SEUNG-JONG PARK

Dr. Fred H. Fenn Memorial Professor

Professor at the School of Electrical Engineering and Computer Science,
Associate Director at the Center for Computation & Technology
Louisiana State University
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PROFESSIONAL SUMMARY

Has performed interdisciplinary research related with
(1) distributed computing ranging from cloud computing over high speed optical networks to mobile computing over wireless networks;
(2) big data research including developing software frameworks for large-scale genome sequence analysis, large-scale molecular dynamic simulation over heterogeneous computing environment including cloud computing and high performance computing; and
(3) cyberinfrastructure development for large-scale scientific and engineering applications.

POSITIONS HELD

Professor with tenure, 2016-present
Division of Computer Science in the School of Electrical Engineering & Computer Science
Louisiana State University, Baton Rouge

Associate Director, 2016-present, supervised 10 post-/doctoral research staffs at CCT
Center for Computation & Technology
Louisiana State University, Baton Rouge

Associate Professor with tenure, 2010-2016
Division of Computer Science in the School of Electrical Engineering & Computer Science
Louisiana State University, Baton Rouge

Graduate Advisor for Graduate Program, 2012 - 2015
Division of Computer Science in the School of Electrical Engineering & Computer Science
Louisiana State University, Baton Rouge

Assistant Professor, 2004-2010
Department of Computer Science
Louisiana State University, Baton Rouge

Research Assistant, 2000-2004
Electrical and Computer Engineering,
Georgia Institute of Technology, Atlanta, Georgia,

Research Staff, 1995-2000
Research & Development Center (developing software for cellular network

Shinsegi Telecomm, Inc., Seoul, Korea

EDUCATION

Ph.D., 2000 - 2004
Electrical and Computer Engineering,
Georgia Institute of Technology, Atlanta, Georgia, USA

M.Sc., 1993 - 1995
Computer Science,

Korea Advanced Institution of Science and Technology, Teajun, Korea

B.Sc., 1989 - 1993
Computer Science,
Korea University, Seoul, Korea

Award

Dr. Fred H. Fenn Memorial Professorship (2014 ~ current)

IBM FACULTY RESEARCH AWARD (2015, 2016, 2017)

1. RESEARCH

1.1 Major Areas of Research Interest

As "Big data" has gained tremendous significance and importance, both industrial and scientific communities have been looking for sustainable cyberinfrastructure and innovative solutions for storing, transferring, and analyzing the massive amount of data.

The goal of Dr. Park's research program is the development of cyberinfrastructure for big data applications. To accomplish the goal, he has focused on two objectives:
Objective-1: building network & computing infrastructure and designing distributed algorithms over high-speed networks and large scale data center networks and
Objective-2: developing distributed computing frameworks for compute and data intensive scientific applications over high performance computing and cloud platforms.

For the Objective-1, he has worked on federal research projects (GENI project, NSF MRI projects, Naval Research project and Air Force Research project) to

(i) Develop a cyber-infrastructure for reconfigurable optical network environment (CRON),
(ii) Evaluate performance of protocols over 10Gbps virtual networking environment,
(iii) Design distributed algorithms for high speed networks of which a bandwidth is higher than 10Gbps, and
(iv) Develop technologies and demonstrate solutions based on GENI frameworks for the federation and integration of computing resources over heterogeneous networks, such as campus networks, Internet2, and National Lambda Rail, etc.

For the Objective-2 as well as the Objective-1, he has led NSF projects (supported by Campus Cyberinfrastructure – Infrastructure Innovation and Engineering Program) of which a goal is to seamlessly integrate large-scale scientific research groups with cyberinfrastructure and 10Gbps high speed networks using big data technologies (e.g., MapReduce), Software Defined Networking, and Global Environment for Network Innovations (GENI). The project consists of three key research tasks:

(i) Building Big Data Bridges, the 10Gbps software-defined campus-wide network based on OpenFlow switch technology, separating from the LSU campus networks and creating multiple virtual network slices for each research group;
(ii) Transferring Big Data with Automatically Tuned Operation through campus or external high speed networks, such as the Internet2 ION networks and the LONI network; and
(iii) Analyzing Big Data by developing data-intensive frameworks using the Hadoop frameworks. Those three components have been integrated with a user-friendly social network-based web service. In particular, the Big Data Analysis software has been developed with the Hadoop and Giraph frameworks over HPC and cloud platforms to analyze up to terabytes of genome sequence datasets.

In addition to the major research on cyberinfrastructure, he has collaborated with other researchers at interdisciplinary areas including a remote visualization over high-speed networks, high performance computing for large scale simulations and bioinformatics. For example, he has collaborated with biologists at bioinformatics projects, which developed a cancer drug, using a large-scale job scheduler

over multiple cluster machines and developed Hadoop-based software for large-scale genome analysis over HPC resources. In addition to those research works, he also has involved as a senior personnel in other research projects funded by NSF, NIH, Department of Education, and Louisiana Board of Regents.

