

# Ningfang Mi

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## RESEARCH INTERESTS

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Capacity Planning; MapReduce/Hadoop Scheduling; Cloud Computing; Resource Management; Performance Evaluation; Workload Characterization; Simulation; Virtualization.

## EDUCATION

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

## PROFESSIONAL EXPERIENCE

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<b><i>Associate Professor</i></b>	Sept. 2016 - present
Northeastern University, Boston, MA, USA	
<b><i>Assistant Professor</i></b>	Aug. 2009 - Aug. 2016
Northeastern University, Boston, MA, USA	
<b><i>Research Associate</i></b>	Jun. 2007 - May 2009
Hewlett-Packard Laboratories, Palo Alto, CA, USA	
<b><i>Research Associate</i></b>	Oct. 2006 - Jan. 2007
Seagate Research, Pittsburgh, PA, USA	
<b><i>Research Assistant</i></b>	Aug. 2005 - Aug. 2009
College of William and Mary, Williamsburg, VA, USA	
<b><i>Teaching Assistant</i></b>	Aug. 2004 - Aug. 2005
College of William and Mary, Williamsburg, VA, USA	

## AWARDS, HONORS, AND FELLOWSHIPS

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- 2017 The Best Paper Award at 36th IEEE International Performance Computing and Communications Conference (IPCCC)
- 2015 The NSF Faculty Early Career Development (CAREER) Award (\$459,588)

- 2014 The Air Force’s Young Investigator Research Program (YIP) Award (\$353,050)
- 2010 The IBM Faculty Award (\$20,000)
- 2015 The Best Student Paper Runner-up Award at the 34rd IEEE International Performance Computing and Communications Conference (IPCCC’15), Nanjing, China, 2015, for the paper titled “OMO: Optimize MapReduce Overlap with a Good Start (Reduce) and a Good Finish (Map)”
- 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

## GRANTS

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- **External Research Grant**

- Total amount of external funding is \$1,332,489.
- Total amount of my share is \$1,322,489.

1. **2017 Samsung Semiconductor Inc. Research Grant**      **PI**  
 “Dynamic Resource Allocation Scheme for Virtualized Storage with Flash-Memory Resources”  
 Total Value: \$200,000 (Direct+Indirect)      My share: \$200,000 (100%)  
 Start date: December 1, 2017      Expiration date: November 30, 2019
2. **2015 NSF Faculty Early Career Development (CAREER) Award**      **PI**  
 “Capacity Planning Methodologies for Large Clusters with Heterogeneous Architectures and Diverse Applications”  
 Total Value: \$459,588 (Direct+Indirect)      My share: \$459,588 (100%)  
 Start date: April 1, 2015      Expiration date: March 31, 2020
3. **2015 Mathworks Microgrant**      **PI**  
 “Parallel Processing of Machine Learning Algorithms”  
 Total Value: \$20,000 (Direct)      My share: \$10,000 (50%)  
 Start date: May 1, 2015      Expiration date: December 31, 2015
4. **2014 Air Force’s Young Investigator Research Program (YIP) Award**      **PI**  
 “Creating An Integrated Management Layer To Administer Heterogeneous Resources in Dynamic Workflow Clusters”  
 Total Value: \$353,050 (Direct+Indirect)      My share: \$353,050 (100%)  
 Start date: July 1, 2014      Expiration date: June 30, 2017
5. **2012 NSF #CNS-1251129**      **PI**  
 “CSR:EAGER:An Integrated Framework for Performance and Reliability in Large-scaled Computing Systems”  
 Total Value: \$272,351 (Direct+Indirect)      My share: \$272,351 (100%)  
 Start date: September 1, 2012      Expiration date: August 31, 2014

6. **2010 IBM Faculty Award PI**  
 “Temporal Dependence-Based Workload Prediction Techniques For Enterprise Storage Systems”  
 Total Value: \$20,000 (Direct)      My share: \$20,000 (100%)
7. **2010 Amazon Web Services in Education Research Grant PI**  
 “ArA-C2E: Adaptive Resource Allocation for Cloud Computing Environments under Bursty Workloads”  
 Total Value: \$7,500 (credits)      My share: \$7,500 (100%)

- **Internal Research Grant**

- Total amount of internal funding is \$47,377.
- Total amount of my share is \$15,634.

