Mobile Applications Supporting Rich Multimedia Feeds*, IEEE Communication Society (COMSOC) Multimedia Communications Technical Committee (MMTC). 2013.
- J-35 Sebastian Gutierrez-Nolasco, Mark-Oliver Stehr, Carolyn Talcott and Nalini Venkatasubramanian. *Tailoring Consistency in Group Membership for Mobile Networks*, Journal of Future Generation Computing Systems, Volume 31, Pages 134-146, 2014.
- J-34 Reza Rahimi, Jian Ren, Harold Liu, Athanasios Vasilakos and Nalini Venkatasubramanian. *Mobile Cloud Computing: A Survey, State of the Art and Future Directions*, ACM/Springer Mobile Application and Networks (MONET) Journal, Special Issue on Mobile Cloud Computing. Mobile Networks and Applications, April 2014, Volume 19, Issue 2, pp 133-143, 2014.
- J-33 Ngoc Do Minh, Cheng-hsin Hsu, Nalini Venkatasubramanian. *Video Dissemination over Hybrid Cellular and Ad Hoc Networks*, IEEE Transactions on Mobile Computing, Vol 13, No.2, 2014 E-published online November 2012 ahead of print publication.

- J-32 Nga Dang, Elaheh Bozorgzadeh, Nalini Venkatasubramanian. *QuARES: A Quality-Aware Renewable Energy-driven Sensing Framework*, Sustainable Computing: Informatics and Systems, Volume 2, Issue 4, pp. 171-183, December 2012.
- J-31 Ravi Chandra Jammalamadaka, Roberto Gamboni, Sharad Mehrotra, Kent Seamons, Nalini Venkatasubramanian. *A Middleware Approach for Outsourcing Data Securely*, In Elsevier Computers and Security, pp. 252-266, July 2012.
- J-30 Mayur Deshpande, Kyungbaek Kim, Bijit Hore, Sharad Mehrotra, Nalini Venkatasubramanian. *ReCREW: A Reliable Flash Dissemination System*, IEEE Transactions on Computers, 62(7): 1432:1446, 2013.
- J-29 Kyoungwoo Lee, Nikil Dutt and Nalini Venkatasubramanian. *EAVE: Error Aware Video Encoding for Supporting Extended Energy/QoS Tradeoffs for Mobile Embedded Systems*, ACM Transactions on Embedded Computing Systems, 11(2):37 (2012).
- J-28 Minyoung Kim, Mark-Oliver Stehr, Carolyn Talcott, Nikil Dutt, Nalini Venkatasubramanian. *xTune: A Formal Methodology for Cross-layer Tuning of Mobile Embedded Systems*, ACM Transactions on Embedded Computing Systems (TECS), Vol. 11, No. 4, (73), 2012.
- J-27 Hojjat Jafarpour, Bijit Hore, Sharad Mehrotra, Nalini Venkatasubramanian. *CCD: A Distributed Publish/Subscribe Framework for Rich Content Formats*, IEEE Transactions on Parallel and Distributed Systems, 23(5): 844-852, 2012.
- J-26 Grit Denker, Nikil Dutt, Sharad Mehrotra, Mark-Oliver Stehr, Carolyn Talcott, Nalini Venkatasubramanian. *Resilient, Dependable CyberPhysical Systems: A Middleware Perspective*. Journal of Internet Systems and Applications, Volume 3, No.1, pages 41-49, 2012; invited papers from the Future of Middleware Event (FOME 2011) held in conjunction with ACM/IFIP/USENIX Middleware 2011.
- J-25 Ravi Chandra Jammalamadaka, Sharad Mehrotra, Nalini Venkatasubramanian, *Protecting personal data from untrusted web-based data services*, Elsevier Network Security , Vol. 2011, No. 9, pp. 11-16, 2011.
- J-24 Ravi Chandra Jammalamadaka, Sharad Mehrotra, Nalini Venkatasubramanian, Kent Seamons *DataVault: secure mobile access and data sharing*, Elsevier Network Security, Vol. 2011, No. 5, pp. 16-19, 2011 DOI: 10.1016/S1353-4858(11)70052-6.
- J-23 D. Kalashnikov, S. Mehrotra, J. Xu, N. Venkatasubramanian. *A Semantics-Based Approach for Speech Annotation of Images*, IEEE Transactions on Knowledge and Data Engineering (TKDE), 23(9), September 2011.
- J-22 Kyoungwoo Lee, Aviral Srivastava, Nikil Dutt and Nalini Venkatasubramanian. *Partitioning Techniques for Partially Protected Caches in Resource-Constrained Embedded Systems*, IEEE Transactions on Design Automation and Embedded Systems, Volume 15, No. 4, 2010.
- J-21 Kyoungwoo Lee, Aviral Shrivastava, Ilya Issenin, Nikil Dutt, and Nalini Venkatasubramanian. *Partially Protected Caches to Reduce Failures due to Soft Errors in Multimedia Applications*, IEEE Transactions on Very Large Scale Integration (TVLSI) Systems, Vol. 17, No. 9, September 2009,
- J-20 Minyoung Kim, Sudarshan Banerjee, Nikil Dutt, Nalini Venkatasubramanian. *Energy-aware Co-synthesis of Real Time Multimedia Applications on MPSoCs Using Heterogeneous Scheduling Policies*, ACM Transactions on Embedded Computing Systems (TECS), Vol 7, No. 2, Article 9, February 2008
- J-19 Qi Han, Nalini Venkatasubramanian, Sharad Mehrotra. *Application-aware Integration of Data Collection and Power Management in Wireless Sensor Networks*, Journal of Parallel and Distributed Computing (JPDC), Vol.67, Issue 9, September 2007.
- J-18 Iosif Lazaridis, Qi Han, Sharad Mehrotra and Nalini Venkatasubramanian. *Fault-Tolerant Evaluation of Continuous Queries over Sensor Data*, International Journal on Distributed Sensor Networks (IJDSN), Vol. 5, No.4. 2009.