1.2 External Research Grants (NSF, DoD, AFRL, NIH, LA BoR, etc.)

1) NSF CC-NIE Integration, Park as a PI (active)

Project Title: Bridging, Transferring, and Analyzing Big Data over 10Gbps Campus-wide Software Defined Networks
PI: Seung-Jong Park, co-PI: Joel Tohline, Gus Kousoulas, Lonnie Ledger, Sean Robbins.
Award amount: $947,860
Duration: 2013 – 2017
Sponsor: NSF

2) NSF MRI: Park as a PI (active)

Project Title: Acquisition of SuperMIC - A Heterogeneous Computing Environment to Enable Transformation of Computational Research and Education in the State of Louisiana,
PI: Seung-Jong Park, co-PI: Mark Jarrell, Susanne Brenner, Qin Chen, Jagannathan Ramanujam.
Award amount: $3,924,181
Duration: 2013 – 2017
Sponsor: NSF

3) NSF IBSS, Park as a co-PI (active)

Project Title: IBSS-L: Understanding Social and Geographical Disparities in Disaster Resilience Through the Use of Social Media
PI: Nina Lam, co-PI: Seung-Jong Park, Michelle Meyer, Margaret Reams, Seungwon Yang.
Award amount: $834,585
Duration: 2016 – 2020
Sponsor: NSF

4) Cyber Security Research (AFRL), Park as a co-PI (completed)

Project Title: Cyber Security Research: 1-Performance Optimization of Distributed Hadoop-based Cloud Computing Data Centers Integrated with Android Smartphone Clouds 2-Defensive Techniques for Distributed Sensing Systems
PI: Naraghi-Pour, co-PI: Seung-Jong Park
Award amount: $200,008
Duration: 11/26/12 – 11/29/13
Sponsor: Department of Air Force Research Laboratory

5) GENI Integration Project (NSF), Park as a PI (completed)

Project Title: Integrating a CRON (Cyberinfrastructure of Reconfigurable Optical Network) Testbed into ProtoGENI

Co-PI: Rajgopal Kannan
Award amount: $266,688
Duration: 10/01/09 – 06/31/13
Sponsor: GENI (Global Environment for Networking Innovation) project office funded by NSF Program

6) NSF MRI Grant (0821741), Park as a PI (completed)

Project title: CRON: Development of a Cyberinfrastructure Reconfigurable Optical Network for Large-Scale Scientific Discovery
Co-PI: S. Sitharama Iyengar, Thomas Sterling, and Rajgopal Kannan
Award amount: $495,181 and LSU match money ($201,796)
Duration: 08/01/08 – 07/30/13
Sponsor: NSF Major Research Infrastructure (MRI) Program

7) DoD EPSCOR (N00014-08-1-0856), Park as a PI (completed)

Project title: Secure and Survivable Cyber-Centric Sensor Networks: Algorithms and Architecture Research
PI: Co-PI: C. Wu.
Amount: $781,731
Duration: 06/01/08 - 12/30/12
Funding Agency: Department of Defense (Office of Naval Research)

8) Louisiana Board of Regents, (LEQSF2006-08-RD-A-08), Park as a PI (completed)

Project title: Developing a Fluid Based Simulator and Transport Protocols for Large-Scale Wireless Sensor and Actor Networks
Award amount: $82,280
Duration: 07/01/06 – 05/31/08
Sponsor: Louisiana Board of Regents, RCS Program

9) NIH Research Project Grant Program (R01), Park as a co-Investigator (completed)

Project title: PFKFB3-based development of a new cancer drug targeting the Warburg effect
Award amount: $1,099,350
PI: Yong-Hwan Lee, Dept. of Biological Sciences, LSU
Duration: 2/18/08 – 01/31/12
Sponsor: National Institutes of Health (NIH), Research Project Grant Program

10) TeraGrid: Mid-size Allocation, Park as a co-PI (completed)

Project title: Virtual Screening of Inhibitor Compounds for PFKFB3, A Novel Cancer Therapeutic Target
Award amount: 250,000 computation hours
PI: Yong-Hwan Lee, Dept. of Biological Sciences, LSU
Duration: 2/18/09 – 01/31/10

Sponsor: TeraGrid (http://www.teragrid.org/) supported by NSF

11) LSU Faculty Research Grant, Park as a PI (completed)

Project title: Developing an adaptive and parallel transport protocol for large-scale scientific applications over high speed networks
Award amount: $10,000
Duration: 01/01/05 – 12/31/05
Sponsor: The Office of Research and Economic Development, LSU

12) LSU CCT General Development Program, Park as a PI (completed)

Project title: Scalable algorithms for high-end parallel and distributed computing
Award amount: $60,000
Duration: 02/01/05-01/31/06
Sponsor: General Development Program, CCT, LSU

13) LSU Grant for faculty summer salary, Park as a PI (completed)

