

CURRICULUM VITAE

Cathy Honghui Xia

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RESEARCH INTERESTS

Services Sciences, Management and Engineering

- Pricing and Outsourcing Strategies in IT Services
- Dynamic Resource Allocation of Information Processing Systems
- Performance Modeling, Analysis and Optimization of Web Service Systems
- Heavy Tail and Long-Range Dependence in Web Traffic
- Queueing Theory and Stochastic Processes
- Sensor Networks, Distributed Query Processing, Network Coding

EDUCATION

Stanford University, Stanford, CA, USA

Ph.D. in Engineering-Economic Systems and Operations Research

December 1998

Dissertation: "Optimal Control of Queueing Systems with Applications in
Communication, Computing and Manufacturing Systems "

Advisor: Nicholas Bambos

Committee: Peter Glynn, J. George Shanthikumar

Stanford University, Stanford, CA, USA

M.S. in Statistics

June 1996

University of Minnesota, Minneapolis, MN, USA

Qualified Ph.D. Candidate in Applied Mathematics

June 1993

Peking University, Beijing, China

B.S. (with Honor) in Applied Mathematics

July 1992

HONORS, AWARDS AND DISTINCTIONS

- IBM Research Division Award, 2007
- Fourth Invention Plateau Award, IBM T.J. Watson Research, 2007
- Third Invention Plateau Award, IBM T.J. Watson Research, 2006
- IBM Research Division Award, 2005
- Second Invention Plateau Award, IBM T.J. Watson Research, 2004
- Best Practice, IBM Academy of Technology, 2003
- First Invention Plateau Award, IBM T.J. Watson Research, 2003
- IBM Application Invention Achievement Award, 2001
- Engineering School Predoctoral Fellowship, Stanford University, 1994
- Dantzig Best Case Study Award in Linear Programming, Stanford University, 1994
- Guang-Hua Award to the Best Graduates of Class 1992, Peking University, 1992
- National Jiu-Zhang Mathematical Journal Award for Top Ranking Bachelor Student in China. 1990, 1991 (2 Separate Awards)
- Advanced Admission to the Gifted Young Class of Peking University, 1988

RESEARCH EXPERIENCE

IBM T. J. Watson Research Center, Hawthorne, NY

Research Staff Member

September 1998 - Present

- **Dynamic pricing and outsourcing strategies in IT services.** Investigated the dynamic pricing, capacity planning and strategic outsourcing decisions facing by e-commerce firms and IT service providers. Studied the dynamics of the e-services markets and analyzed the pricing and outsourcing behavior at equilibrium, taking into account the stochasticity of the demands, the heterogeneity of potential customers with regard to QoS sensitivity and price sensitivity. Developed efficient dynamic pricing and capacity planning strategies for IT service providers under demand uncertainty. Such mechanisms balance the tradeoff between exploration and exploitation and guarantee the firms' profitability in the long run.
- **Distributed resource control of information processing networks.** Developed distributed mechanisms for managing resources in large-scale stream processing networks to provide continuous information processing and query services. Investigated the dual-resource problem of allocating the limited computing resources as well as the communication bandwidth in a network of servers with heterogeneous capabilities. Deployed a utility based optimization framework to address the admission control, routing, and resource assignment problem. Developed novel distributed admission and resource control mechanisms with guaranteed convergence to the global optimal system utility. These control mechanisms are simple, robust, easy to implement, and are readily to be deployed at the IBM System S stream processing cluster.
- **Performance modeling, analysis and optimization of Web service systems.** 1) Lead a team of four and engaged in extensive performance modeling services for a broad range of customers and applications, including SAP, Siebel, ShopIBM, etc. 2) Developed AMBIENCE: an efficient performance modeling tool for capacity planning and performance prediction. The tool integrates high-level queueing network models and advanced inference techniques and builds performance models automatically using online end-to-end performance measurements. 3) Initiated multiple projects on autonomic performance tuning of WebSphere applications, on scheduling and capacity planning for unified messaging services, and on cost-effective design of multi-tiered e-business infrastructures.
- **Heavy tail and long-range dependence in Web traffic.** Conducted extensive statistical analysis of web traffic for a large number of e-commerce firms. Investigated specifically the heavy tail and long-range dependence behavior in web traffic and their implications to the performance of Web systems. Developed high level performance models using the queueing network framework and carried out in-depth study on the asymptotic behavior of queues under heavy-tailed and long-range dependent traffic.
- **Sensor networks, distributed query processing, network coding.** Developed efficient real-time network coding and scheduling algorithms for collecting multi-snapshots spatial data in a resource constrained disaster monitoring sensor network. Developed distributed mechanisms for efficient operator placement and data caching for in-network stream query processing. Studied the many-to-one transport capacity of a dense wireless sensor network and the compressibility of its data. Explored the scalability of large scale reliable stream processing networks constrained by fork-and-join type of operations.
- **Others.** Chaired the Performance Modeling and Analysis Professional Interest Community (PIC) at IBM Research, responsibilities include managing annual PIC budget, organizing PIC external seminar series, recruiting summer interns and regular employees, and coordinating campus relationship. Mentored 11 summer interns, defined and supervised their research projects.

