

Ningfang Mi

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RESEARCH INTERESTS

Storage systems, multi-tier systems, performance evaluation, energy/power management, simulation, data analysis, system modeling, capacity planning, web characterization, and scheduling/load balancing.

EDUCATION

<i>Ph.D. in Computer Science</i>	2009
College of William and Mary, Williamsburg, VA, USA Supervisor: Evgenia Smirni	
<i>M.S. in Computer Science</i>	2004
University of Texas at Dallas, Richardson, TX, USA Supervisor: Ovidiu Daescu	
<i>B.S. in Computer Science</i>	2000
Nanjing University, Nanjing, Jiangsu, China Supervisor: Shijie Cai	

AWARDS, HONORS, AND FELLOWSHIPS

2011 The IBM Faculty Award (\$20,000).
2010 The AWS (Amazon Web Services) in Education Research Grant (\$7,500).
2010 The Best Student Paper Award at the 22nd International Teletraffic Congress (ITC-22), Amsterdam, The Netherlands, 2010, for the paper titled “Fastrack for Taming Burstiness and Saving Power in Multi-Tiered Systems”
2009 The Computer Management Group (CMG) Graduate Fellowship
2008 The Best Paper Award at the ACM/IFIP/USENIX 9th International Middleware Conference (Middleware’08), Leuven, Belgium, 2008, for the paper titled “Burstiness in Multi-Tier Applications: Symptoms, Causes, and New Models”
2008 Incogen Award for Excellence in Scholarship in the Natural and Computational Sciences at the 7th Annual Graduate Research Symposium of the College of William and Mary
2000 The Fujitsu Fellowship for Outstanding Students at Nanjing University
1998 The Luopu Fellowship for Outstanding Students at Nanjing University
1996 The President Fellowship for Freshman at Nanjing University

PROFESSIONAL EXPERIENCE

Assistant Professor

Northeastern University, Boston, MA, USA

Aug. 2009 - present

Research Associate

Hewlett-Packard Laboratories, Palo Alto, CA, USA

Jun. 2007 - May 2009

Research Associate

Seagate Research, Pittsburgh, PA, USA

Oct. 2006 - Jan. 2007

Research Assistant

College of William and Mary, Williamsburg, VA, USA

Aug. 2005 - Aug. 2009

Teaching Assistant

College of William and Mary, Williamsburg, VA, USA

Aug. 2004 - Aug. 2005

PUBLICATIONS

Refereed Journal Publications

1. **Ningfang Mi**, Giuliano Casale, Ludmila Cherkasova, and Evgenia Smirni, "Sizing Multi-Tier Systems with Temporal Dependence: Benchmarks and Analytic Models", to appear, in *Journal of Internet Services and Application (JISA)*, 2010.
2. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, "Model-Driven System Capacity Planning Under Workload Burstiness", in *IEEE Transactions on Computers (TC)*, Vol. 59, No. 1, pp. 66-80, January 2010.
3. Ludmila Cherkasova, Kivanc Ozonat, **Ningfang Mi**, Julie Symons, and Evgenia Smirni, "Automated Anomaly Detection and Performance Modeling of Enterprise Applications", in *ACM Transactions on Computer Systems (TOCS)*, Vol. 27, Issue 3, November 2009.
4. **Ningfang Mi**, Alma Riska, Qi Zhang, Evgenia Smirni, and Eric Riedel, "Efficient Management of Idleness in Systems", in *ACM Transactions on Storage (TOS)*, Vol. 5, No. 2, Article 4, June 2009.
5. Qi Zhang, Ludmila Cherkasova, **Ningfang Mi**, and Evgenia Smirni, "A Regression-Based Analytic Model for Capacity Planning of Multi-Tier Applications", in *Journal of Cluster Computing*, Vol 11, No. 3, pp. 197-211, 2008.
6. Qi Zhang, **Ningfang Mi**, Alma Riska, and Evgenia Smirni, "Performance-Guided Load (Un)Balancing Under Autocorrelated Flows", in *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, Vol. 19, No. 2, pp. 652-665, 2008.
7. **Ningfang Mi**, Qi Zhang, Alma Riska, Evgenia Smirni, and Eric Riedel, "Performance Impacts of Autocorrelated Flows in Multi-tiered Systems", in *Performance Evaluation*, Vol 64, No. 9-12, pp. 1082-1101, 2007. Also presented at *the 26th International Symposium on Computer Performance, Modeling, Measurements, and Evaluation (Performance'07)*, Cologne, Germany, 2007. Acceptance Rate: 20%.
8. Ovidiu Daescu, **Ningfang Mi**, Chan-Su Shin, and Alexander Wolff, "Farthest-point Queries with Geometric and Combinatorial Constraints", in *Computational Geometry: Theory & Applications*, Vol. 33, No. 3, pp. 174-185, 2006.
9. Danny Z. Chen, Ovidiu Daescu, John Hershberger, Peter M. Kogge, **Ningfang Mi**, and Jack Snoeyink, "Polygonal Path Approximation with Angle Constraints", in *Computational Geometry: Theory & Applications*, Vol. 32, No. 3, pp. 173-187, 2005.