Project title: Developing an Adaptive Simulation Method to Predict Behaviors of Transport Protocols over High Speed Optical Networks
Award amount: $5,000
Duration: 2005
Sponsor: The Office of Research and Economic Development, LSU

1.3 Research Publications

Peer Reviewed Journal Paper Publications

1. Richard Platania, Shayan Shams, Chui-Hui Chiu, Nayong Kim, Joohyun Kim, *Seung-Jong Park*, "Hadoop-based replica exchange over heterogeneous distributed cyberinfrastructures," in the journal of Concurrency and computation: Practice and Experience, Wiley 2016, doi: 10.1002/cpe.3878.
2. Lin Xue, Suman kumar, Chui-Hui Chiu, *Seung-Jong Park*, "Towards Fair and Low Latency Next Generation High Speed Networks: AFCD Queuing," in the journal of Network and Computer Applications, Elsevier, Vol 70, Issue C, pp. 183-193, 2016, doi: 10.1016/j.jnca.2016.03.021.
3. Cheng Cui, Lin Xue, Chui-Hui Chiu, Praveenkumar Kondikoppa, *Seung-Jong Park*, "Exploring Parallelism and Desynchronization of TCP over High-Speed Networks with Tiny Buffers," in the journal of Computer Communication, Elsevier, Volume 69 Issue C, pp. 60-68, 2015
4. Lin Xue, Suman Kumar, Cheng Cui, *Seung-Jong Park*, "A Study of Fairness among Heterogeneous TCP Variants over 10Gbps High-speed Optical Networks," in the Journal of Optical Switching and Networking, Elsevier, Volume 13, pp.124-134, 2014.

5. Robert B. Crochet, Michael C. Cavalier, Minsuh Seo, Jeong Do Kim, Young-Sun Yim, *Seung-Jong Park*, Yong-Hwan Lee, "Investigating combinatorial approaches in virtual screening on human inducible 6-phosphofructo-2-kinase/fructose-2, 6-bisphosphatase (PFKFB3): A case study for small molecule kinases," in the Journal of Analytical Biochemistry, Elsevier, Volume 418, Issue 1, pp.143-148, 2011.
6. Suman Kumar, *Seung-Jong Park*, and S. Sitharama Iyengar, "A Loss-Event Driven Scalable Fluid Simulation Method for High Speed Networks," in the Journal of Computer Networks, Elsevier, Volume 54, Issue 1, pp.112-132, 2010.
7. Yixin Wu, Suman Kumar, and *Seung-Jong Park*, "Measurement and Performance Issues of Transport Protocols over 10Gbps High Speed Optical Networks," in the Journal of Computer Networks, Elsevier, Volume 54, Issue 3, pp.475-488, 2010.
8. *Seung-Jong Park* and R. Sivakumar, "Congestion-Aware Topology Controls for Wireless Multi-hop Networks," in the Journal of Ad-hoc Networks, Elsevier, Volume 8, Issue 3, pp.295-312, 2010.
9. Suman Kumar and *Seung-Jong Park*, "Probability Model for Data Redundancy Detection in Sensor Networks," in the Journal of the Mobile Information Systems, Volume 5, Number 2, pp.195-204, 2009.
10. *Seung-Jong Park* and R. Sivakumar, "Energy Efficient Correlated Data Aggregation for Wireless Sensor Networks," in the International Journal of Distributed Sensor Networks, Vol 4, Issue 1, pp.13-27, 2008.
11. Y. Zhu, R. Vedantham, *Seung-Jong Park* and R. Sivakumar, "A Scalable Correlation Aware Aggregation Strategy for Wireless Sensor Networks," Information Fusion, Volume 9, Issue 3, pp.354-369, 2008.
12. *Seung-Jong Park*, R. Vedantham, R. Sivakumar and I. Akyildiz, "GARUDA: Achieving Effective Reliability for Downstream Communication in Wireless Sensor Networks," in the journal of IEEE transactions on Mobile Computing, Volume 7, Number 2, pp.214-230, 2008.
13. R. Vedantham, *Seung-Jong Park* and R. Sivakumar, "Sink-to-Sensors Congestion Control," in the journal of Ad Hoc Networks, Elsevier, Volume 5, Number 4, pp.462-485, 2007.
14. V. Anantharaman, *Seung-Jong Park*, K. Sundaresan and R. Sivakumar, "TCP Performance over Mobile Ad-hoc Networks: A Quantitative Study," In the Journal of Wireless Communications and Mobile Computing Journal (WCMC), Volume 4, Issue 2, pp.203-222, Mar. 2004.
15. *Seung-Jong Park* and R. Sivakumar, "Sink-to Sensors Communication Reliability in Sensor Networks," ACM SIGMOBILE Mobile Computing and Communications Review, Volume 7, Issue 3, pp.27-28, July 2003.
16. *Seung-Jong Park* and R. Sivakumar, "Adaptive Topology Control for Wireless Ad-hoc Networks," ACM SIGMOBILE Mobile Computing and Communications Review, Volume 7, Issue 3, pp.37-38. July 2003.