RESEARCH EXPERIENCE (CONT'D)

Stanford University, Stanford, CA

Research Assistant

September 1995 - August 1998

Applied queueing networks theory to telecommunication and manufacturing systems. Studied the dynamic control of complex queueing networks in telecommunication and manufacturing systems and analyzed underlying dynamics.

Cisco Systems, San Jose, CA

Summer Intern

May 1996 - August 1996

Investigated congestion management and resource allocation issues for the internal routing system. Assisted in the enhancement of system software performance manageability.

KLA-Tencor Corporation, San Jose, CA

Summer Intern

May 1995 - December 1995

Developed sophisticated yield improvement models and methodologies for semiconductor manufacturing. Developed efficient in-line inspection policies for fab process and quality control.

Quantum Corporation, Milpitas, CA

Summer Intern

May 1994 - August 1994

Integrated multivariate analysis and multi-criteria analysis into a specialized Quantum data analysis package with graphical user interface. Developed an advanced statistical analyzer for Quantum on-line production control.

TEACHING EXPERIENCE

U. C. Berkeley, Berkeley, CA

Lecturer

November 1997

Courses: Queueing Theory (doctoral course)

Organized course materials and gave substitute lectures to about 40 graduate students.

Stanford University, Stanford, CA

Teaching Assistant

September 1994 - March 1997

Courses: – Applied Probability, – Queueing Theory, – Simulation, – Inventory Theory, – Dynamic Programming and Stochastic Control

Graded homework and exams, prepared solution sets, helped students during office hours, led problem sessions and review sessions.

Stanford University, Stanford, CA

Workshop Technical Assistant

March 1995 and August 1997

Decision Management Workshops for Industry Managers

Assisted industrial managers using INSIGHT Business Analysis Tool and provided Q&A assistance on techniques of modeling, simulation, optimization and forecasting for real problem solving.

University of Minnesota, Minneapolis, MN

Lecturer

June 1992 - August 1993

Course: Calculus I

Prepared course material and gave lectures to about 100 students, helped students during office hours, prepared and graded homework and exams.

University of Minnesota, Minneapolis, MN

Teaching Assistant

September 1992 - May 1993

Courses: – Calculus I, – Calculus II, – Multivariable Calculus

Led weekly problem sessions to about 150 students, led lab sessions on using Matlab and Mathematica, prepared and graded homework and exams, held office hours and tutoring sessions.

