

# YUAN XUE

## CONTACT INFORMATION

383 Featheringill Hall  
Vanderbilt University  
VU Station B 351824  
Nashville, TN 37235 U.S.A.

Phone: (615) 322-2926  
Fax: (615) 343-6702  
Email: [yuan.xue@vanderbilt.edu](mailto:yuan.xue@vanderbilt.edu)

## RESEARCH INTEREST

My research area includes networking and distributed systems with a focus on wireless and sensor networks, peer-to-peer and overlay systems, and multimedia systems. My research goal is to provide protection, performance optimization, and quality of service support for next generation networking and distributed systems.

## EDUCATION

**University of Illinois at Urbana-Champaign** Urbana, Illinois USA  
Department of Computer Science

◇ *Ph.D.* Computer Science Oct 2005  
▷ *Dissertation:* "Price-based Optimal Resource Allocation in Multi-hop Wireless Networks"  
▷ *Advisor:* Klara Nahrstedt, Department of Computer Science

**University of Illinois at Urbana-Champaign** Urbana, Illinois USA  
Department of Computer Science

◇ *M.Sc.* Computer Science May 2002  
▷ *Dissertation:* "Cross-Layer Design for Power-Aware Communication in Multi-hop Wireless Networks"  
▷ *Advisor:* Klara Nahrstedt, Department of Computer Science

**Harbin Institute of Technology** Harbin, China  
Department of Computer Science

◇ *B.S.* Computer Science July 1998

## PROFESSIONAL EXPERIENCE

**Vanderbilt University** Nashville, Tennessee USA  
*Assistant Professor of Computer Science* Sep 2005 – present

**University of Illinois at Urbana-Champaign** Urbana, Illinois USA  
*Research Assistant* May 2001 – Aug 2005  
*Teaching Assistant* Jan 2000 – May 2001

**National Center for Supercomputing Applications (NCSA)** Urbana, Illinois USA  
*Research Intern* May 2000 – Aug 2000

## TEACHING EXPERIENCE

### **Vanderbilt University**

CS291 Special Topics on Network Security

CS396-4 Special Topics on Wireless and Sensor Networks

CS291 Special Topics on Network Security

### **University of Illinois at Urbana-Champaign**

Teaching Assistant, CS110 Java Programming Laboratory

Head Teaching Assistant, CS110 Java Programming Laboratory

Teaching Assistant, CS125 Introduction to Computer Science

Nashville, Tennessee USA

**Sep 2006 – present**

**Jan 2005 – May 2005**

**Sep 2005 – Dec 2005**

Urbana, Illinois USA

**Jan 2000 – May 2000**

**Aug 2000 – Jan 2001**

**Jan 2001 – May 2001**

## HONORS AND AWARDS

◇ *Who's Who in America*, 2007.

◇ *Vodafone Fellowship*, University of Illinois at Urbana-Champaign, 2003-2005.

◇ *Outstanding Student Scholarship*, Harbin Institute of Technology, 1994-1998.

◇ *Honorable Mention*, The Mathematical Contest In Modeling, 1997.

◇ *First Prize*, The Mathematical Contest In Modeling (China), 1996.

## PUBLICATIONS

### ◇ **Book Chapter Publications**

[B1] Klara Nahrstedt, Wanghong Yuan, Samarth Shah, **Yuan Xue**, Kai Chen, "QoS Support in Multimedia Wireless Environments" in *Multimedia Networking and Communications*, Elsevier Science, to appear.

### ◇ **Refereed Journal Publications**

[J9] **Yuan Xue**, Baochun Li, and Klara Nahrstedt, "Optimal Resource Allocation in Wireless Ad Hoc Networks: A Price-based Approach," in *IEEE Transactions on Mobile Computing*, Vol 5, No 4, April 2006.

[J8] Yi Cui, **Yuan Xue** and Klara Nahrstedt, "Optimal Resource Allocation in Overlay Multicast", in *IEEE Transactions on Parallel and Distributed Systems*, vol 17, no 8, pp 808-823, Aug 2006.

[J7] Yi Cui, **Yuan Xue** and Klara Nahrstedt, "A Utility-based Distributed Maximum Lifetime Routing Algorithm for Wireless Networks," in *IEEE Transactions on Vehicular Technology, Special Issue on Cross-layer Design in Mobile Ad hoc Networks and Wireless Sensor Networks*, vol 55, no 3, pp 797-805, May 2006.

