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Objective

Internship position in the field of networking (with special interest in software defined networking and data center networking), scheduling in switches, and software engineering. Available: Summer and Fall 2018

Education

Georgia Institute of Technology, Atlanta, GA, USA

Ph.D. Candidate in Computer Science (GPA: 3.91/4.0)

2015.8 - 2019.5 (**Expected**)

University of Science and Technology of China, Hefei, Anhui, China

M.Eng. in Communication and Information Systems (GPA: 3.81/4.3)

2012.9 - 2015.6

B.Eng. in Electronic Information Engineering (GPA: 3.75/4.3)

2008.9 - 2012.6

Intern Experience

AT&T Labs Research, Bedminster, NJ, USA

2016.5 - 2016.7

Research Intern

Mentor: He Yan and Zihui Ge

Developed tools to automate the dynamics analysis in services supported by virtualized environment.

Projects

Crossbar Scheduling

2016.2 - Present

- Designed a suite of simple distributed/parallel crossbar scheduling algorithms, which can exactly or approximately emulate the linear-time centralized version (*i.e.*, SERENA) in logarithmic rounds with almost the same delay performance.
- Designed a simple yet effective “add-on” crossbar scheduling algorithm for input-queued switches, which can boost the performance (switch throughput or delay or both) of existing crossbar scheduling algorithms (*e.g.*, iSLIP and SERENA) with almost “no” computational overhead. (SIGMETRICS 2017)
- Built an efficient and flexible simulator for crossbar scheduling in input-queued switches.

Time Capsule for Online Social Activities

2015.9 - Present

- Designed a hybrid streaming-sampling algorithm for high accurate measurements of Online Social Networking (OSN) cascade statistics, using limited memory, which decreased the errors (measured in ℓ_2) by more than one order of magnitude. (ICCCN 2017)

Network Virtualization over Elastic Optical Networks

2012.2 - 2015.6

- Designed a novel virtual network embedding algorithm, which increased the network utilization and decreased the time complexity. (INFOCOM 2014)
- Proposed the first integer linear programming formulations for the virtual optical network embedding problems in the contexts of flexible-grid elastic optical networks, and designed efficient algorithms which achieved much better performance. (Journal of Lightwave Technology)
- Proved the first inapproximability result of the location-constrained virtual network embedding (LC-VNE) problems, and designed efficient algorithms for solving LC-VNE, which achieved much better performance (in terms of both resource consumption and fairness). (IEEE/ACM Transactions on Networking)
- Built the first OpenFlow-based network virtualization platform where the underlying infrastructure is the flexible-grid elastic optical networks. (Master Thesis)

1. **Long Gong**, Lanxi Huang, Paul Tune, Jinyoung Han, Chen-Nee Chuah, Matthew Roughan, and Jun Xu. Foreststream: Accurate measurement of cascades in online social networks. **accepted to ICCCN** 2017, 2017
2. Long Gong, Paul Tune, Liang Liu, Sen Yang, and Jun (Jim) Xu. Queue-proportional sampling: A better approach to crossbar scheduling for input-queued switches. *Proc. ACM Meas. Anal. Comput. Syst.*, 1(1):3:1–3:33, June 2017
3. Zuqing Zhu, Xiahe Liu, Yixiang Wang, Wei Lu, **Long Gong**, Shui Yu, and Nirwan Ansari. Impairment- and splitting-aware cloud-ready multicast provisioning in elastic optical networks. *IEEE/ACM Transactions on Networking*, 25(2):1220–1234, Apr. 2017
4. **Long Gong**, Huihui Jiang, Yixiang Wang, and Zuqing Zhu. Novel Location-Constrained Virtual Network Embedding (LC-VNE) Algorithms Towards Integrated Node and Link Mapping. *IEEE/ACM Transactions on Networking*, 24(6):3648–3661, Dec. 2016
5. Lulu Yang, **Long Gong**, and Zuqing Zhu. Incorporating network coding to formulate multicast sessions in elastic optical networks. In *2016 International Conference on Computing, Networking and Communications (ICNC)*, pages 1–5, Feb. 2016
6. Huihui Jiang, Yixiang Wang, **Long Gong**, and Zuqing Zhu. Availability-aware survivable virtual network embedding in optical datacenter networks. *IEEE/OSA Journal of Optical Communications and Networking*, 7(12):1160–1171, Dec. 2015
7. Lulu Yang, **Long Gong**, Fen Zhou, Bernard Cousin, Miklós Molnár, and Zuqing Zhu. Leveraging light forest with rateless network coding to design efficient all-optical multicast schemes for elastic optical networks. *Journal of Lightwave Technology*, 33(18):3945–3955, Sept. 2015
8. Jingjing Yao, Ping Lu, **Long Gong**, and Zuqing Zhu. On Fast and Coordinated Data Backup in Geo-Distributed Optical Inter-Datacenter Networks. *Journal of Lightwave Technology*, 33(14):3005–3015, Jul. 2015
9. **Long Gong**, Yonggang Wen, Zuqing Zhu, and Tony Lee. Toward Profit-Seeking Virtual Network Embedding Algorithm via Global Resource Capacity. In *IEEE International Conference on Computer Communications (INFOCOM)*, pages 1–9, Apr. 2014
10. **Long Gong** and Zuqing Zhu. Virtual Optical Network Embedding (VONE) Over Elastic Optical Networks. *Journal of Lightwave Technology*, 32(3):450–460, Feb. 2014
11. Huihui Jiang, **Long Gong**, and Zuqing Zhu. Efficient joint approaches for location-constrained survivable virtual network embedding. In *IEEE Global Communications Conference (GLOBECOM)*, pages 1810–1815, Dec. 2014
12. **Long Gong**, Yonggang Wen, Zuqing Zhu, and Tony Lee. Revenue-driven virtual network embedding based on global resource information. In *IEEE Global Communications Conference (GLOBECOM)*, pages 2294–2299, Dec. 2013
13. **Long Gong**, Wenwen Zhao, Yonggang Wen, and Zuqing Zhu. Dynamic transparent virtual network embedding over elastic optical infrastructures. In *IEEE International Conference on Communications (ICC)*, pages 3466–3470, Jun. 2013
14. **Long Gong**, Xiang Zhou, Xiahe Liu, Wenwen Zhao, Wei Lu, and Zuqing Zhu. Efficient resource allocation for all-optical multicasting over spectrum-sliced elastic optical networks. *IEEE/OSA Journal of Optical Communications and Networking*, 5(8):836–847, Aug. 2013
15. Xiahe Liu, **Long Gong**, and Zuqing Zhu. On the spectrum-efficient overlay multicast in elastic optical networks built with multicast-incapable switches. *IEEE Communications Letters*, 17(9):1860–1863, Sept. 2013
16. Xiahe Liu, **Long Gong**, and Zuqing Zhu. Design integrated rsa for multicast in elastic optical networks with a layered approach. In *IEEE Global Communications Conference (GLOBECOM)*, pages 2346–2351, Dec. 2013
17. Xiahe Liu, **Long Gong**, and Zuqing Zhu. Spectrum- and energy-efficient multicasting over multicast-incapable eons with member-only flexible relay. In *Asia Communications and Photonics Conference (ACP)*, page AW4H.6. Optical Society of America, 2013