PROFESSIONAL SERVICE

- **Chair** of Professional Interest Community on Performance Modeling & Analysis (PMA PIC), IBM Research, 2006-present
- **Associate Editor** of International Journal of Information Systems in the Service Sector (IJISSS), 2008
- **Tutorial Chair** of ACM SIGMETRICS 2008 – the International Conference on Measurement and Modeling of Computer Systems
- **Program Committee Member**
 - ACM SIGMETRICS 2007, 2008
 - Performance 2005, 2007 – International Symposium on Computer Performance, Modeling, Measurements, and Evaluation
 - The 4th International Conference on the Quantitative Evaluation of Systems (QEST) 2007
 - SIGMETRICS/Performance 2004, 2006 – Joint International Conference on Measurement and Modeling of Computer Systems
 - The 4th International Workshop on Performance Modeling, Evaluation, and Optimization of Parallel and Distributed Systems (PMEO-PDS05)
- **Session Chair**
 - SIGMETRICS/Performance, New York, 2004, 2006
 - INFORMS Applied Probability Society Conference, 2004, 2007
 - INFORMS Annual Meeting 2003, 2004, 2006, 2007
- **PhD Thesis Committee Member**
 - Junning Liu, Department of Computer Science, University of Massachusetts Amherst, 2007
 - Saeed Aldosari, Electrical/Computer Engineering, Carnegie Mellon University, 2006
 - Wuqin Lin, School of Industrial and System Engineering, Georgia Tech, 2005
 - Junxia Chang, School of Industrial and System Engineering, Georgia Tech, 2004
- **Reviewer** for *Operations Research*, *Queueing Systems*, *Manufacturing & Service Operations Management*, *Annals of Operations Research*, *Journal of Scheduling*, *European Journal of Operations Research*, *Probability in the Engineering and Information Sciences*, *Naval Research Logistics*, *Electronic Commerce Research Journal*, *Performance Evaluation*, *IEEE Transactions on Automatic Control*, *IEEE Transactions on Parallel and Distributed Systems*, *IEEE/ACM Transactions on Networking*

PUBLICATIONS

Book Chapters

- [1] Xia C.H. and Shanthikumar J.G., "Asymptotic Optimal Control of Multi-class G/G/1 Queues with Feedback". In *Stochastic Modeling and Optimization of Manufacturing Systems and Supply Chains*, J.G. Shanthikumar, D.D. Yao, W.H.M. Zijm (eds), Kluwer, 127-142, 2003.

Journal Papers

- [1] Xia C.H. and Dube P. "Avoiding Price Dispersion in Learning and Dynamic Pricing with Demand Uncertainty", To appear in *Production and Operations Management*, 2008.
- [2] Liu Z., Tang A., Xia C.H., and Zhang L., "A Decentralized Control Mechanism for Stream Processing Networks", *Annals of Operations Research*, Special issue on Stochastic Performance Models for Resource Allocation in Communication Systems, 2007.
- [3] Feng H., Liu Z., Xia C.H. and Zhang L., "Load Shedding and Distributed Resource Control of Stream Processing Networks", *Performance Evaluation*, **64**(9-12): 1102-1120, 2007.
- [4] Dube P., Liu Z., Wynter L., and Xia C.H., "Competitive Equilibrium in e-Commerce: Pricing and Outsourcing", *Computers & Operations Research*, **34** (2007), 3541-3559.
- [5] Liu Z., Wynter L., Xia C.H. and Zhang F., "Parameter Inference of Queueing Models for IT Systems using End-to-End Measurements", *Performance Evaluation*, **63** (2006): 36-60.

- [6] Xia C.H., Liu Z., Squillante M.S., Zhang L. and Malouch N.M., "Web Traffic Modeling at a Finer Time Scales and Performance Implication", *Performance Evaluation*, Special Issue on Long Range Dependence and Heavy Tail Distributions, **61** (2005): 181-201.
- [7] Lin W., Liu Z., Xia C.H., and Zhang L., "Optimal Capacity Allocation for Web Systems with End-to-end Delay Guarantees", *Performance Evaluation*, **62** (2005): 400-416.
- [8] Chang J., Ayhan H., Dai J. and Xia C.H., "Dynamic scheduling of a Multiclass Fluid Model with Transient Overload", *Queueing Systems, Theory and Applications*, **48**(3-4): 263-307, 2004.
- [9] Xia C.H., Liu Z., Squillante M.S., and Zhang L., "Lower Bounds for FBM/GI/1 Queues with Subexponential Service Times", *Probability in the Engineering and Information Sciences (PEIS)*, **18**: 87-101, 2004.
- [10] Zhang L., Liu Z. and Xia C.H., "Clock Synchronization for Internet Measurements: a Clustering Algorithm", *Computer Networks: The International Journal of Computer and Telecommunications Networking*, **45**(6): 731-741, 2004.
- [11] Peköz E., Righter R. and Xia C.H., "Characterizing Losses During Busy Periods in Finite Buffer Systems", *Journal of Applied Probability*, **40**(1): 242-249, 2003.
- [12] Xia C.H., Michailidis G. and Bambos N., and Glynn P.W., "Optimal Control of Parallel Queues with Batch Service", *Probability in the Engineering and Information Sciences (PEIS)* **16**: 289-307, 2002.
- [13] Squillante M.S., Xia C.H. and Zhang L., "Optimal scheduling in queuing network models of high-volume commercial web sites", *Performance Evaluation* **47**(4): 223-242, 2002.
- [14] Xia C.H., Michailidis G. and Bambos N., "Dynamic On-line Task Scheduling on Parallel Processors", *Performance Evaluation*, **46**(2-3): 219-233, 2001.
- [15] Xia C.H., Shanthikumar J.G. and Glynn P.W., "On the Asymptotic Optimality of the SPT Rule for the Static Flow Shop Average Completion Time Problem", *Operations Research*, **48**: 615-622, 2000.