[J6] **Yuan Xue**, Baochun Li, and Klara Nahrstedt, "Channel-Relay Price Pair: Towards Arbitrating Incentives in Wireless Ad hoc Networks," in *Wireless Communications and Mobile Computing, Special Issue on Ad Hoc Networks*, Wiley InterScience, vol 6, no 2, pp 235-245, March 2006.

[J5] **Yuan Xue**, Yi Cui, and Klara Nahrstedt, "Maximizing Lifetime for Data Aggregation in Wireless Sensor Networks," in *Mobile Networks and Applications (MONET), Special Issue on Energy Constraints and Lifetime Performance in Wireless Sensor Networks*, Springer Science/ACM, vol 10, no 6, pp 853-864, December 2005.

[J4] **Yuan Xue**, Kai Chen, and Klara Nahrstedt, "Achieving Proportional Delay Differentiation in Wireless LAN via Cross-Layer Scheduling," in *Wireless Communications and Mobile Computing, Special Issue on Emerging WLAN Technologies and Applications*, Wiley InterScience, Vol 4, No 8, pp 849-866, 2004.

[J3] **Yuan Xue** and Klara Nahrstedt, "Providing Fault-Tolerant Ad-hoc Routing Service in Adversarial Environments," in *Wireless Personal Communications, Special Issue on Security for Next Generation*

*Communications*, Kluwer Academic Publishers, vol 29, no 3-4, pp 367-388, 2004.

[J2] Kai Chen, **Yuan Xue**, Samarth H. Shah, and Klara Nahrstedt, "Understanding Bandwidth-Delay Product in Mobile Ad Hoc Networks," in *Computer Communications*, Elsevier, vol 27, no 1, pp 923-934, 2004.

[J1] Yi Cui, **Yuan Xue**, and Klara Nahrstedt, "Optimal Distributed Multicast Routing using Network Coding: Theory and Applications," in *ACM SIGMETRICS Performance Evaluation Review*, vol 32, no2, pp 47-49, September 2004.

#### ◇ Refereed Conference Publications

[C14] Taojun Wu, Liang Dai, **Yuan Xue**, Yi Cui, "Digital Rights Management for Video Sensor Network," to appear in *Proc. of IEEE International Symposium on Multimedia (ISM)*, San Diego, California, December 2006.

[C13] Ken Debelak, Larry Howard, **Yuan Xue**, Christina Lee and Janos Sztipanovits, "Introducing Security in a Chemical Engineering Design Course Using Adaptive On-line Learning," in *Proc. of International Conference on Engineering Education*, San Juan, Puerto Rico, July 2006.

[C12] Nishanth Shankaran, Xenofon Koutsoukos, Douglas C. Schmidt, **Yuan Xue**, and Chenyang Lu, "Hierarchical Control of Multiple Resources in Distributed Real-time and Embedded Systems," in *Proc. of the 18th Euromicro Conference on Real-Time Systems (ECRTS)*, Dresden, Germany, July 2006.

[C11] Taojun Wu, Yi Cui, and **Yuan Xue**, "Preserving Traffic Privacy in Wireless Mesh Networks," in *Proc. of IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (WoW-MoM)*, Buffalo, New York, June 2006.

[C10] **Yuan Xue**, Yi Cui, and Klara Nahrstedt, "A Utility-based Distributed Maximum Lifetime Routing Algorithm for Wireless Networks," in *Proc. of the second International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine)*, Orlando, Florida, August, 2005.

[C9] **Yuan Xue**, Kai Chen, and Klara Nahrstedt, "Distributed end-to-end proportional delay differentiation in wireless LAN," in *Proc. of IEEE International Conference on Communications (ICC)*, Paris, France, August, 2004. (acceptance ratio =  $864/3000 = 29\%$ )

[C8] Yi Cui, **Yuan Xue**, and Klara Nahrstedt, "Max-min Overlay Multicast: Rate Allocation and Tree Construction," in *Proc. of IEEE International Workshop on Quality of Service (IWQoS)*, Montreal, Canada, June, 2004. (acceptance ratio =  $30/154 = 19\%$ )

[C7] Yi Cui, **Yuan Xue**, and Klara Nahrstedt, "Optimal Distributed Multicast Routing using Network Coding: Theory and Applications," in *Proc. of the 6th Workshop on Mathematical Performance Modeling and Analysis*, held in conjunction with Sigmetrics, New York City, New York, June, 2004.

