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## Education

**Georgia Institute of Technology**, Atlanta, GA, USA

Ph.D. in Computer Science (GPA: 3.92/4.0) 2015.8 - 2020.8

**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 Experiences

**Facebook Inc.**, Menlo Park, CA, USA

2019.5 - 2019.8

Intern

Mentor: Alex Eckert

Built a user-friendly tool to assist fast yet robust software deployment processes for switches.

**Alibaba Group (U.S.) Inc.**, Bellevue, WA, USA

2018.5 - 2018.8

Intern

Mentor: Gang Cheng

Built a highly scalable multi-tenant BGP tool as an important component of a high-performance and high-availability SDN based hybrid cloud network solution.

**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

**Set Reconciliation**

2019.2 - 2020.7

- Designed a novel set reconciliation scheme that has both a low computational complexity and a low communication overhead of roughly twice the theoretical minimum. (**submitted to VLDB 2021**)

- Built an efficient benchmark tool (in C++) for set reconciliation.

**Similarity Search**

2019.2 - 2020.7

- Designed a new framework to Approximate Nearest Neighbor Search (ANNS), a solution based on which can have both a low index size and a low query time complexity. (VLDB 2020)

- Built an efficient benchmark tool (in C++) for ANNS in Hamming and edit distances.

**Crossbar Scheduling**

2016.2 - 2020.7

- Designed a series of simple distributed/parallel crossbar scheduling algorithms that are low in time complexities, yet have excellent (throughput and delay) performances. (SIGMETRICS 2017, HPSR 2020, and Valuetools 2020)

- Built an efficient and flexible simulator (in C/C++) for crossbar scheduling in input-queued switches.

**Time Capsule for Online Social Activities**

2015.9 - 2017.7

- 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  $\ell_2$ ) by more than one order of magnitude. (ICCCN 2017)

**Network Virtualization over Elastic Optical Networks**

2012.2 - 2015.6

- 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](#)]

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1. **Long Gong**, Huayi Wang, Mitsunori Ogihara, and Jun Xu. iDEC: Indexable distance estimating codes for approximate nearestneighbor search. In *PVLDB*, volume 13, 2020
2. **Long Gong**, Jun Jim Xu, Liang Liu, and Siva Theja Maguluri. QPS-r: A cost-effective iterative switching algorithm for input-queued switches. In *Proceedings of the 13th EAI International Conference on Performance Evaluation Methodologies and Tools*, VALUETOOLS '20, page 19–26, New York, NY, USA, 2020. Association for Computing Machinery
3. **Long Gong**, Liang Liu, Sen Yang, Jun (Jim) Xu, Yi Xie, and Xinbing Wang. SERENADE: A parallel iterative algorithm for crossbar scheduling in input-queued switches. In *2020 IEEE 21st International Conference on High Performance Switching and Routing (HPSR)*, pages 1–6, 2020
4. **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. In *2017 26th International Conference on Computer Communication and Networks (ICCCN)*, pages 1–9, 2017
5. **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. *Proceedings of the 2017 ACM SIGMETRICS/International Conference on Measurement and Modeling of Computer Systems*, 1(1):3:1–3:33, June 2017
6. **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
7. **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
8. **Long Gong** and Zuqing Zhu. Virtual Optical Network Embedding (VONE) Over Elastic Optical Networks. *Journal of Lightwave Technology*, 32(3):450–460, Feb. 2014
9. **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
10. **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
11. **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
12. **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

## Selected Talks

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1. SERENADE: A Parallel Iterative Algorithm for Crossbar Scheduling in Input-Queued Switches, IEEE HPSR 2020, virtual
2. Queue-Proportional Sampling: A Better Approach to Crossbar Scheduling for Input-Queued Switches, ACM SIGMETRICS 2017, Urbana-Champaign, Illinois, USA
3. Toward Profit-Seeking Virtual Network Embedding Algorithm via Global Resource Capacity, IEEE INFOCOM 2014, Toronto, Canada
4. Revenue-Driven Virtual Network Embedding Based on Global Resource Information, IEEE GLOBECOM 2013, Atlanta, GA, USA

5. Dynamic Transparent Virtual Network Embedding over Elastic Optical Infrastructures, IEEE ICC 2013, Budapest, Hungary

Professional Skills

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

Honors and Awards

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<b>Student Travel Grant Award</b>	
ACM SIGMETRICS	2017
<b>Excellent Graduate</b>	
University of Science and Technology of China, Hefei, Anhui, China	2015
<b>National Scholarship (for Master Students)</b>	
University of Science and Technology of China, Hefei, Anhui, China	2013
<b>Best Paper Award</b>	
ONS Symposium, IEEE GLOBECOM 2013	2013
ONS Symposium, IEEE ICC 2013	2013

Professional Service

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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