- J-17 Liang Cheng, Shivajit Mohapatra, Magda El Zarki, Nikil Dutt and Nalini Venkatasubramanian. *Quality-Based Backlight Optimization for Video Playback on Handheld Devices*, Journal on Advances in Multimedia, vol. 2007, Article ID 83715, July 2007.
- J-16 Shivajit Mohapatra, Nikil Dutt, Alex Nicolau, Nalini Venkatasubramanian. *DYNAMO: A Cross-Layer Framework for End-to-End QoS and Energy Optimization in Mobile Handheld Devices*, IEEE Journal on Selected Areas in Communication (JSAC), Special Issue on Cross-Layer Optimized Wireless Multimedia, May 2007.
- J-15 Qi Han and Nalini Venkatasubramanian. *Timeliness-Accuracy Balanced Collection of Dynamic Data*, IEEE Transactions on Parallel and Distributed Systems (TPDS), Vol. 18, No.2, February 2007
- J-14 Minyoung Kim, Hyunok Oh, Nikil Dutt, Alex Nicolau, Nalini Venkatasubramanian. *PBPAIR: An Energy-efficient Error-resilient Encoding Using Probability Based Power Aware Intra Refresh*, ACM SIGMOBILE Mob. Comput. Commun. Rev. 10(3): 58-69, 2006.
- J-13 Q. Han and N. Venkatasubramanian. *Information Collection Services for QoS-aware Mobile Applications*. IEEE Transactions on Mobile Computing (TMC), Vol.5, No.5, May 2006.
- J-12 S. Pasricha, M. Luthra. S. Mohapatra, N. Dutt and N. Venkatasubramanian. *Dynamic Backlight Adaptation for Low-Power Handheld Devices*. IEEE Design and Test of Computers, Special Issue on Embedded Systems for Real Time Embedded Systems. 2004.
- J-11 Nalini Venkatasubramanian, Carolyn Talcott, Gul Agha. *A Formal Model for Reasoning about Adaptive QoS-Enabled Middleware*, ACM Transactions on Software Engineering and Methodology, Vol. 13, No.1, pages 86-147, 2004.
- J-10 Zhenghua Fu and Nalini Venkatasubramanian. *Directory-Based Composite Routing and Scheduling Policies for Dynamic Multimedia Environments*, ACM Multimedia Systems Journal, Vol. 9, No. 5: 398-410, 2004.
- J-9 Iosif Lazaridis, Qi Han, Xingbo Yu, Sharad Mehrotra, Nalini Venkatasubramanian, and Dmitri Kalashnikov, *QUASAR: Quality Aware Sensing Architecture*, ACM SIGMOD Record, Vol 33, No.1, March 2004.
- J-8 Qi Han, Sebastian Gutierrez-Nolasco, and Nalini Venkatasubramanian. *Reflective Middleware for Integrating Network Monitoring with Adaptive Object Messaging*, IEEE Networks (Special Issue on Middleware), Vol. 18, No.1: 56-65, 2004.
- J-7 Sudeep Pasricha, Shivajit Mohapatra, Manev Luthra, Nikil Dutt and Nalini Venkatasubramanian. *Reducing Backlight Power Consumption for Streaming Video Applications on Mobile Handheld Devices*. Special Issue Journal of Korean Multimedia Society (KSSM), December 2003.
- J-6 Xingbo Yu, Koushik Niyogi, Sharad Mehrotra and Nalini Venkatasubramanian. *Adaptive Middleware for Distributed Sensor Environments*, IEEE Distributed Systems Online, May 2003.
- J-5 Nalini Venkatasubramanian. *Safe Composability of Middleware Services*, Communications of the ACM. June 2002.
- J-4 Qi Han and Nalini Venkatasubramanian. *Aggregation Based Information Collection for Mobile Environments*, Journal of High Speed Networking, Vol. 11, No. 3-4, 2002.
- J-3 Qi Han and Nalini Venkatasubramanian. *AutoSeC: An integrated Middleware Framework for Dynamic Service Brokering*, IEEE Distributed Systems Online 2001, Vol. 2, No. 7, 2001.
- J-2 Nalini Venkatasubramanian, Carolyn Talcott. *A Semantic Framework for Modeling and Reasoning about Reflective Middleware*, IEEE Distributed Systems Online, Vol. 2, No. 6, October 2001.
- J-1 Nalini Venkatasubramanian, Gul Agha and S. Miriyala, *Scalable Concurrent Computing*, Journal of The Indian Academy of Sciences, March 1992.

