Long Gong

Personal Website: https://lgong30.github.io

266 Ferst Dr, Atlanta, GA 30332, United States
Cell: +1(404)697-0608. Email: gonglong@gatech.edu

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

, 2018.5 - 2018.8
Intern Mentor: Gang Cheng
Built a

AT&T Labs Research, Bedminster, NJ, USA

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)

Selected Publications [Google Scholar]

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