1. **2014 Northeastern TIER 1 Internal Research Grant Co-PI**  
 “Mining Big Heterogeneous Networks: Scalable Parallel Algorithms and Effective Scheduling”  
 Total Value: \$47,377 (Direct+Indirect)      My share: \$15,634 (33%)  
 Start date: July 1, 2014      Expiration date: June 30, 2015

## PUBLICATIONS

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### Refereed Journal Publications

1. Janki Bhimani, Zhengyu Yang, **Ningfang Mi**, Jingpei Yang, Qiumin Xu, Manu Awasthi, Rajinikanth Pandurangan, and Vijay Balakrishnan, “Docker Container Scheduler for I/O Intensive Applications running on NVMe SSDs”, in *IEEE Transactions on Multi-Scale Computing Systems (TMSCS)*, 2018.
2. Zhengyu Yang, Janki Bhimani, Yi Yao, Cho-Hsien Lin, Jiayin Wang, **Ningfang Mi**, and Bo Sheng, “AutoAdmin: Admission Control in YARN Clusters Based on Dynamic Resource Reservation”, in *Scalable Computing: Practice and Experience, Special Issue on Advances in Emerging Wireless Communications and Networking (SCPE)*, 2018.
3. Zhengyu Yang, Yufeng Wang, Janki Bhimani, Chiu C. Tan, and **Ningfang Mi**, “EAD: Elasticity Aware Deduplication Manager for Datacenters with Multi-tier Storage Systems”, in *Cluster Computing (CC)*, 2018.
4. Zhengyu Yang, Janki Bhimani, Jiayin Wang, David Evans, and Ningfang Mi, “Automatic and Scalable Data Replication Manager in Distributed Computation and Storage Infrastructure of Cyber-Physical Systems”, in *Scalable Computing: Practice and Experience, Special Issue on Communication, Computing, and Networking in Cyber-Physical Systems (SCPE)*, 2018.
5. Jianzhe Tai, Deng Liu, Zhengyu Yang, Xiaoyun Zhu, Jack Lo, and **Ningfang Mi**, “Improving Flash Resource Utilization at Minimal Management Cost in Virtualized Flash-based Storage Systems”, in *IEEE Transactions on Cloud Computing (TCC)*, 5(3): 537-549, 2017.
6. Yi Yao, Jiayin Wang, Bo Sheng, Chiu C. Tan, and **Ningfang Mi**, “Self-Adjusting Slot Configurations for Homogeneous and Heterogeneous Hadoop Clusters”, in *IEEE Transactions on Cloud Computing (TCC)*, 5(2): 344-357, 2017.
7. Yi Yao, Bo Sheng, and **Ningfang Mi**, “A New Packet Scheduling Algorithm for Access Points in Crowded WLANs”, in *Journal of Ad Hoc Networks (Ad Hoc)*, 36(1):100-110, 2016.
8. Jianzhe Tai, Bo Sheng, Yi Yao, and **Ningfang Mi**, “SLA-Aware Data Migration in A Shared Hybrid Storage Cluster”, in *Journal of Cluster Computing (CC)*, 18(4):1581-1593, 2015.