Refereed Conference Proceedings

- [1] Xia C.H., Liu Z., Towsley D. and Lelarge M., "Scalability of Fork/Join Queueing Networks with Blocking". *Proceedings of ACM SIGMETRICS 2007*, pp. 133-144. [**Acceptance rate 17%**].
- [2] Xia C.H., Towsley D., and Zhang C., "Distributed Resource Management and Admission Control of Stream Processing Systems with Max Utility". *Proceedings of The 27th International Conference on Distributed Computing Systems(ICDCS)*, 2007. [**Acceptance rate 13%**].
- [3] Liu J., Liu Z., Towsley D., and Xia C.H. "Maximize the Data Utility of a Data Archiving & Querying System through Joint Coding and Scheduling". *Proceedings of the 6th international conference on Information processing in sensor networks (IPSN'07)*, pp. 244-253.
- [4] Rong B., Douglis F., Liu Z., and Xia C.H., "Failure Recovery in Cooperative Data Stream Analysis". *The Second International Conference on Availability, Reliability and Security (ARES'07)*, pp. 77-84.
- [5] Xia C.H., Broberg J., Liu Z. and Zhang L., "Distributed Resource Allocation in Stream Processing Systems", *20th International Symposium on Distributed Computing (DISC 2006)*,
- [6] Tang A., Liu Z., Xia C.H., Zhang L., "Distributed Resource Allocation for Stream Data Processing Systems", *The 2006 International Conference on High Performance Computing and Communications (HPCC-06)*.
- [7] Kayshyap A., Lastras L., Xia C.H., Liu Z., "Distributed Source Coding in Dense Sensor Networks", *Proceedings of Data Compression Conference 2005(DCC'05)*, 13-22.