10. Ovidiu Daescu, and **Ningfang Mi**, “Polygonal Path Approximation: a Query Based Approach”, in *Computational Geometry: Theory & Applications*, Vol. 30, No. 1, pp. 41-58, 2005.

Refereed Conference Publications

Acceptance rates are provided when known.

1. Juemin Zhang, **Ningfang Mi**, Jianzhe Tai and Waleed Meleis, “Decentralized Scheduling of Bursty Workload on Computing Grids”, to appear, in *the IEEE International Conference on Communications (ICC’11)*, Kyoto, Japan, June 5-9, 2011.
2. Andrew Caniff, Lei Lu, **Ningfang Mi**, Ludmila Cherkasova, and Evgenia Smirni, “Fast-track for Taming Burstiness and Saving Power in Multi-Tiered Systems”, in *the 22nd International Teletraffic Congress (ITC’10)*, pp. 1-8, Amsterdam, The Netherlands, Sept 7-9, 2010. Acceptance Rate: 30%. (**Best Student Paper Award**)
3. Lei Lu, Ludmila Cherkasova, V. de Nitto Person, **Ningfang Mi**, and Evgenia Smirni, “AWAIT: Efficient Overload Management for Busy Multi-tier Web Services under Bursty Workloads”, in *the 10th International Conference on Web Engineering (ICWE’10)*, pp. 81-97, Vienna, Austria, July 5-9, 2010. Acceptance Rate: 20%.
4. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, “CWS: a Model-Driven Scheduling Policy for Correlated Workloads”, in *the 2010 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS’10)*, pp. 251-262, June 2010. Acceptance Rate: 16%.
5. **Ningfang Mi**, Giuliano Casale, Alma Riska, Qi Zhang, and Evgenia Smirni, ”Autocorrelation-Driven Load Control in Distributed Systems”, in *the IEEE/ACM International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems (MASCOTS’09)*, London, U.K., September 2009. Acceptance Rate: 20%.
6. **Ningfang Mi**, Giuliano Casale, Ludmila Cherkasova, and Evgenia Smirni, “Injecting Realistic Burstiness to a Traditional Client-Server Benchmark”, in *the International Conference on Autonomic Computing and Communications (ICAC’09)*, pp. 149-158, Barcelona, Spain, 2009. Acceptance Rate: 16%
7. **Ningfang Mi**, Alma Riska, Xin Li, Evgenia Smirni, and Erik Riedel, “Restrained Utilization of Idleness for Transparent Scheduling of Background Tasks”, in *the 2009 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS’09)*, pp. 205-216, Seattle, WA, 2009. Acceptance Rate: 15%
8. Alma Riska, **Ningfang Mi**, Giuliano Casale, and Evgenia Smirni, ”Feasibility Regions: Exploiting Trade-offs between Power and Performance in Disk Drives”, in *the second Workshop on Hot Topics in Measurement & Modeling of Computer Systems (HotMetrics’09)*, ACM Perf. Eval. Rev. Vol. 37, Issue 3, pp. 49-54, Seattle, WA, 2009.
9. **Ningfang Mi**, Giuliano Casale, Ludmila Cherkasova, and Evgenia Smirni, “Burstiness in Multi-Tier Applications: Symptoms, Causes, and New Models”, in *ACM/IFIP/USENIX 9th International Middleware Conference (Middleware’08)*, pp. 265-286, Leuven, Belgium, 2008. Acceptance Rate: 18%. (**Best Paper Award**)
10. **Ningfang Mi**, Giuliano Casale, and Evgenia Smirni, “Scheduling for Performance and Availability in Systems with Temporal Dependent Workloads”, in *the International Conference on Dependable Systems and Networks (DSN’08)*, pp. 336-345, Anchorage, AK, 2008. Acceptance Rate: 25%.