9. Yi Yao, Jianzhe Tai, Bo Sheng, and **Ningfang Mi**, “LsPS: A Job Size-Based Scheduler for Efficient Assignments in Hadoop”, in *IEEE Transactions on Cloud Computing (TCC)*, 3(4):411-424, 2015.
10. Jianzhe Tai, Zhen Li, Jiahui Chen, and **Ningfang Mi**, “Load balancing for cluster systems under heavy-tailed and temporal dependent workloads”, in *Simulation Modelling Practice and Theory (SIMPAT)*, 44: 63-77, 2014.
11. Giuliano Casale, **Ningfang Mi**, Ludmila Cherkasova, and Evgenia Smirni, “Dealing with Burstiness in Multi-Tier Applications: New Models and Their Parameterization”, in *IEEE Transactions on Software Engineering (TSE)*, 33(5): 1040-1053, 2012.
12. **Ningfang Mi**, Giuliano Casale, and Evgenia Smirni “ASIDE: Using Autocorrelation-Based Size Estimation for Scheduling Bursty Workloads”, in *IEEE Transactions on Network and Service Management (TNSM)*, 9(2): 198-212, 2012.
13. **Ningfang Mi**, Giuliano Casale, Ludmila Cherkasova, and Evgenia Smirni, ”Sizing Multi-Tier Systems with Temporal Dependence: Benchmarks and Analytic Models”, in *Journal of Internet Services and Application (JISA)*, 1(2): 117-134, 2010.
14. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, “Model-Driven System Capacity Planning Under Workload Burstiness”, in *IEEE Transactions on Computers (TC)*, 59(1): 66-80, 2010.
15. Alma Riska, **Ningfang Mi**, Evgenia Smirni, and Giuliano Casale, “Feasibility regions: exploiting tradeoffs between power and performance in disk drives”, in *ACM SIGMETRICS Performance Evaluation Review*, 37(3):43-48, 2010.
16. 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.
17. **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.
18. 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.
19. 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.
20. **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%.
21. 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.
22. 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.
23. 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.

## Highly Selective Conference Publications

Acceptance rates  $\leq 30\%$ .

1. Zhengyu Yang, Morteza Hoseinzadeh, Ping Wong, John Artoux, Clay Mayers, David Thomas Evans, Rory Thomas Bolt, Janki Bhimani, **Ningfang Mi**, and Steven Swanson, “H-NVMe: A Hybrid Framework of NVMe-based Storage System in Cloud Computing Environment”, in *36th IEEE International Performance Computing and Communications Conference (IPCCC’17)*, 2017. (**Best Paper Award**)
2. Zhengyu Yang, Morteza Hoseinzadeh, Allen Andrews, Clay Mayers, David Thomas Evans, Rory Thomas Bolt, Janki Bhimani, **Ningfang Mi**, and Steven Swanson, “AutoTiering: Automatic Data Placement Manager in Multi-Tier All-Flash Datacenter”, in *36th IEEE International Performance Computing and Communications Conference (IPCCC’17)*, 2017.
3. Han Gao, Zhengyu Yang, Janki Bhimani, Teng Wang, Jiayin Wang, **Ningfang Mi**, and Bo Sheng, “AutoPath: Harnessing Parallel Execution Paths for Efficient Resource Allocation in Multi-Stage Big Data Frameworks”, in *26th International Conference on Computer Communications and Networks (ICCCN’17)*, Vancouver, Canada, July 2017. Acceptance Rate: 25.0%.
4. Teng Wang, Jiayin Wang, Son Nam Nguyen, Zhengyu Yang, **Ningfang Mi**, and Bo Sheng, “EA2S2 : An Efficient Application-Aware Storage System for Big Data Processing in Heterogeneous Clusters”, in *26th International Conference on Computer Communications and Networks (ICCCN’17)*, Vancouver, Canada, July 2017. Acceptance Rate: 25.0%.
5. Janki Bhimani, Ningfang Mi, Miriam Leeser, and Zhengyu Yang, “FiM: Performance Prediction for Parallel Computation in Iterative Data Processing Applications”, in *IEEE International Conference on Cloud Computing (Cloud’17)*, Honolulu, Hawaii, June 2017. (Applications Track)
6. Jiayin Wang, Teng Wang, Zhengyu Yang, Ying Mao, **Ningfang Mi**, and Bo Sheng, “SEINA: A Stealthy and Effective Internal Attack in Hadoop Systems”, in *25th International Conference on Computing, Networking and Communication (ICNC’17)*, Silicon Valley, USA, Jan. 2017. Acceptance Rate: 29.0%.
7. Zhengyu Yang, Jianzhe Tai, Janki Bhimani, Jiayin Wang, **Ningfang Mi**, and Bo Sheng, “GREM: Dynamic SSD Resource Allocation In Virtualized Storage Systems With Heterogeneous IO Workloads”, in *35th IEEE International Performance Computing and Communications Conference (IPCCC’16)*, Las Vegas, NV, Dec. 2016. Acceptance Rate: 24.7%.
8. Janki Bhimani, Jingpei Yang, Zhengyu Yang, **Ningfang Mi**, Qiumin Xu, Manu Awasthi, Rajinikanth Pandurangan, and Vijay Balakrishnan, “Understanding Performance of I/O Intensive Containerized Applications for NVMe SSDs”, in *35th IEEE International Performance Computing and Communications Conference (IPCCC’16)*, Las Vegas, NV, Dec. 2016. Acceptance Rate: 24.7%.
9. Jiayin Wang, Teng Wang, Zhengyu Yang, **Ningfang Mi**, and Bo Sheng, “eSplash: Efficient Speculation in Large Scale Heterogeneous Computing Systems”, in *35th IEEE International Performance Computing and Communications Conference (IPCCC’16)*, Las Vegas, NV, Dec. 2016. Acceptance Rate: 24.7%.
10. Zhengyu Yang, Manu Awasthi, Mrinmoy Ghosh, and **Ningfang Mi**, “A Fresh Perspective on Total Cost of Ownership Models for Flash Storage in Datacenters”, in *8th IEEE International Conference on Cloud Computing Technology and Science (CloudCom’16)*, Luxembourg, Dec. 2016. Acceptance Rate: 25.9%.
11. Yi Yao, Han Gao, Jiayin Wang, **Ningfang Mi**, and Bo Sheng, “OPERA: Opportunistic and Efficient Resource Allocation in Hadoop YARN by Harnessing Idle Resources”, in *25th International Conference on Computer Communication and Networks (ICCCN’16)*, Waikoloa, Hawaii, Aug. 2016. Acceptance Rate: 30%.