- [8] Kashyap A., Xia C.H., Liu Z. and Dube P., "Scaling Laws of Sampling and Capacity of Sensors on Closed Surfaces", *Proceedings of the 2005 International Conference on Wireless Networks (ICWN'05)*, pp. 677-686.
- [9] Lelarge M., Liu Z. and Xia C.H., "Asymptotic Tail Distribution of End-to-End Delay in Networks of Queues with Self-Similar Cross Traffic", *Proceedings of INFOCOM 2004*, pp. 2352-2363. [**Acceptance rate 18%**].
- [10] Xi B., Liu Z., Raghavachari M., Xia C.H. And Zhang L., "A Smart Hill-Climbing Algorithm for Application Server Configuration", *Proceedings of WWW2004, the 13th international conference on World Wide Web*, pp. 287-296. [**Acceptance rate 14%**].
- [11] Xia C.H. and Liu Z., "Queueing Systems with Long-Range Dependent Input Process and Subexponential Service Times", *Proceedings of ACM SIGMETRICS 2003*, pp. 25-36. [**Acceptance rate 11%**].
- [12] Xia C.H., Liu Z., Squillante M.S., Zhang, L. and Malouch, N., "Analysis of Performance Impact of Drill-down Techniques for Web Traffic Models", *Proceedings of the 18th International Teletraffic Congress (ITC 2003)*, pp. 409-418.
- [13] Liu Z., Squillante M.S., Xia C.H., Yu S.-Z., Zhang L., "Profile-based Traffic Characterization of Commercial Web Sites", *Proceedings of the 18th International Teletraffic Congress (ITC 2003)*, pp. 231-240.
- [14] Liu Z., Wynter L. and Xia C.H., "Usage-based versus Flat Pricing for e-business Services with Differentiated QoS", *Proceedings of the IEEE Conference on Electronic Commerce (CEC 2003)*, pp. 355-362.
- [15] Liu Z., Xia C.H., Momcilovic P. and Zhang L., "AMBIENCE: Automatic Model Building using InferENCE", *Congress MSR03 - 4th Conference on the Modeling of the Reactive Systems*, France, 2003.
- [16] Chang J., Ayhan H., Dai J., Liu Z., Squillante M., and Xia C.H., "Optimal Dynamic Scheduling in a Multiclass Fluid Model of Internet Servers with Transient Overload", *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC 2003)*, vol. 1, pp. 721-727.
- [17] Dube P., Liu Z., Wynter L. and Xia C.H., "Outsourcing and Price-QoS Equilibrium for E-Commerce and Internet Firms: IT On-Demand", *Proceedings of the 42nd IEEE Conference on Decision and Control (CDC 2003)*, vol. 6, pp. 5801-5806.
- [18] Zhang L., Liu Z., Riabov A., Schulman S., Xia C.H., and Zhang F., "A Comprehensive Toolset for Workload Characterization, Performance Modeling and On-line Control", *Computer Performance Evaluation /TOOLS 2003*, pp. 63-77.
- [19] Zhang L., Liu Z. and Xia C.H., "Clock Synchronization Algorithms for Network Measurements", *Proceedings of the IEEE INFOCOM 2002*, vol. 1, pp. 160-169.
- [20] Zhang L., Xia C.H., Squillante M.S., Mills N., "Workload Service Requirements Analysis: A Queueing Network Optimization Approach", *Proceedings of the 10th IEEE International. Symposium on Modeling, Analysis, and Simulation of Computer and Telecommunication Systems (MAS-COTS 2002)*, pp. 23-32. [**Ranked No. 6 as most-accessed in May 2005 on IEEE Xplorer**].
- [21] Yu S.-Z., Liu Z., Squillante M.S., Xia C.H., Zhang L., "A Hidden Semi-Markov Model for Web Workload Self-similarity", *21st IEEE International Performance, Computing, and Communications Conference (IPCCC 2002)*.
- [22] Liu Z., Squillante M.S., Xia C.H., Yu S.-Z., Zhang L., Dantzig P.M. and Malouch N.M. "Analysis of Measurement Data from Sporting Event Web Sites", *IEEE Globecom 2002*, vol. 3, pp. 2543-2547.
- [23] Liu Z., Squillante M.S., Xia C.H., Yu S.-Z., Zhang L., Malouch N.M., and Dantzig P. "Analysis of Caching Mechanisms from Sporting Event Web Sites", *Proceedings of the 7th Asian Computing Science Conference on Advances in Computing Science: Internet Computing and Modeling, Grid Computing, Peer-to-Peer Computing, and Cluster (2002)*, pp. 76-86.

- [24] Liu Z., Squillante M.S., Xia C.H., Yu S.-Z. and Zhang L., "Traffic Profiling, Clustering and Classification for Commercial Web Sites", *The 10th International Conference on Telecommunication Systems Management (ICTSM10)*, 2002.
- [25] Squillante M.S., Xia C.H. and Zhang L., "Optimal Scheduling in Queueing Network Models of High-Volume Web Sites", *Select Proceedings of the SPIE-2000 Conference on Internet Quality and Performance and Control of Network Systems*, 4211:113-121.

