

Ben Leong

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Research Interests

Congestion Control (low-latency TCP & QUIC)
& Software Defined Networking for Data Centres.

Education

Massachusetts Institute of Technology Cambridge, MA
- obtained both Bachelor of Science in Electrical Science and Engineering and Master of Engineering in Electrical Engineering and Computer Science in 1997.
- obtained Ph.D. in Computer Science in June 2006.

Professional Experience

National University of Singapore Singapore, September 2001 - present
Senior Tutor from 2001 to 2006. Assistant Professor from July 2006 to Dec 2014. Promoted to Associate Professor with tenure in Jan 2015. Appointed as Director, Centre for Computing for Social Good and Philanthropy in Mar 2021.

AI Singapore, Singapore's National AI Programme Singapore, January 2020 - present
Appointed as Chief Data Officer in Jan 2020 and Director, AI Centre for Educational Technologies on Jan 2021.

Ministry of Education Singapore, July 2014 - Jun 2019
Appointed as Director, Experimental Systems & Technology Laboratory.

The Center for Excellence in Education/Fudan University Shanghai, China, Summer 2006
Assistant Director of the Research Science Institute-Fudan 2006, a six-week research summer camp, held in Fudan University, Shanghai.

MIT Laboratory for Computer Science Cambridge, Fall 2001 - June 2006
Full-time graduate student in the Ph.D. program in Computer Science. Served as Teaching Assistant for 6.170 (Laboratory in Software Engineering) and 6.829 (Computer Networks).

PSC Secretariat, Public Service Division, PMO Singapore, May 1999 - August 2001
Appointed to the Singapore Administrative Service. Held appointments of Assistant Director(Discipline) and Assistant Director(Legal Service).

Honours

ICNP 2019 Best Paper Award
Outstanding Educator Award 2015
NUS ATEA and FTEA Honour Roll 2011
AY2010/2011 NUS Annual Teaching Excellence Award
AY2010/2011 Faculty Teaching Excellence Award
AY2009/2010 NUS Annual Teaching Excellence Award
AY2009/2010 Faculty Teaching Excellence Award
2009 ComSoc & Information Theory Society Joint Paper Award
AY2008/2009 NUS Annual Teaching Excellence Award
AY2008/2009 Faculty Teaching Excellence Award

Professional Service

TPC member, SIGCOMM 2024, 2025
TPC member, INFOCOM 2024
TPC member, NSDI 2024
TPC member, IMC 2023
TPC member, APNet 2021
TPC member, HotNets 2020
TPC member, SIGCSE 2017, 2018
TPC member, CoNEXT 2015
TPC member, ICNP 2014, 2021, 2022, 2023, 2024
TPC member, SECON 2014, 2013, 2012, 2011
General Chair & TPC member, APSys 2013
Vice General Chair, APSys 2012
TPC member, ICDCS 2012
Poster Co-Chair & TPC member, ICNP 2011

**Selected
Grants Awarded**

1. Principal Investigator, “Active and Passive Monitoring of Realtime Internet and 5G Evolution,” 3-year MOE Tier-2 grant (Jul 2023 – Jun 2026): \$444,145.
2. Principal Investigator, “AI Centre for Education Technologies,” 2-year AI Singapore Technology Challenge grant (Jul 2023 – Jun 2025): \$4.46 million.
3. Principal Investigator, “A Buffer-Regulation-Based Approach to Achieving Low-Latency TCP,” 3-year FRC grant (Mar 2020 – Mar 2023): \$130,000.
4. Co-Principal Investigator, “Leveraging Data-Plane Programmability for Scalable & Resilient Network Services,” 2-year MOE Tier-2 grant (Jul 2020 – Jun 2023): \$489,000.
5. Co-Principal Investigator, “Towards High-Fidelity Datacenter Network Monitoring with Programmable Dataplanes,” 3-year FRC grant (March 2018 – Feb 2021): \$53,400.
6. Principal Investigator, “Towards Mobile Aerial Meshes for Interactive Streaming,” 3-year FRC grant (Jan 2013 – Dec 2015): \$123,830.
7. Principal Investigator, “Accessible Fault-Tolerant Computing on Commercial Hardware,” 18-month JPP grant (Jan 2012 – Jun 2013): \$49,800.
8. Principal Investigator, “OpenNAT: Enabling Universal Connectivity in an Increasingly Heterogeneous World,” 2-year FRC grant (Jan 2011 – Dec 2012): \$136,188.
9. Principal Investigator, “Achieving High-Bandwidth Peer-to-Peer Data Transfers with Network Coding and the Right Incentives in Heterogeneous Networking Environments,” 3-year grant (Apr 2008 – Mar 2011): \$812,000.