12. Jiayin Wang, Yi Yao, Ying Mao, Bo Sheng, and **Ningfang Mi**, “OMO: Optimize MapReduce Overlap with a Good Start (Reduce) and a Good Finish (Map)”, in *IEEE International Performance Computing and Communications Conference (IPCCC’15)*, Nanjing, China, Dec. 2015. Acceptance Rate: 29.0%. (**Best Student Paper Runner-up Award**)
13. Yi Yao, Jiayin Wang, Bo Sheng, Jason Lin, and **Ningfang Mi**, “HaSTE: Hadoop YARN Scheduling Based on Task-Dependency and Resource-Demand”, in *the IEEE International Conference on Cloud Computing (Cloud’14)*, Anchorage, AK, June 2014. Acceptance Rate: 20.0%.
14. Jiayin Wang, Yi Yao, Ying Mao, Bo Sheng, and **Ningfang Mi**, “FRESH: Fair and Efficient Slot Configuration and Scheduling for Hadoop Clusters”, in *the IEEE International Conference on Cloud Computing (Cloud’14)*, Anchorage, AK, June 2014. Acceptance Rate: 30.0%. (Applications and Industry Track)
15. Yufeng Wang, Chiu Tan, and **Ningfang Mi**, “Using Elasticity to Improve Inline Data Deduplication Storage Systems”, in *the IEEE International Conference on Cloud Computing (Cloud’14)*, Anchorage, AK, June 2014. Acceptance Rate: 30.0%. (Applications and Industry Track)
16. Deng Liu, Jianzhe Tai, Jack Lo, Ningfang Mi and Xiaoyun Zhu, “vFRM: Flash Resource Manager in VMware ESX Server”, in *the IFIP/IEEE Network Operations and Management Symposium (NOMS’14)*, Krakow, Poland, May 2014. Acceptance Rate: 29.0%.
17. Yi Yao, Jiayin Wang, Bo Sheng and **Ningfang Mi**, “Using a Tunable Knob for Reducing Makespan of MapReduce Jobs in a Hadoop Cluster”, in *the Proceedings of the IEEE International Conference on Cloud Computing (Cloud’13)*, pp. 1-8, Santa Clara Marriott, CA, June 2013. Acceptance Rate: 19.0%.
18. Jianzhe Tai, Juemin Zhang, Jun Li, Waleed Meleis and **Ningfang Mi**, “ArA: Adaptive Resource Allocation for Cloud Computing Environments under Bursty Workloads”, in *the IEEE International Performance Computing and Communications Conference (IPCCC’11)*, Orlando, Florida, Nov., 2011. Acceptance Rate: 27.9%.
19. Andrew Caniff, Lei Lu, **Ningfang Mi**, Ludmila Cherkasova, and Evgenia Smirni, “Fastrack 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., 2010. Acceptance Rate: 30%. (**Best Student Paper Award**)
20. 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, 2010. Acceptance Rate: 20%.
21. 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%.
22. **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%.
23. **Ningfang Mi**, Giuliano Casale, Ludmila Cherkasova, and Evgenia Smirni, “Injecting Realistic Burstiness to a Traditional Client-Server Benchmark”, in *the International Conference on Autonomous Computing and Communications (ICAC’09)*, pp. 149-158, Barcelona, Spain, 2009. Acceptance Rate: 16%
24. **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%