Extented Abstracts

- [1] Broberg J., Liu Z., Xia C.H. and Zhang L., "A Multicommodity Flow Model for Distributed Stream Processing", *Proceedings of SIGMETRICS/Performance 2006*, pp. 377-378.
- [2] Wynter L., Xia C.H. and Zhang F., "Parameter Inference of Queueing Models for IT Systems using End-to-End Measurements", *Proceedings of SIGMETRICS/Performance 2004*, pp. 408-409.
- [3] Liu Z., Wynter L. and Xia C.H., "Pricing Information Services in a Competitive Market: Avoiding Price Wars", *ACM Conference on Electronic Commerce 2003*, pp. 188-189.
- [4] Lin W., Liu Z., Stavropoulos H. and Xia C.H., "Hard Deadline Queueing System with Application to Unified Messaging Service", *SIGMETRICS Performance Evaluation Review 2003*. 31(2), pp. 31-33.
- [5] Xia C.H., Liu Z., Squillante M.S., Zhang L., Malouch N., "Traffic Modeling and Performance Analysis of Commercial Web Sites", *SIGMETRICS Performance Evaluation Review 2002*. 30(3), pp. 32-34.
- [6] Squillante M.S., Xia C.H., Yao D.D. and Zhang L., "Threshold-Based Priority Policies for Parallel-Server Systems with Affinity Scheduling", *Proceedings of the American Control Conference (ACC2001)*, pp. 2992-2999.
- [7] Squillante M.S., Xia C.H. and Zhang L., "Optimal Scheduling in Queueing Network Models of High-Volume Commercial Web Sites", *SIGMETRICS Performance Evaluation Review 2001*. 29(3), pp. 47-48.

PATENTS

- [1] YOR8-2007-0751-US1 Methods and Apparatus for Continuous Resource Allocation for Multiple Hypothesis Testing in Stream Processing Systems Dube P., Jain A., Liu Z. and Xia C.H., Sept. 2007.
- [2] YOR8-2007-0001-US1. Method and Apparatus for Pricing and Capacity Planning of e-Services on-demand, Dube P. and Xia C.H., Sept. 2007.
- [3] YOR8-2006-1058-US1. Methods and apparatus for Effective On-line Backup Selection for Failure Recovery in Distributed Stream Processing Systems, Douglass F., Liu Z., Rong B. and Xia C.H., Jul. 2007.
- [4] YOR820060707-US1. Distributed Interior-Point Method for Admission Control and Resource Allocation in Stream Processing Systems. Feng H., Liu Z., Xia C.H. and Zhang L. Sept. 2006.
- [5] YOR820060705-US1. Push and Pull based Methods for Resource Allocation Scheme in Distributed Stream Processing. Feng H., Liu Z., Xia C.H. and Zhang L. Sept. 2006.
- [6] YOR820051009-US1. Methods and apparatus for efficient in-network processing of sensor networks. Liu Z., Towsley D., Xia C.H. and Ying L. Sept. 2006.
- [7] YOR8-2005-0931-US1. Method and Apparatus for Distributed Resource Management in Stream Processing Systems. Broberg J., Liu Z., Xia C.H., and Zhang L., 2005.
- [8] YOR8-2005-0740-US1. System and apparatus for optimally trading off replication overhead and consistency level in distributed applications. Liu Z., Xia C.H., Yang H. and Ye F., 2005.
- [9] YOR8-2004-0889-US1. Methods and Apparatus for Resource Allocation for Stream Data Processing. Liu Z., Tang A., Xia C.H. and Zhang L., 2005.