## **Refereed Conference Papers:**

- C-214 Praveen Venkateswaran, Mahima Agumbe Suresh, Nalini Venkatasubramanian, "Augmenting In-situ with Mobile Sensing for Adaptive Monitoring of Water Distribution Networks", in Proceedings of the 10th ACM/IEEE International Conference on Cyber-physical Systems (ICCPS), 2019.
- C-213 N. Panwar, S. Sharma, G. Wang, S. Mehrotra, and N. Venkatasubramanian, "Verifiable Round-Robin Scheme for Smart Homes". in the 9th ACM Conference on Data and Application Security and Privacy, CODASPY 2019, Dallas, TX, USA, March 25-27, 2019. ACM 2019.
- C-212 Kyle E. Benson, Georgios Bouloukakis, Casey Grant, Valerie Issarny, Sharad Mehrotra, Ioannis Moscholios, Nalini Venkatasubramanian. "*FireDeX: a Prioritized IoT Data Exchange Middleware for Emergency Response*", ACM/IFIP/USENIX Middleware 2018, Accepted for publication.
- C-211 Luca Scalzotto, Kyle E. Benson, Georgios Bouloukakis, Paolo Bellavista, Valerie Issarny, Sharad Mehrotra, Nalini Venkatasubramanian. "*An Implementation Experience with SDN-Enable IoT Data Exchange Middleware*", ACM/IFIP/USENIX Middleware 2018 (Posters and Demo Track), accepted for publication.
- C-210 Q. Han, R. T. Eguchi, S. Mehrotra, N. Venkatasubramanian "*Enabling State Estimation for Fault Identification in Water Distribution Systems under Large Disasters*". in 37th IEEE International Symposium on Reliable Distributed Systems (SRDS), 2018, pp. 1-10. **(Best Paper Award)**
- C-209 M. Y. S. Uddin, and N. Venkatasubramanian. "*Edge Caching for Enriched Notifications Delivery in Big Active Data*". in 38th IEEE International Conference on Distributed Computing Systems (ICDCS), Vienna, Austria, June 2018, pp. 696-705.
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### **Software Systems/Releases:**

**FireDEX:** An IoT Based Edge Data Exchange System for Prioritized IoT Data Delivery for Smart Firefighting applications in smartspaces.

**TIPPERS:** Testbed for IoT-based Privacy-Preserving PERvasive Spaces: a robust experimental smart building testbed for real-world deployment, testing, and evaluation of a variety of privacy technologies in Internet of Things scenarios.

**BAD:** A Big Active Data Based Enriched Publish Subscribe System

**EnviroSCALE:** Resilient IoT platform for environmental monitoring applications in developing nations

**AquaSCALE:** A cyber-physical-human middleware for gathering, analyzing and adapting operations of increasingly failure-prone community water services.

**SCALE:** An end-to-end system to enable resilient cloud-based IoT platform for home and personal safety with multiple inexpensive devices and networks.

**Offline FaceBook:** A system to enable social media content prefetching for mobile clients whose goal is to prefetch content at the mobile device or a nearby broker when connectivity is cheap and good.

**CROWDMAC:** A mobile app that facilitates a marketplace for Internet Access Sharing across mobile devices.

**MAPCLOUD:** A system for exploiting local and public cloud computing resources to improve mobile applications and alleviate limitations on mobile devices and networks.