Peer Reviewed Conference Papers

17. Richard Platania, Shayan Shams, Seungwon Yang, Jian Zhang, Kisung Lee, Seung-Jong Park, "Automated Breast Cancer Diagnosis Using Deep Learning and Region of Interest Detection (BC-DROID)," in the proceeding of the 8th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB), 2017, Boston MA, USA.
18. Arghya Kusum Das, Jaeki Hong, Sayan Goswami, Richard Platania, Kisung Lee, Wooseok Chang, Seung-Jong Park, Ling Liu, "Augmenting Amdahl's Second Law: A Theoretical Model to Build Cost-Effective Balanced HPC Infrastructure for Data-Driven Science," in the proceeding of the IEEE International Conference on Cloud Computing (CLOUD) 2017, Honolulu, USA.
19. Shayan Shams, Richard Platania, Kisung Lee and Seung-Jong Park, "Evaluation of Deep Learning Frameworks over Different HPC Architectures," in the proceeding of the 37th IEEE International Conference on Distributed Computing Systems (ICDCS 2007), Atlanta, USA, 2017.
20. Chui-Hui Chiu, Dipak Kumar Singh, Qingyang Wang, Seung-Jong Park, "Coflourish: An SDN-Assisted Coflow Scheduling Framework for Clouds," in the proceeding of the IEEE International Conference on Cloud Computing (CLOUD) 2017, Honolulu, USA.
21. Chui-Hui Chiu, Dipak Kumar Singh, Qingyang Wang, Kisung Lee, Seung-Jong Park, "Minimal Coflow Routing and Scheduling in OpenFlow-based Cloud Storage Area Networks," in the proceeding of the IEEE International Conference on Cloud Computing (CLOUD) 2017, Honolulu, USA.
22. Sayan Goswami, Arghya Kusum Das, Richard Platania, Kisung Lee, and Seung-Jong Park, "Lazer: Distributed Memory-Efficient Assembly of Large-Scale Genomes," in the proceeding of the IEEE International Conference on Big Data (IEEE BigData), 2016.
23. Chui-hui Chiu, Nathan Lewis, Dipak Kumar Singh, Arghya Kusum Das, Mohammad M Jalazai, Richard Platania, Sayan Goswami, Kisung Lee, *Seung-Jong Park*, "BIC-LSU: Big Data Research Integration with Cyberinfrastructure for LSU", in proceedings of the 2016 XSEDE Conference (XSEDE16), Miami, FL, USA, 2016
24. Praveen Kumar Kondikoppa, Arghya Kusum Das, Sayan Goswami, Richard Platania, *Seung-Jong Park*, "Giraph-based Genome Assembler for Gigabase Scale Genomes," in the proceeding of the 8th International Conference on Bioinformatics and Computational Biology (BICoB), pp.55-62, Las Vegas, USA, 2016.
25. Arghya Kusum Das, *Seung-Jong Park*, Jaeki Hong, Wooseok Chang, "Evaluating different distributed cyber-infrastructure for data and compute intensive scientific application," in the proceeding of IEEE Bigdata Conference (acceptance rate: 17%), pp134-143, 2015.
26. Lin Xue, Chui-Hui Chiu, Suman Kumar, Praveenkumar Kondikoppa, Seung-Jong Park, "FaLL: a Fair and Low Latency Queuing Scheme for Data Center Networks," in the Proceeding of the International Conference on Computing, Networking and Communications, (ICNC) (acceptance rate: 30%), pp.771-777, 2015.
27. Nayong Kim, Richard Platania, Tom Keyes, Wei Huang, Chris Knight, *Seung-Jong Park*, Joohyun Kim, "Enabling Large-scale Biomolecular Conformation Search with Replica Exchange Statistical Temperature Molecular Dynamics (RESTMD) over HPC and Cloud Computing

Resources," in the proceeding of the 8th International Workshop on Bio and Intelligent Computing (BiCOM-2015), pp.61-66, Korea, 2015.