- [10] YOR8-2004-0709-US1. Methods and Apparatus for Cost-Effective Design of Large Scale Sensor Networks. Kashyap A., Lastras L., Liu Z. and Xia C.H., 2005.
- [11] YOR8-2003-1025-US1. Methods and Apparatus for Cost Minimization of Multi-tiered e-Business Infrastructure with End-to-end Delay Guarantees. Lin W., Liu Z., Xia, C.H. and Zhang L., 2004.
- [12] YOR8-2004-0030-US1. Methods and Apparatus for Automatic System Parameter Configuration of Web Application Servers. Liu Z., Raghavachari M., Xi B.W., Xia C.H. and Zhang L., 2004.
- [13] YOR9-2003-0498-US1. Method and Apparatus for automatic model building using inference for IT Systems. Liu Z., Xia C.H., Momcilovic P. and Zhang L., 2003.
- [14] YOR9-2003-0507-US1. Method and Apparatus for On-demand Resource Allocation and Job Management for Messaging Services. Lin W., Liu Z., Stavropoulos H., and Xia C.H., 2003.
- [15] YOR9-2002-0221-US1. Methods and Apparatus for Profiling, Clustering and Classification of Web Sites, Halim N., Liu Z., Squillante S.S., Xia C.H., Yu S.Z. and Zhang L., 2002.
- [16] YOR9-2002-0222-US1. Exploiting Traffic Patterns for Resource Allocation, Dias D., King R., Liu Z., Squillante S.S., Yu S.Z., Xia C.H. and Zhang L., 2002.
- [17] YOR9-2001-0383-US1. Clock Synchronization Algorithms for Network Measurements with Clock Resets, Zhang L., Liu Z. and Xia C.H., 2002.
- [18] YOR8-2000-0843-US1. Clock Synchronization Algorithms for Network Measurements, Zhang L., Liu Z. and Xia C.H., 2001.

PRESENTATIONS

Univeristy Seminar Presentations

- [1] "Distributed Control of Stream Processing Networks", Invited Talk, University of California at Berkeley, Feb. 2007.
- [2] "Distributed Control of Stream Processing Networks", Invited Talk, University of Connecticut, Mar. 2007.
- [3] "Internet traffic: Its Dependence Structure and Tail Distributions", Invited Talk, Rensselaer Polytechnic Institute, Mar. 2004.
- [4] "Internet traffic: Its Dependence Structure and Tail Distributions", Invited Talk, Carnegie Mellon University, Nov. 2003.
- [5] "Asymptotic Tail Distribution Of End-To-End Delay In Networks Of Queues With Self-Similar Cross Traffic", Invited Talk, Georgia Institute of Technology, Nov. 2001, Oct. 2003.
- [6] "Web Traffic: Its Dependence Structure And Tail Probabilities", Invited Talk, Stanford University, Nov. 2002.
- [7] "Web Traffic: Its Dependence Structure And Tail Probabilities", Invited Talk, Georgia Institute of Technology, Nov. 2001.
- [8] "Stochastic Control of Systems with Parallel Servers", Invited Talk, Stern School of Business, New York University, Nov. 1999.
- [9] "Optimal Control of Parallel-Server Queueing Networks", Invited Talk, INRIA MISTRAL Group, INRIA, Centre Sophia Antipolis, France, Jul. 1999.

Invited Conference Presentations

- [1] A Push-and-pull Based Distributed Control of Stream Processing Networks, INFORMS Annual Meeting, Seattle, Nov. 2007.

- [2] Avoiding Price Dispersion in Learning and Dynamic Pricing with Demand Uncertainty, INFORMS Annual Meeting, Seattle, Nov. 2007.
- [3] Pressure-Based Decentralized Resource Allocation in Stream Processing Systems, INFORMS Annual Meeting, Pittsburg, Nov. 2006.
- [4] Demand Uncertainty and Dynamic Pricing of IT Services, INFORMS Annual Meeting, Pittsburg, Nov. 2006.
- [5] Distributed Resource Allocation for Stream Data Processing, 13th INFORMS Applied Probability Conference, Ottawa, Canada, Jul. 2005.
- [6] Performance Modeling and Optimization using AMBIENCE, **Tutorial**, Professional Leadership Technical Exchange (PLTE) for Asia Pacific and the Americas, Orlando, Mar. 2004.
- [7] Asymptotic Throughput Analysis of Large Scale Multicast Networks, INFORMS Annual Meeting, Denver, Oct. 2004.
- [8] Cost Minimization of Multi-Tiered e-Business Infrastructure with End-to-End Delay Guarantees, 12th INFORMS Applied Probability Conference, Beijing, China, Jun. 2004.
- [9] Asymptotic Tail Distribution of End-to-End Delay in Networks of Queues with Self-Similar Cross Traffic, 12th INFORMS Applied Probability Conference, Beijing, China, Jun. 2004.
- [10] Optimizing Pricing for Communication Networks at Different Levels, 12th INFORMS Applied Probability Conference, Beijing, China, Jun. 2004.
- [11] AMBIENCE: Automatic Model Building using InferEnce, Congress MSR03, Metz, France, Oct. 2003.
- [12] Profile-based Traffic Characterization of Commercial Web Sites, **Plenary session talk**, the 18th International Teletraffic Congress, Berlin, Germany, Sept. 2003.
- [13] AMBIENCE: Automatic Model Building using InferEnce, **Best Practice**, IBM Academy of Technology, Performance Engineering 'Best Practices' Topical Conference IV, East Fishkill, Jun. 2003.
- [14] Performance Modeling in the Information Technology Era, 21st IFIP TC 7 Conference on System Modeling and Optimization, Sophia Antipolis, France, Jul. 2003.
- [15] Threshold-Based Priority Policies for Parallel-Server Systems with Affinity Scheduling. 2001 American Control Conference(ACC2001), Arlington, Jun. 2001.