[C6] **Yuan Xue**, Baochun Li, and Klara Nahrstedt, "Price-based Resource Allocation in Wireless Ad hoc Networks," in *Proc. of the 11th International Workshop on Quality of Service (IWQoS)*, also *Lecture Notes in Computer Science*, ACM Springer-Verlag, vol. 2707, pp. 79-96, Monterey, California, June, 2003.

[C5] Yi Cui, **Yuan Xue**, and Klara Nahrstedt, "Optimal Resource Allocation in Overlay Multicast," in *Proc. of the 11th International Conference on Network Protocols (ICNP)*, Atlanta, Georgia, November, 2003. (acceptance ratio =  $30/230 = 13\%$ )

[C4] Kai Chen, **Yuan Xue**, and Klara Nahrstedt, "On Setting TCP's Congestion Window Limit in Mobile Ad Hoc Networks," in *Proc. of IEEE International Conference on Communications (ICC)*, Anchorage, Alaska, May, 2003.

[C3] **Yuan Xue** and Klara Nahrstedt, "Fault Tolerant Routing in Mobile Ad hoc Networks," in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, New Orleans, Louisiana, March, 2003.

[C2] **Yuan Xue** and Baochun Li, "A Location-aided Power-aware Routing Protocol in Mobile Ad Hoc Networks," in *Proc. of IEEE Globecom*, vol. 5, pp. 2837-2841, San Antonio, Texas, November,

2001.

[C1] **Yuan Xue**, Baochun Li, and Klara Nahrstedt, "A Scalable Location Management Scheme in Mobile Ad-hoc Networks," in *Proc. of the 26th IEEE Annual Conference on Local Computer Networks (LCN)*, Tampa, Florida, November, 2001.

◇ **Invited/Position Papers in Conference Proceedings**

[IC3] **Yuan Xue**, Shanshan Jiang, "Disruption-Aware Dynamic Component Deployment and Composition in Ultra-Large-Scale (ULS) Systems," to appear in *Workshop on Ultra-Large-Scale Systems*, held in conjunction with ACM SIGPLAN International Conference on Object-Oriented Programming, Systems, Languages, and Applications (OOPSLA), Portland, Oregon, October 2006.

[IC2] Jan Werner, Matthew Eby, Janos Mathe, Gabor Karsai, **Yuan Xue**, Janos Sztipanovits, "Integrating Security Modeling in Embedded System Design," in *Workshop on Research Directions for Security and Networking in Critical Real-Time and Embedded Systems (CRTES)*, held in conjunction with IEEE Real-Time and Embedded Technology and Applications Symposium (RTAS), San Jose, California, April 2006.

[IC1] Chui Sian Ong, **Yuan Xue**, and Klara Nahrstedt, "A Middleware for Service Adaptation in Differentiated 802.11 Wireless Networks," in *Proc. of IEEE International Conference on Networks (ICON)*, Singapore, 2004.

◇ **Conference/Workshop Posters and Demonstrations**

[PS1] "Providing Fault-Tolerant Ad-hoc Routing Service in Adversarial Environments," poster presentation at Information Trust Institute Workshop on Dependability and Security at University of Illinois at Urbana-Champaign, November, 2004.

[D2] "Dirty Bomb Detection and Localization," large-scale demonstration for International Conference on Information Processing in Sensor Networks (IPSN), Nashville, April, 2006. (Participants – Tracking: Branislav Kusy, Gyorgy Balogh, Miklos Maroti; Network: Andras Nadas, Peter Volgyesi, Janos Sallai, Akos Ledeczki; Security: Yuan Xue, Taojun Wu; Radiation Detection: Frank Denap, Johnny Tolliver, David Resseguie; Camera Control: Morey Parang, Mark Gardner.)

[D1] "Audio Delivery over Delay Differentiated Wireless Networks with Service Adaptation," demonstration for Grand Opening of Siebel Center for Computer Science of University of Illinois at Urbana-Champaign, May, 2004.

SELECTED SCHOLARLY ADDRESSES

◇ **Invited Talks**

[T8] "Building Security into Embedded Systems: Validating Theoretical Design using Experimental Platforms," webcast presentation at the Center for the Team in Research for Ubiquitous Secure Technology (TRUST), May 2006.