28. Arghya Das, Praveenkumar Kondikoppa, *Seung-Jong Park*, "Experimenting Big Data Applications for Genome Sequence Assembly over NSF-Cloud," in the Proceeding of the NSFCloud Workshop on Experimental Support for Cloud Computing, VA 2014.
29. Praveenkumar Kondikoppa, Umesh Chandra, *Seung-Jong Park*, Manish Patil and Rahul Shah, "MapReduce based Parallel Suffix Tree Construction for Human Genome," in the proceeding of the 20th IEEE International Conference on Parallel and Distributed Systems (ICPADS) (acceptance rate: 29%), pp.664-670, Taiwan, Dec 2014.
30. Praveenkumar Kondikoppa*, Richard Platania*, *Seung-Jong Park*, Shuju Bai*, Tom Keyes and Jaegil Kim, Nayong Kim, and Joohyun Kim, "MapReduce-based RESTMD: Enabling Large-scale Sampling Tasks with Distributed HPC Systems", in the proceeding of the International Workshop for Science Gateways, pp.30-35, Jun. 2014.
31. Cheng Cui, Lin Xue, Chui-Hui Chiu, Praveenkumar Kondikoppa*, *Seung-Jong Park*, "DMCTCP: Desynchronized Multi-Channel TCP for High Speed Access Networks with Tiny Buffers," in the proceeding of the 23nd IEEE International Conference on Computer Communications and Networks, ICCCN (acceptance rate: 30%), pp.1-8, 2014.
32. Shuju Bai, E. Khosravi, and *Seung-Jong Park*, "An MPI-enabled MapReduce framework for molecular dynamics simulation applications," in the proceeding of the 2013 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), poster paper, pp.1-3, Dec. 2013.
33. Jin Niu, Shuju Bai, E. Khosravi, and *Seung-Jong Park*, "A Hadoop approach to advanced sampling algorithms in molecular dynamics simulation on cloud computing," in the proceeding of the 2013 IEEE International Conference on Bioinformatics and Biomedicine (BIBM) (acceptance rate: 17.9%), pp.452-455, Dec. 2013.
34. Lin Xue, Suman Kumar, Cheng Cui, Praveenkumar Kondikoppa, Chui-Hui Chiu*, *Seung-Jong Park*, "AFCD: An Approximated-Fair and Controlled-Delay Queuing for High Speed Networks," in proceedings of the International Conference on Computer Communications and Networks (ICCCN 2013) (acceptance rate: 30%), pp.1-7, Nassau, Bahamas, 2013.
35. Manish Patil, Xuanting Cai, Sharma V. Thankachan, Rahul Shah, *Seung-Jong Park*, David Foltz, "Approximate string matching by position restricted alignment," in the proceeding of the International Conference on Extending Database Technology (EDBT)/ International Conference on Database Theory (ICDT Workshops) (acceptance rate: 20%), pp.384-391, 2013.
36. Praveenkumar Kondikoppa, *Seung-Jong Park*, Chui-Hui Chiu*, Cheng Cui* and Lin Xue*, "Network-Aware Scheduling of MapReduce Framework on Distributed Clusters over High Speed Networks," in the proceeding of the Workshop on Cloud Services, Federation, and the 8th Open Cirrus Summit, pp. 39-44, San Jose, USA. 2012.
37. Lin Xue, Suman Kumar, Cheng Cui, *Seung-Jong Park*, "An Evaluation of Fairness Among Heterogeneous TCP Variants Over 10Gbps High-speed Networks," in proceedings of the 37th Annual IEEE Conference on Local Computer Networks (LCN 2012) (acceptance rate: 30%), pp. 348–351, Clearwater, FL, 2012.
38. Lin Xue, Cheng Cui, Suman Kumar, *Seung-Jong Park*, "Experimental Evaluation of the Effect of Queue Management Schemes on the Performance of High Speed TCPs in 10Gbps Network

Environment," in the proceeding of the International Conference on Computing, Networking and Communications (ICNC 2012) (acceptance rate: 29%), pp. 315-319, Hawaii, USA, 2012.