11. **Ningfang Mi**, Alma Riska, Evgenia Smirni, and Erik Riedel, “Enhancing Data Availability through Background Activities”, in *the International Conference on Dependable Systems and Networks (DSN’08)*, pp. 492-501, Anchorage, AK, 2008. Acceptance Rate: 25%.
12. Ludmila Cherkasova, Kivanc Ozonat, **Ningfang Mi**, Julie Symons, and Evgenia Smirni, “Anomaly? Application Change? or Workload Change?”, in *the International Conference on Dependable Systems and Networks (DSN’08)*, pp. 452-461, Anchorage, AK, 2008. Acceptance Rate: 25%.
13. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, “Bound Analysis of Closed Queueing Networks with Workload Burstiness”, in *the 2008 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS’08)*, pp. 13-24, Annapolis, MD, 2008. Acceptance Rate: 18%.
14. Giuliano Casale, **Ningfang Mi**, Ludmila Cherkasova, and Evgenia Smirni, “How to Parameterize Models with Bursty Workloads”, in *the First Workshop on Hot Topics in Measurement & Modeling of Computer Systems (HotMetrics’08)*, Annapolis, MD, 2008. Acceptance Rate: 27%.
15. **Ningfang Mi**, Ludmila Cherkasova, Kivanc Ozonat, Julie Symons, and Evgenia Smirni, “Analysis of Application Performance and Its Change via Representative Application Signatures”, in *IEEE/IFIP Network Operations and Management Symposium (NOMS’08)*, pp. 216-223, Salvador, Brazil, 2008. Acceptance Rate: 27%.
16. **Ningfang Mi**, Qi Zhang, Alma Riska, and Evgenia Smirni, “Load Balancing for Performance Differentiation in Dual-Priority Clustered Servers”, in *the 3rd International Conference on the Quantitative Evaluation of Systems (QEST’06)*, pp. 385-394, Riverside, CA, 2006.
17. Qi Zhang, **Ningfang Mi**, Alma Riska, and Evgenia Smirni, “Load Unbalancing to Improve Performance under Autocorrelated Traffic”, in *the 26th International Conference on Distributed Computing Systems (ICDCS’06)*, pp. 20, Lisboa, Portugal, 2006. Acceptance Rate: 14%.
18. Qi Zhang, Alma Riska, **Ningfang Mi**, Erik Riedel, and Evgenia Smirni, “Evaluating the Performability of Systems with Background Jobs”, in *the International Conference on Dependable Systems and Networks (DSN’06)*, pp. 495-504, Philadelphia, PA, 2006. Acceptance Rate: 18%.
19. Ovidiu Daescu, **Ningfang Mi**, Chan-Su Shin, and Alexander Wolff, “Farthest-point Queries with Geometric and Combinatorial Constraints”, in *the Japan Conference on Discrete and Computational Geometry (JCDCG’04)*, pp. 62-75, 2004.
20. Ovidiu Daescu, and **Ningfang Mi**, “Polygonal Path Approximation: a Query Based Approach”, in *the 14th Annual International Symposium on Algorithms and Computation (ISAAC’03)*, pp. 36-46, 2003.