[T7] "Security in Wireless Sensor Network," invited lecture for Women's Institute in Summer Enrichment (WISE) program of the Center for the Team in Research for Ubiquitous Secure Technology (TRUST), Berkeley, California, July 2006.

[T6] "QoS Provisioning in Multimedia Wireless Networks", presentation at Office of Naval Research Multidisciplinary University Research Initiative program (MURI) review meeting, Ithaca, NY, September, 2005.

[T5] "A Price-Based Approach to Resource Allocation in Wireless Networks," invited talk at Department of Computer Science, University of Florida, April 2005.

[T4] "A Price-Based Approach to Resource Allocation in Wireless Networks," invited talk at Department of Electrical Engineering and Computer Science, University of Kansas, March 2005.

[T3] "A Price-Based Approach to Resource Allocation in Wireless Networks," invited talk at De-

partment of Computer Science, University of Iowa, March 2005.

[T2] "A Price-Based Approach to Resource Allocation in Wireless Networks," invited talk at Department of Computer Science, Iowa State University, March 2005.

[T1] "QoS Support for Multimedia Delivery over Wireless Networks," invited talk at Motorola Science Advisory Board Associate (SABA) meeting, October, 2004.

#### ◇ **Conference Presentations**

[CP5] "A Utility-based Distributed Maximum Lifetime Routing Algorithm for Wireless Networks," presentation at the second International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine), Orlando, Florida, August, 2005.

[CP4] "Optimal Distributed Multicast Routing: Theory and Applications," presentation at the 6th Workshop on Mathematical Performance Modeling and Analysis, held in conjunction with SIGMETRICS, New York City, NY, June, 2004.

[CP3] "Price-based Resource Allocation in Wireless Ad hoc Networks," presentation at the 11th International Workshop on Quality of Service (IWQoS), Monterey, CA, June, 2003.

[CP2] "Fault Tolerant Routing in Mobile Ad hoc Networks," presentation at IEEE Wireless Communications and Networking Conference (WCNC), New Orleans, Louisiana, March, 2003.

[CP1] "A Scalable Location Management Scheme in Mobile Ad-hoc Networks," presentation at the 26th IEEE Annual Conference on Local Computer Networks (LCN), Tampa, Florida, November, 2001.

#### PROFESSIONAL SOCIETY MEMBERSHIPS

- ◇ Member, the Institute of Electrical and Electronic Engineers (IEEE)
- ◇ Member, the Association for Computing Machinery (ACM)

#### PROFESSIONAL SERVICES AND ACTIVITIES

##### ◇ **Technical Program Committee Member for**

IEEE Conference on Computer Communications (Infocom), 2007

IEEE International Conference on Communications (ICC), 2007

International Workshop on "Wireless mesh: moving towards applications" (WiMeshNets), 2006

IEEE Globecom, 2006

International Conference on Quality of Service in Heterogeneous Wired/Wireless Networks (QShine), 2006

IEEE International Conference on Sensor Networks, Ubiquitous, and Trustworthy Computing, 2006

##### ◇ **Reviewer for Journal Manuscript Submissions (a selective list)**

IEEE Transactions on Networking, IEEE Transactions on Mobile Computing, IEEE Transactions on Wireless Communications, IEEE Transactions on Parallel and Distributed Systems, IEEE Transactions on Signal Processing, IEEE Transactions on Vehicular Technology, ACM Transactions on Sensor Networks, IEEE Security & Privacy, IEEE Journal on Selected Areas in Communications, Elsevier Computer Network Journal, ACM Computer Communication Review, IEEE Wireless Communications Magazine, ACM Mobile Computing and Communications Review.

##### ◇ **Reviewer for Conference Manuscript Submissions (a selective list)**

ACM SIGMETRICS 2004, IEEE INFOCOM 2003, IEEE ICNP 2002/2003, IEEE IWQoS 2001-04, ACM Multimedia 2001/2002, SPIE/ACM MMCN 2004, IEEE Percom 2003-2005, IEEE IDCDS 2003, Middleware 2003, IEEE RTAS 2004, IEEE ICC 2003-2005, IEEE WCNC 2003, IEEE MASS 2006, IEEE Globecom 2006.