39. Suman Kumar, Mohammed Azad, and *Seung-Jong Park*, "A fluid-based simulation study: the effect of loss synchronization on sizing buffers over 10Gbps high speed networks," in the proceeding of the 8th International Workshop on Protocols for Future, Large-Scale & Diverse Network Transports (PFLDNeT), Lancaster, PA, 2010.
40. Yixin Wu, Suman Kumar and *Seung-Jong Park*, "On Transport Protocol Performance Measurement over 10Gbps High Speed Optical Network," in the proceeding of the 18th International Conference on Computer Communications and Networks (ICCCN) (acceptance rate: 29%), pp.1-6, 2009.
41. Suman Kumar, *Seung-Jong Park*, S. Iyengar, and J.-H. Kimn, "Time-Adaptive Numerical Simulation for High Speed Networks," in the Proceeding of High Performance Computing, Networking and Communication System (HPCNCS-07), pp.198-205, Orlando, FL, 2007.
42. Suman Kumar and *Seung-Jong Park*, "Estimating Data Redundancy in Sensor Networks," in the Proceeding of 3rd International Symposium on Innovations and Real Time Applications of Distributed Sensor Networks, Nov. 26-27, 2007, Shreveport, Louisiana.
43. L. Battestilli, A. Hutanu, G. Karmous-Edwards, D. Katz, J. MacLaren, J. Mambretti, H. Moore, *Seung-Jong Park*, H. Perros, S. Sundar, S. Tanwir, S. Thorpe, and Y. Xin, "EnLIGHTened Computing: An Architecture for Co-allocating Network, Compute, and other Grid Resources for High-End Applications," in the Proceeding of IEEE 4th International Symposium on High Capacity Optical Networks and Enabling Technologies (HONET 2007), Dubai, UAE, pp.1-8, November 2007.
44. Y. Zhou, Y. Yuan and *Seung-Jong Park*, "ACKNET, A Synthetic, Reliable, and Accurate Network Emulator over Long Fat Networks," in the Proceeding of the 17th Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics, Nov. 2006.
45. *Seung-Jong Park* and R. Sivakumar, "An Energy Efficient Correlated Data Aggregation for Wireless Sensor Networks," in the Proceeding of 2nd International Symposium on Innovations and Real Time Applications of Distributed Sensor Networks, Washington DC, USA, Oct. 2006.
46. R. Vedantham, R. Sivakumar, and *Seung-Jong Park*, "Sink-to-Sensors Congestion Control," in the Proceeding of IEEE International Conference on Communications (ICC) (acceptance rate: 35%), Seoul, Korea, pp.3211-3217, May 2005.
47. Y. Zhu, R. Vedantham, *Seung-Jong Park* and R. Sivakumar, "A Scalable Correlation Aware Aggregation Strategy for Wireless Sensor Networks," in the Proceeding of IEEE International Conference on Wireless Internet (WICON) (acceptance rate: 32%), Budapest, Hungary, pp.122-129, July 2005.
48. S. S. Iyengar, G. Seetharaman, R. Kannan, A. Durresi, *Seung-Jong Park*, B. Krishnamachari, R. R. Brooks and J. Morrison, "Next Generation Distributed Sensor Networks," in Proceedings of Office of Naval Research, September 5-6, 2004, USA.
49. *Seung-Jong Park*, R. Vedantham, R. Sivakumar and I. Akyildiz, "A Scalable Approach for Reliable Downstream Data Delivery in Wireless Sensor Networks," in the Proceedings of ACM International Symposium on Mobile Ad hoc Networking and Computing (MOBIHOC) (acceptance rate: 9%), pp.78-89, Japan, May 2004.

50. *Seung-Jong Park* and R. Sivakumar, "Load-sensitive transmission power control in wireless ad-hoc network," in the Proceeding of IEEE Globecom (acceptance rate: 30%), Volume 21, Number 1, pp.42-46, Taiwan, 2002.
51. *Seung-Jong Park* and R. Sivakumar, "Quantitative Analysis of Transmission Power Control in Wireless Ad-Hoc Network," in the Proceeding of International Workshop on Ad Hoc Networking, in conjunction with International Conference on Parallel Processing 2002, pp.56-63, Vancouver, Canada.
52. *Seung-Jong Park*, Dong-Woo Kim and C.-Y. Kim, "Optimal power allocation in CDMA forward link using dependencies between pilot and traffic channels," in the Proceeding of 50th IEEE Vehicular Technology Conference (VTC), pp.223-227, Sept. 1999, Amsterdam, The Netherlands.
53. Dong-Woo Kim, *Seung-Jong Park* and Jin-Woo Lee, "Scaling power up to resist SIR measurement error in CDMA mobile systems," in the Proceedings of CDMA International Conference (CIC), pp.419-422, 1998, Seoul, Korea.
54. *Seung-Jong Park* and Dong-Woo Kim, "Optimal channel separation in CDMA mobile systems," in the Proceeding of CDMA International Conference, pp.419-422, 1997, Korea.
55. *Seung-Jong Park*, et al, "Frequency coordination between adjacent carriers of two CDMA operators," in the Proceeding of 48th IEEE Vehicular Technology Conference, pp.1458-1461, 1996, Atlanta, GA, USA.
56. Seung-Joo Kim, *Seung-Jong Park* and Y.-H. Oh, "Complexity reduction method for vector sum excited linear prediction coding," in the Proceeding of International Conference on Spoken Language Processing, pp.2071-2074, 1994, Japan.

Book Chapters:

1. Praveenkumar Kondikoppa, Chui-Hui Chiu and *Seung-Jong Park*, "MapReduce Performance in Federated Cloud Computing Environment," in the book of High Performance Cloud Auditing and Applications, Springer, pp.301-321, ISBN 978-1-4614-3296-8, 2014.
2. Suman Kumar and *Seung-Jong Park*, "On the Design and Analysis of Transport Protocols over Wireless Sensor Networks," in the book of Wireless Sensor Network," ISBN 978-3-902613-49-3, 2009.
3. S. Karthikeyan, *Seung-Jong Park* and R. Sivakumar, "Transport Layer Solutions for Ad-hoc Networks," in the book of Ad Hoc Networks: Technologies and Protocols, Springer, pp.123-152, 2004.

Edited Books

1. Soft Computing in Big Data Processing, Keon Myung Lee, *Seung-Jong Park*, Jee-Hyong Lee (Editors), Springer, ISBN 978-3-319-05526-8, 2014.