25. **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**)
26. **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%.
27. **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%.
28. 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%.
29. 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%.
30. 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%.
31. **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%.
32. 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%.
33. 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%.

## Other Conference and Workshop Publications

*Acceptance rates are provided when known.*

1. Baiyu Chen, Zhengyu Yang, Siyu Huang, Xianzhi Du, Zhiwei Cui, Janki Bhimani, Xin Xie, and **Ningfang Mi**, “Cyber-Physical System Enabled Nearby Traffic Flow Modelling for Autonomous Vehicles”, in *36th IEEE International Performance Computing and Communications Conference, Special Session on Cyber Physical Systems: Security, Computing, and Performance (IPCCC-CPS’17)*, 2017.
2. Janki Bhimani, Zhengyu Yang, Miriam Leiser, and **Ningfang Mi**, “Accelerating Big Data Applications Using Lightweight Virtualization Framework on Enterprise Cloud”, in *IEEE High Performance Extreme Computing Conference (HPEC’17)*, Waltham, MA, 2017.
3. Zhengyu Yang, Jiayin Wang, David Evans, and **Ningfang Mi**, “AutoReplica: Automatic Data Replica Manager in Distributed Caching and Data Processing Systems”, in *First International workshop on Communication, Computing, and Networking in Cyber Physical Systems (CCN-CPS’16)*, Las Vegas, NV, Dec. 2016.
4. Janki Bhimani, Miriam Leiser, and **Ningfang Mi**, “Performance Prediction Techniques for Scalable Large Data Processing in Distributed MPI Systems”, in *35th IEEE International Performance Computing and Communications Conference (IPCCC’16)*, Las Vegas, NV, Dec. 2016. Poster.