Invited Publications

1. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, “Versatile Models of Systems Using MAP Queueing Networks”, to appear, *the IEEE International Parallel and Distributed Processing Symposium (IPDPS), Next Generation Software (NGS) Workshop*, 2008.

2. Evgenia Smirni, Qi Zhang, **Ningfang Mi**, Alma Riska, and Giuliano Casale, “New Results on the Performance Effects of Autocorrelated Flows in Systems”, in *IEEE International Parallel and Distributed Processing Symposium (IPDPS), Next Generation Software (NGS) Workshop*, pp. 1-6, Long Beach, CA, 2007.

Refereed Posters

1. Andrew Caniff, Lei Lu, **Ningfang Mi**, Ludmila Cherkasova, and Evgenia Smirni, “Efficient Resource Allocation and Power Saving in Multi-Tiered Systems”, in *the 19th International World Wide Web Conference (WWW’2010)*, Raleigh, North Carolina, USA, April 26-30, 2010.
2. **Ningfang Mi**, Alma Riska, Qi Zhang, Evgenia Smirni, and Eric Riedel, “Efficient Management of Idleness in Systems”, in *the 2007 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS’07)*, pp. 371-372, San Diego, CA, 2007.

PATENTS

1. “Using Transaction Latency Profiles For Characterizing Application Updates”, *Hewlett-Packard Laboratories*, patent pending with US Patent NO. 200704163.
2. “Using Application Performance Signatures For Characterizing Application Updates”, *Hewlett-Packard Laboratories*, patent pending with US Patent NO. 200704162.
3. “Capacity Planning Of Multi-tiered Applications From Application Logs”, *Hewlett-Packard Laboratories*, patent pending with US Patent NO. 200704165.
4. “Data Storage Device with Histogram of Idle Time and Scheduling of Background and Foreground Jobs”, *Seagate Research*, patent pending, submitted November 2007.

PROFESSIONAL ACTIVITIES

- Editorial Board for Journal of Simulation Modelling Practice and Theory 2011-present
- Demo/Poster Chair for ACM International Conference on Performance Engineering 2012
- Program Committee Member, QEST International Conference 2011
- Shadow Program Committee Member, ACM SIGMETRICS International Conference 2010
- Program Committee Member, QEST International Conference 2010
- Publicity Co-Chair, ACM/IFIP/USENIX International Middleware Conference 2010
- **Reviewer**
 - IEEE Transactions on Dependable and Secure Computing
 - IEEE Transactions on Computers
 - IEEE Transactions on Parallel and Distributed Systems
 - International Journal of Modeling, Simulation, and Scientific Computing
 - Journal of Parallel and Distributed Computing
 - Journal of Simulation Modelling Practice and Theory
 - International Journal Performance Evaluation
 - ACM SIGMETRICS Performance Evaluation Review

ACM SIGMETRICS Conference
International Symposium on Computer Architecture (ISCA)
The IEEE/ACM International Symposium on Modeling, Analysis and Simulation of
Computer and Telecommunication Systems (MASCOTS)
The International Conference on Distributed Computing Systems (ICDCS)
IEEE International Workshop on Feedback Control Implementation and Design in Com-
puting Systems and Networks (FeBID)
IFIP/IEEE Symposium on Integrated Management (IM)
The International Conference on Quantitative Evaluation of Systems (QEST)
IEEE International Workshop on Quality of Service (IWQoS)
The International Conference on Wireless Algorithms, Systems and Applications (WASA)
The Annual Simulation Symposium (ANSS)
The KES International Symposium on Agent and Multi-Agent Systems : Technologies
and Applications (AMSTA)
The European Performance Engineering Workshop (EPEW)
The International European Conference on Parallel and Distributed Computing (Euro-
Par)

- **Member** of ACM, IEEE, and IEEE Women in Engineering