2. TEACHING

2.1 List of Courses

2017
CSC 7700: Special Topic: Data Science and Bioinformatics (Spring: 7 students)

2016
CSC 4501: Computer Networks (25 students)

2015
CSC 4501: Computer Networks (33 students)
CSC 4740: Big Data Technologies (17 students)
CSC 9000: Dissertation Research (Chui-Hui Chiu, Arghya Kusum Das, Sayan Goswami, Richard Platania, Mohammad Jalalzai, Dipak Singh)

2014
CSC 4501: Computer Networks (22 students)
CSC 9000: Dissertation Research (Chui-Hui Chiu, Arghya Kusum Das, Sayan Goswami, Richard Platania, Mohammad Jalalzai, Dipak Singh)

2013
CSC 4501: Computer Networks (15 students)
CSC7700: Special Topics: Computational Biology (8 students)
CSC 9000: Dissertation Research (Chui-Hui Chiu, Lin Xue, Praveenkumar Kondikoppa, Richard Platania)

2012
CSC 4501: Computer Networks (21 students)
CSC 7602: Wireless Networks (7 students)
CSC 9000: Dissertation Research (Chui-Hui Chiu, Cheng Cui, Lin Xue, Praveenkumar Kondikoppa,)

2011
CSC 4501: Computer Networks
CSC 7601:Design Issues of High Speed Optical Networks
CSC 9000: Dissertation Research (Chui-Hui Chiu, Cheng Cui, Lin Xue, Praveenkumar Kondikoppa,)

2010
CSC 7201: Wireless Networks (Fall, graduate course)
CSC 9000: Dissertation Research (Shuju Bai, Lin Xue and Cheng Cui, Praveenkumar Kondikoppa,)

2009
SYSC 7090: System Science Design Project, one student (Yixin Wu, Gayathri Namala)
CSC 7999: Selected Readings in CS (Suman Kumar, Shuju Bai)
CSC 9000: Dissertation Research (Suman Kumar, Shuju Bai, and Cheng Cui)

2008
CSC 3501: Computer Organization and Design (Spring, undergraduate course)
CSC 3999: Independent Undergraduate Research to teach two senior undergraduate students (Aaron Banks and Aaron Tureau at the computer networking concentration) who needed to take Computer Networks course that Dr. Wilson was supposed to teach at Fall semester of 2008.
CSC 7999: Selected Readings in CS (Suman Kumar, Yixin Wu, Shuju Bai)
SYSC 8000: System Science Thesis Research (Yaaser Mohammed)
CSC 9000: Dissertation Research (Suman Kumar, Shuju Bai)

2007
CSC 7201: Wireless Networks (Fall, graduate course)
CSC 7202: Design Issues of High Speed Optical Networks (Fall, Graduate course)
CSC 3999: Independent Undergrad Research (Yunan Yuan)
CSC 7999: Selected Readings in CS (Suman Kumar,Yaaser Mohammed)
SYSC 8000: System Science Thesis Research (Yaaser Mohammed)
CSC 9000: Dissertation Research (Suman Kumar)

2006
CSC 7201: Wireless Networks (Fall, graduate course)
CSC 3501: Computer Organization and Design (Spring, undergraduate course)
CSC 7999: Selected Readings in CS (Suman Kumar,Teawoo Park)
SYSC 8000: System Science Thesis Research (Yaaser Mohammed)
CSC 9000: Dissertation Research (Suman Kumar)

2005
CSC 4501: Computer Networks (Fall, undergraduate course)
CSC 7999: Selected Readings in CS (Suman Kumar, Yaaser Mohammed)

2004
CSC 4890: Introduction to Theory of Computation (Fall, undergraduate course)

2.2 Theses/Dissertations Directed

PhD students: 5

1) Suman Kumar (2004 ~ 2009) had studied hybrid simulation methods for large-scale networks. After he graduated in Fall 2009, he had worked as a PostDoc at North Carolina State University between 2010-2011. Then he joined Troy University as a tenure track assistant professor at the Computer Science Department.
2) Cheng Cui (2008 ~ 2013) had studied parallel transport protocols over high-speed networks as a GRA supported partially by the Department of Defense EPSCOR grant and the NSF MRI grant. After he graduated in 2013, he joined the NetApp as a network soft engineer.
3) Shuju Bai (2007 ~ 2013) had studied large-scale simulations at molecular level over HPC and Cloud computing environment. While she studied at LSU she also worked at the Southern

University as an assistant professor. After she graduated in 2013, she was promoted to the associate professor with tenure and continues to work on the bioinformatics area.

4) Lin Xue (2009 ~ 2014) had studied fair and low latency AQM policies for high-speed networks and data center networks. After he graduated in 2013, he joined Google as a network test engineer and continues to work on the data center network areas.
5) Praveenkumar Kondikopa (2008 ~ 2014) had studied development of big data applications using Hadoop over HPC and Cloud computing environment. After he graduated in 2014, he joined the Teradata Aster as a senior software engineer.