5. Janki Bhimani, Miriam Leaser, and **Ningfang Mi**, “Design Space Exploration of GPU Accelerated Cluster Systems for Optimal Data Transfer Using PCIe Bus”, in *IEEE High Performance Extreme Computing Conference (HPEC’16)*, Waltham, MA, Sept. 2016.
6. Janki Bhimani, Miriam Leaser, and **Ningfang Mi**, “Accelerating K-Means Clustering with Parallel Implementations and GPU Computing”, in *IEEE High Performance Extreme Computing Conference (HPEC’15)*, Waltham, MA, Sept. 2015.
7. Yi Yao, Jason Lin, Jiayin Wang, **Ningfang Mi**, and Bo Sheng, “Admission Control in YARN Clusters Based on Dynamic Resource Reservation”, in *the IFIP/IEEE Integrated Network Management Symposium (IM’15)*, Ottawa, Canada, May 2015. (Short paper)
8. Jianzhe Tai, Bo Sheng, Yi Yao, and Ningfang Mi, “Live Data Migration For Reducing SLA Violations In Multi-tiered Storage Systems”, in *the IEEE International Workshops on Cloud Analytics (IWCA’14)*, Boston, MA, March, 2014.
9. Yi Yao, Jianzhe Tai, Bo Sheng, and **Ningfang Mi**, ”Scheduling Heterogeneous MapReduce Jobs for Efficiency Improvement in Enterprise Clusters”, in *the IFIP/IEEE Integrated Network Management Symposium (IM’13)*, Ghent, Belgium, May 2013. (Short paper)
10. Zhen Li, Jianzhe Tai, Jiahui Chen, and **Ningfang Mi**, “ADUS:Adaptive Resource Allocation in Cluster Systems under Heavy-Tailed and Bursty Workloads”, in *the IEEE International Conference on Communications (ICC’12)*, Ottawa, Canada, June, 2012. Acceptance Rate: 37.0%.
11. Yi Yao, Bo Sheng and **Ningfang Mi**, “DAT: An AP Scheduler using Dynamically Adjusted Time Windows for Crowded WLANs”, in *the IEEE International Performance Computing and Communications Conference (IPCCC’11)*, Orlando, Florida, Nov., 2011. Acceptance Rate: 34.8%.
12. Juemin Zhang, **Ningfang Mi**, Jianzhe Tai and Waleed Meleis, “Decentralized Scheduling of Bursty Workload on Computing Grids”, in *the IEEE International Conference on Communications (ICC’11)*, Kyoto, Japan, June 5-9, 2011. Acceptance Rate: 38.5%.
13. 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.
14. 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.
15. Giuliano Casale, **Ningfang Mi**, and Evgenia Smirni, “Versatile Models of Systems Using MAP Queueing Networks”, in *the IEEE International Parallel and Distributed Processing Symposium (IPDPS), Next Generation Software (NGS) Workshop*, 2008.
16. 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.
17. **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.
18. **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.
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.

## PATENTS

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1. “Using Transaction Latency Profiles For Characterizing Application Updates”, *Hewlett-Packard Laboratories*, US Patent NO. US20090307347 A1, Dec., 2009.
2. “Capacity Planning Of Multi-tiered Applications From Application Logs”, *Hewlett-Packard Laboratories*, US Patent NO. US20100094992 A1, April, 2010.
3. “Data Storage Device with Histogram of Idle Time and Scheduling of Background and Foreground Jobs”, *Seagate Research*, US Patent NO. US7904673 B2, March, 2011.
4. “Using Application Performance Signatures For Characterizing Application Updates”, *Hewlett-Packard Laboratories*, US Patent NO. US8224624 B2, July, 2012.

## TEACHING

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- Fall 2009: EECE3326 Optimization Methods
- Spring 2010: EECE7366 Simulation and Performance Evaluation
- Fall 2010: EECE3326 Optimization Methods
- Spring 2011: EECE5698 Simulation and Performance Evaluation
- Fall 2011: EECE7366 Simulation and Performance Evaluation
- Spring 2012: EECE3326 Optimization Methods
- Spring 2013: EECE7369 Simulation and Performance Evaluation
- Fall 2013: EECE3326 Optimization Methods
- Spring 2014: EECE5698 Simulation and Performance Evaluation
- Fall 2014: EECE3326 Optimization Methods
- Spring 2015: EECE5698 Simulation and Performance Evaluation
- Fall 2015: EECE5643 Simulation and Performance Evaluation
- Spring 2016: EECE2560 Fundamental of Engineering Algorithms
- Fall 2016: EECE5643 Simulation and Performance Evaluation
- Spring 2017: EECE2560 Fundamental of Engineering Algorithms

## PROFESSIONAL ACTIVITIES

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### Service as Editorial Board Member