Organized and Contributed Conference Presentations

- [1] Robust Optimization for Least Squares Estimation. INFORMS Annual Meeting, Pittsburg, Nov. 2006.
- [2] Parameter Inference of Queueing Models for IT Systems using End-to-End Measurements, SIGMETRICS/Performance 2004, New York, Jun. 2004.
- [3] Asymptotic Tail Distribution of End-to-End Delay in Networks of Queues with Self-Similar Cross Traffic, INFOCOM 2004, Hong Kong, Mar. 2004.
- [4] Optimal Configuration of Web Application Servers, WWW 2004, New York, May 2004.
- [5] Cost Minimization of Multi-Tiered e-Business Infrastructure with End-to-End Delay Guarantees, the Sixth Workshop on MATHematical (performance) Modeling and Analysis (MAMA 2004), New York, Jun. 2004.
- [6] Queueing Systems with Long-Range Dependent Input Process and Subexponential Service Times. SIGMETRICS, San Diego, Jun. 2003.
- [7] Usage-based versus Flat Pricing for e-business Services with Differentiated QoS, IEEE Conference on Electronic Commerce (CEC'03), Newport Beach, CA, Jun. 2003.

- [8] Pricing Information Services in a Competitive Market: Avoiding Price Wars, ACM Conference on Electronic Commerce (EC'03), San Diego, Jun. 2003.
- [9] Analysis of Performance Impact of Drill-down Techniques for Web Traffic Models, 18th International Teletaffic Congress (ITC2003), Berlin, Germany, Sept. 2003.
- [10] Hard Deadline Queueing System with Application to Unified Messaging Service, the Fifth Workshop on MATHematical (performance) Modeling and Analysis (MAMA 2003), San Diego, CA, Jun. 2003.
- [11] Queueing Network Inference and Optimization for End-to-End Performance Modeling, Invited talk at SAMSI Workshop on Internet Tomography, Research Triangle Park, NC, Oct. 2003.
- [12] Optimization methods for the inference of queueing network arising from IT Systems, INFORMS Annual Meeting, Atlanta, Oct. 2003.
- [13] Diffusion approximations for Queueing Systems with Hard Deadlines, INFORMS Annual Meeting, Atlanta, Oct. 2003.
- [14] A Queueing Network Approach for Application Server Configuration, INFORMS Annual Meeting, Atlanta, Oct. 2003.
- [15] Outsourcing and Price-QoS Equilibrium for E-Commerce and Internet Firms: IT On-Demand, the 42nd IEEE Conference on Decision and Control (CDC 2003), Hawaii, Dec. 2003.
- [16] Optimal Dynamic Scheduling in a Multiclass Fluid Model of Internet Servers with Transient Overload, the 42nd IEEE Conference on Decision and Control (CDC 2003), Hawaii, Dec. 2003.
- [17] Optimal Control in Fluid and Brownian Models of High-Volume Commercial Web Sites, 11th INFORMS Applied Probability Conference, New York City, Jul. 2001.
- [18] Optimal Scheduling on Queueing Network Models of High-Volume Commercial Web Sites. The 3rd Workshop on MATHematical (performance) Modeling and Analysis (MAMA 2001), Cambridge, Jun. 2001.

MISCELLANEOUS

Gender: Female

Visa Status: US Permanent Resident, Green Card Holder