**MINA:** A middleware framework for multinet network management that captures and efficiently maintains the state of heterogeneous communication networks (wired, cellular, WiFi, MANETs, Zigbee, mesh... ) in pervasive environments.

**UCI311:** A system for robust emergency monitoring that obtains and merges information from multiple sources including human input (via telephone, email), social media and sensors.

**OpsTalk:** A Speech based mobile situational awareness platform for command and control operations.

**SAFIRE:** A system for generating situational awareness for firefighter safety from multiple mobile and in-situ sensors targeted at delivering actionable information to a incident commander through a Fire Incident Command Board (FICB).

**CrisisAlert:** An automated system to disseminate customized information to schools and other organizations in case of disasters. <http://www.ics.uci.edu/~projects/dissemination/artifacts.htm>, <http://www.disasterportal.org:8280/crisis/>

**RAPID:** A P2P framework for flash distribution (over the Internet) of heterogeneous data to a large number of recipients in as short a time period as possible (Flash Dissemination) using an underlying minimum-state gossip-based protocol (CREW). <http://www.ics.uci.edu/~projects/dissemination/rapid.htm>

**Flashback:** System for scalably handling large unexpected traffic spikes on web-sites where clients (browsers) create a dynamic, self-scaling Peer-to-Peer (P2P) web-server that grows and shrinks according to the load. <http://flashback.calit2.uci.edu/>

**Disaster Portal:** An Emergency Information Portal (EIP) that includes a web-accessible integrated dashboard of local disaster and associated relief information, hotlinks for citizens and also an online donation management system. <http://www.disasterportal.org/ProjectWebsites/>, <http://www.disasterportal.org/Ontario/home.htm>

**pVault:** A password management service that prevents some of the prevalent online attacks on passwords. <http://www.itr-rescue.org/pVault/>

**gVault:** An application level cryptographic network file system built on top of the storage offered by Gmail (Web based email) service. <http://gvault.ics.uci.edu>

**dataVault:** A system for Web users to securely access data from any machine connected to the Internet and selectively share data with trusted peers. <http://www.ics.uci.edu/~rjammala/dataVault>.

**SATWARE:** SATware is a multimodal sensor data stream querying, analysis, and transformation middleware for sentient systems. <http://www.ics.uci.edu/~projects/SATware/>

**DrillSIM:** A multi-agent activity simulator for crisis response that models response activities and information flow at both the macro and micro level. <http://www.ics.uci.edu/~project/drillsim/>

**MetaSIM:** A comprehensive platform for plug-and-play operation of simulation and modeling tools for emergency managers and first responders.

**Dynamo:** A middleware framework (Linux based) for cross-layer adaptation of power-saving mechanisms at different layers – device (memory, backlight), OS, network, middleware and application for improved QoS and battery lifetime on low-power mobile devices. <http://www.ics.uci.edu/~dsm/dyn/release/>

**MAPGRID:** A middleware framework built using Globus that exploits grid computing resources to support applications on mobile clients. <http://mapgrid.ics.uci.edu/SystemPrototype.htm>

**GURU:** An MPEG-4 based distance-learning environment for users with visual, auditory and motor disabilities.

**CompOSE|Q:** CompOSE|Q is a customizable distributed systems middleware infrastructure that allows safe integration and concurrent execution of resource management mechanisms for services such mobility, load balancing, fault tolerance and end-to-end QoS management. <http://www.ics.uci.edu/~dsm/compose/>

### **Industry Experience:**

*Multimedia Workload Characterization, Broadband Information Systems Lab, HP Labs.*

Developed video workload models and QoS metrics obtained by empirical studies of video-on-demand systems. Investigated economic models for interactive QoS for multimedia systems.

*Distributed Multimedia Servers, Broadband Information Systems Lab, HP Labs.*

Involved in design and implementation of distributed video servers, resource management (load-balancing, data placement, request assignment, real-time scheduling, high availability) and broadband networking for distributed multimedia and web servers.

*Digital Choreography and Virtual Environments, HP Labs.*

Recipient of a Grass Roots Basic Research Grant to pursue an investigation in digital dance and choreography. Prototype interactive animation systems from were extended to support digital choreography and conduct studies on motion manipulation in distributed environments.

*Object Oriented Database Management, Cooperative Computing Systems Lab, HP.*

Involved in the design and implementation of memory management schemes, interoperability facilities, authorization mechanisms, performance benchmarks and for a commercial object oriented database - OpenODB/Oadapter.

*Compilers for Parallel Architectures, IBM T.J. Watson Research Center.* Worked with the Hybrid Dataflow Architecture Group on compilation techniques for parallel machines developing abstract intermediate forms, representing and executing sequential and dataflow computation on a custom high performance architecture.