18. Wei Lu, Xiang Zhou, **Long Gong**, Mingyang Zhang, and Zuqing Zhu. Dynamic multi-path service provisioning under differential delay constraint in elastic optical networks. *IEEE Communications Letters*, 17(1):158–161, Jan. 2013
19. Mingyang Zhang, Weiran Shi, **Long Gong**, Wei Lu, and Zuqing Zhu. Bandwidth defragmentation in dynamic elastic optical networks with minimum traffic disruptions. In *IEEE International Conference on Communications (ICC)*, pages 3894–3898, Jun. 2013
20. **Long Gong**, Xiang Zhou, Wei Lu, and Zuqing Zhu. A two-population based evolutionary approach for optimizing routing, modulation and spectrum assignments (rmsa) in o-ofdm networks. *IEEE Communications Letters*, 16(9):1520–1523, Sept. 2012
21. Wei Lu, Xiang Zhou, **Long Gong**, and Zuqing Zhu. Scalable network planning for elastic optical orthogonal frequency division multiplexing (ofdm) networks. In *8th International Symposium on Communication Systems, Networks Digital Signal Processing (CSNDSP)*, pages 1–4, Jul. 2012
22. Xiang Zhou, Wei Lu, **Long Gong**, and Zuqing Zhu. Dynamic rmsa in elastic optical networks with an adaptive genetic algorithm. In *IEEE Global Communications Conference (GLOBECOM)*, pages 2912–2917, Dec. 2012

Selected Talks

1. Queue-Proportional Sampling: A Better Approach to Crossbar Scheduling for Input-Queued Switches, ACM SIGMETRICS 2017, Urbana-Champaign, Illinois, USA
2. Toward Profit-Seeking Virtual Network Embedding Algorithm via Global Resource Capacity, IEEE INFOCOM 2014, Toronto, Canada
3. Revenue-Driven Virtual Network Embedding Based on Global Resource Information, IEEE GLOBECOM 2013, Atlanta, GA, USA
4. Dynamic Transparent Virtual Network Embedding over Elastic Optical Infrastructures, IEEE ICC 2013, Budapest, Hungary

Professional Skills

Programming Languages: C++ (proficient), PYTHON (fluent), JAVA (prior experience)

Honors and Awards

Student Travel Grant Award

ACM SIGMETRICS	2017
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Excellent Graduate

University of Science and Technology of China, Hefei, Anhui, China	2015
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National Scholarship (for Master Students)

University of Science and Technology of China, Hefei, Anhui, China	2013
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Best Paper Award

ONS Symposium, IEEE GLOBECOM 2013	2013
ONS Symposium, IEEE ICC 2013	2013

Professional Service

Reviewer: IEEE INFOCOM 2016, IEEE COMMUNICATION LETTERS, IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, IEEE/ACM TRANSACTIONS ON NETWORKING, IEEE/OSA JOURNAL OF OPTICAL COMMUNICATIONS AND NETWORKING