- Journal of Simulation Modeling Practice and Theory 2011-present

## Service as Invited Technical Program Committee Member

- TPC for International Conference on Computer Communication and Networks (ICCCN) 2018
- TPC for IEEE/IFIP International Conference on Dependable Systems and Networks (DSN) 2017
- TPC for International Conference on Performance Engineering (ICPE) 2017, 2018
- TPC for ACM/IEEE/USENIX International Conference on Autonomic Computing (ICAC) 2015, 2017
- TPC for IEEE International Conference on Cloud Computing (CLOUD) 2015, 2016, 2017
- TPC for International Conference on Future Internet of Things and Cloud (FiCloud) 2015, 2016, 2017
- TPC for International Conference on Massive Storage Systems and Technology (MSST) 2015, 2016
- TPC for IEEE International Congress on Big Data (IEEE BigData) 2013, 2014, 2015, 2016
- TPC for International Conference on Smart Grids and Green IT Systems (SMARTGREENS) 2013, 2014, 2015, 2016, 2017, 2018
- TPC for International Conference on Cloud Computing Technologies and Applications (CloudTech) 2016
- TPC for Boston Area Architecture Workshop (BARC) 2016
- TPC for Big Data Management and Analytics (BIDMA) 2016, 2017
- TPC for International Workshop on Big Data and Cloud Performance (DCPerf) 2016, 2017, 2018
- TPC for IEEE International Conference on Networking, Architecture, and Storage (NAS) 2016
- TPC for Workshop on Interactions of NVM/Flash with Operating Systems and Workloads (IN-FLOW) 2016
- TPC for International Conference on Parallel and Distributed Systems (ICPADS) 2016
- TPC for IEEE International Symposium on Cluster, Cloud and Grid Computing (CCGrid) 2013, 2014, 2015
- TPC for International Conference on Smart City (SmartCity) 2016
- TPC for International Workshop on Sustainable High Performance Computing (SHPC) 2014, 2015
- TPC for International Symposium on Foundations and Applications of Big Data Analytics (FAB) 2015
- TPC for International Congress on Big Data (BigData) 2014
- TPC for National Workshop for REU Research in Networking and Systems (REUNS) 2014
- TPC for IEEE International Workshop on Cloud Analytics (IWCA), 2014
- TPC for Workshop of Middleware for Pervasive Systems (MiPS) 2013
- TPC for International Symposium on Cloud Computing and Services for High Performance Computing Systems (InterCloud-HPC) 2013
- TPC for International Conference on the Quantitative Evaluation of Systems (QEST) 2010, 2011
- Shadow TPC for International Conference on Measurement and Modeling of Computer Systems (SIGMETRICS) 2010

## **Other Professional Activities**

- Poster Session Chair of IEEE International Performance Computing and Communications Conference (IPCCC) 2018
- Publicity Chairs for IEEE/ACM International Conference on Big Data Computing, Applications and Technologies (BDCAT) 2017
- Session Chair of IEEE International Performance Computing and Communications Conference (IPCCC) 2017
- Session Chair of IEEE International Performance Computing and Communications Conference (IPCCC) 2016
- Track Co-Chair of International Conference on Computer Communication and Networks (ICCCN) 2016
- Session Chair of International Conference on Computer Communication and Networks (ICCCN) 2016
- Served in AFOSR proposal external review 2016
- Publicity Co-Chair for IEEE International Conference on Cloud Engineering (IC2E) 2016
- Publicity Co-Chair of International ACM/IEEE/Usenix Conference on Autonomic Computing (ICAC) 2015
- Local Chair for IEEE International Conference on Networking, Architecture and Storage (NAS) 2015
- Served in NSF proposal panel 2013
- Session Chair for IEEE International Conference on Cloud Computing (Cloud) 2013
- Demo/Poster Chair for ACM International Conference on Performance Engineering (ICPE) 2012
- Session Chair for IEEE International Performance Computing and Communications Conference (IPCCC) 2011
- Publicity Co-Chair for ACM/IFIP/USENIX International Middleware Conference (Middleware) 2010
- Reviewer for Grant Funding Award
  - National Science Foundation (NSF) Panels 2013, 2015, 2017.
  - Air Force Office of Scientific Research (AFOSR) Proposal External Review 2015, 2016.