MS students: He has supervised more than 10 Master students for their Master theses and projects. The following list shows selected MS that he supported with research grants and produced journal and proceeding papers.

1) Yaaser Mohammed (2004 - 2006, graduated with project) studied the transport development for high-speed optical networks as a GRA supported by the Board of Regents grant.
2) Yixin Wu (2006 - 2008, graduated with project) performed experimental study for different variants of TCP over 10Gbps high-speed optical networks supported by the startup package. He started as a doctoral student and changed his status to a master student after he received a job offer from Microsoft. Now he is a senior software engineer at Qualcomm.
3) Gayathri Namala (2008 - 2010) had studied scheduling algorithms, virtual screening, and web portal for cancer drug discovery as a GRA supported by the bioinformatics project.
4) Vishwanadh Raparthi (2009 - 2011) had performed experiments and evaluation of transport protocols over emulated networking environments as a student worker supported by the NSF MRI grant.
5) Umesh Satish (2011 ~ 2013) had studied large-scale applications using Hadoop over HPC environment at his MS thesis.
6) Georgi Stoyanov (2012 ~ 2014) had studied large scale simulating using Hadoop streaming over HPC environment at his MS thesis.

Undergraduate students: He has mentored three undergraduate students and introduced them the state-of-the-art research projects. Their development works were supported by my research grants and their research paper was presented at the Annual Argonne Symposium for Undergraduates in Science, Engineering and Mathematics 2006. And I advised two senior undergraduate students who took a CSC 3999 instead of CSC4501, which is a mandatory course for students of computer networking concentration.

1) Yuebing Zhou (2005 - 2006, graduated) developed a network emulator, ACKNET, for high speed optical networks as a student worker supported by the startup package.
2) Yunan Yuan (2006 – 2007, graduated) developed a network emulator, ACKNET, for high speed optical networks as a student worker supported by the startup package.
3) Aaron Banks (2008 Fall) studied principals of computer networks and worked a project for network emulation over high speed optical networks at CSC 3999.
4) Aaron Tureau (2008 Fall) studied principals of computer networks and worked a project for network emulation over high speed optical networks at CSC 3999.

3. Professional SERVICE

3.1 Department Service

Graduate Advisor (2012-2015) : Every year, Dr. Park has advised more than 100 graduates students including master and doctoral students at the Division of Computer Science & Engineering. After he became the graduate advisor, he redesigned the master program by restructuring course requirements for master students at the CSE division so that master students should learn more number computer science courses. And he has hosted annual evaluation meeting for doctoral students.

Member of faculty search committee (2010-2013)
Member of faculty search committee (2006-2007)
Member of student admission committee (since 2005)

3.2 University Service

Undergraduate curriculum committee (since 2006)

PhD/MS dissertation committees (on a regular basis)

PhD qualifying exam committee (since 2004)

Departmental news committee (since 2005)

Faculty search committee (2006-2007)

Dean's representative (2005, 2006)

3.3 Professional Service

Conference Chair/Committees

1) Technical Program Committee, 2013 & 2014 International Conference on Computer Communications and Networks (ICCCN)
2) Technical Program Committee, 2013 & 2014 IEEE Globecom.
3) Technical Program Committee, 2012 & 2013 International Conference on Communications (ICC)
4) Technical Program Committee, 2010 IEEE 71st Vehicular Technology Conference
5) Technical Program Committee, IEEE Cluster 2009.
6) Session Chair, 18th International Conference on Computer Communications and Networks (ICCCN) 2009.

7) Publication Chair, 2007 3nd International Symposium of Innovations and Real-Time Applications of Distributed Sensor Networks.
8) Technical Program Committee, 2006 3rd International Conference on Broadband Communications, Networks, and Systems.
9) Publicity Chair, 2006 2nd International Symposium of Innovations and Real-Time Applications of Distributed Sensor Networks.
10) Publicity Chair, SenMetrics: 2005, Third International Workshop on Measurement, Modeling, and Performance Analysis of Wireless Sensor Networks.
11) Poster Session and Local Organizing Committee, 2005, 13th Annual Mardi Gras Conference, Frontiers of Grid Applications and Technologies.

Journal Paper Review

1) IEEE Transactions on Mobile Computing
2) IEEE/ACM Transactions on Networking
3) IEEE Transactions on Parallel and Distributed Systems
4) IEEE Transactions on Wireless Communications
5) Springer Wireless Networks WINET
6) Springer Mobile Networks and Applications MONET
7) Elsevier Journal of Computer Networks
8) Elsevier Journal of Ad-hoc Networks
9) Elsevier Journal of Performance Evaluation
10) ACM Mobile Computing and Communications Review

Proposal Review

1) NSF Review Panel, 2008, 2014
2) Proposal Reviewer for the Broadband Technology Opportunities Program (BTOP) of National Telecommunications and Information Agency (NTIA) of the US Department of Commerce, 2009