## **Peer Review**

- IEEE Transactions on Dependable and Secure Computing
- IEEE Transactions on Computers
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Software Engineering
- IEEE Transactions on Cloud Computing
- ACM Transactions on Modeling and Performance Evaluation of Computing Systems
- ACM Transactions on Multimedia Computing Communications and Applications
- ACM Transactions on Sensor Networks
- ACM Performance Evaluation Review
- Parallel Computing
- International Journal Performance Evaluation
- International Journal of Modeling, Simulation, and Scientific Computing

- The Computer Journal
- Journal of Systems and Software
- Journal of Parallel and Distributed Computing
- Journal of Simulation Modelling Practice and Theory
- Journal of Computing
- KSII Transactions on Internet and Information Systems
- Journal of Systems Science and Systems Engineering
- Journal of Internet Services and Applications
- Special Issue on Modeling and Simulation of Smart and Green Computing Systems
- SIGMETRICS, IPCCC, ICPE, CCGrid, Globecom, MILCOM, ISCA, ICDCS, MASCOTS, FeBID/IM, QEST, IWQoS, WASA, ANSS, AMSTA, EPEW, Euro-Par

### **Northeastern Internal Service**

- Member of the Northeastern ECE Graduate Affair Committee, 2015-2016, 2016-2017, 2017-2018
- Member of the Northeastern ECE TA/HCA Assignment Committee, 2017-2018
- Member of the Northeastern ECE Tenure and Promotion Committee, 2017-2018
- Member of the Northeastern ECE Faculty Hiring Committee, 2016-2017
- Member of the Northeastern ECE Awards Committee, 2017
- Member of the Northeastern ECE Computer Engineering Faculty Search Committee, 2015-2016
- Member of the Northeastern ECE Faculty Evaluation Committee, 2015-2016
- Faculty Mentor for the Northeastern ECE PhD Student Seminar Series Organizing Committee, 2015-2016, 2016-2017
- Member of the Northeastern ECE Resilient and Efficient Energy Systems Faculty Search Committee, 2013-2014
- Member of the Northeastern Software Engineering Program Committee, 2013
- Member of the Northeastern ECE Computer Engineering Faculty Hiring Committee, 2011-2012
- Member of the Northeastern Gordon Engineering Leadership Program Committee, 2010-2014
- Member of 9 Ph.D. Thesis Committees and 14 M.S. Project/Thesis Committees
- Presenter in ECE Industrial Advisory Summit 2016, EMC Visiting Day 2016, Northeastern RISE Forum, Northeastern IEEE chapter meeting, IBM & Northeastern Partnership Workshop, and MathWorks-Northeastern Collaboration Workshop
- Coordinator of the ECE Ph.D. Qualifying Exam in Computer Engineering (CE) track, 2015

### **Community Service**

- Participate the 2017 Annual Resume/Curriculum Vitae Speed-Dating Event hosted by the Graduate Women in Science and Engineering (GWISE) at Northeastern
- Participate the 2016 Annual Resume/Curriculum Vitae Speed-Dating Event hosted by the Graduate Women in Science and Engineering (GWISE) at Northeastern
- Participate the 2015 Annual Resume/Curriculum Vitae Speed-Dating Event hosted by the Graduate Women in Science and Engineering (GWISE) at Northeastern
- Participate the 2013 Summer Enrichment Program of Boston Area Girls STEM Collaborative at Northeastern

## ACADEMIC SUPERVISION

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### Graduated Ph.D. Students (Thesis Advisees)

- Jianzhe Tai (graduated in 2014, VMware)
- Yi Yao (graduated in Aug. 2015, VMware)

### Graduated M.S. Students (Thesis/Project Advisees)

- Dominic Catalano (graduated in 2017)
- Han Gao (graduated in 2017)
- Chohsien Lin (graduated in 2014, Acer)
- Chen Mao (graduated in 2013)
- Jun Li (graduated in 2013, Amazon)
- Wei Cai (graduated in 2013, Seagate Technology)
- Anoop Raghunathan (graduated in 2013, Motorola Mobility)
- Yuqing Lin (graduated in 2013, EMC)
- Zhen Li (graduated in 2011)
- Jiahui Chen (graduated in 2011, Virgin HealthMiles)

### Current Graduate Students (Thesis Advisees)

- Zhengyu Yang (Ph.D. student)
- Janki Bhimani (Ph.D. student)
- Mahsa Bayati (Ph.D. student)
- Danlin Jia (M.S. Thesis student)