**Selected
Publications**

1. Ayush Mishra, Lakshay Rastogi, Raj Joshi, and Ben Leong. *Keeping an Eye on Congestion Control in the Wild with Nebby*. Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM 2024). Sydney, Australia. Aug 2024.
2. Shubham Sahai, Umair Ahmed and Ben Leong. *Improving the Coverage of GPT for Automated Feedback on High School Programming Assignments*. Proceedings of the NeurIPS’23 Workshop on Generative AI for Education (GAIED). New Orleans, USA. Dec 2023.
3. Ayush Mishra and Ben Leong. *Containing the Cambrian Explosion in QUIC Congestion Control*. Proceedings of the 2023 Internet Measurement Conference (IMC ’23). Oct 2023.
4. Raj Joshi, Cha Hwan Song, Xin Zhe Khooi, Nishant Budhdev, Ayush Mishra, Mun Choon Chan and Ben Leong. *Masking Corruption Packet Losses in Datacenter Networks with Link-local Retransmission*. Proceedings of the ACM Special Interest Group on Data Communication (SIGCOMM 2023). New York City, USA. Sep 2023.
5. Ayush Mishra, Wee Han Tiu, and Ben Leong. *Are we heading towards a BBR-dominant Internet?* Proceedings of the 2022 Internet Measurement Conference (IMC ’22). Oct 2022.
6. Ayush Mishra, Sherman Lim, and Ben Leong. *Understanding Speciation in QUIC Congestion Control*. Proceedings of the 2022 Internet Measurement Conference (IMC ’22). Oct 2022.
7. Ayush Mishra, Jingzhi Zhang, Melodies Sim, Sean Ng, Raj Joshi, and Ben Leong. *Conjecture: Existence of Nash Equilibria in Modern Internet Congestion Control*. Proceedings of the Asia-Pacific Workshop on Networking (APNet). June 2021.
8. Ayush Mishra, Xiangpeng Sun, Atishya Jain, Sameer Pande, Raj Joshi, and Ben Leong. *The Great Internet TCP Congestion Control Census*. Proceedings of the ACM on Measurement and Analysis of Computing Systems (SIGMETRICS 2019). Volume 3. Issue 3. December 2019.
9. Yang Hu, Umair Z. Ahmed, Sergey Mechtaev, Ben Leong, and Abhik Roychoudhury. *Refactoring based Program Repair applied to Programming Assignments*. Proceedings of the 34th IEEE/ACM International Conference on Automated Software Engineering (ASE 2019). San Diego, USA. November 2019.
10. Ting Qu, Raj Joshi, Mun Choon Chan, Ben Leong, Deke Guo and Zhong Liu. *SQR: In-network Packet Loss Recovery from Link Failures for Highly Reliable Datacenter Networks*. Proceedings of the 27th IEEE International Conference on Network Protocols (ICNP 2019). Chicago, Illinois, USA. October 2019. *Awarded Best Paper*.
11. Wai Kay Leong, Wang Zixiao, and Ben Leong. *TCP Congestion Control Beyond Bandwidth-Delay Product for Mobile Cellular Networks*. Proceedings of the 13th International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2017), Seoul, South Korea. Dec 2017.
12. Xiangyun Meng, Wei Wang, and Ben Leong. *SkyStitch: a Cooperative Multi-UAV-based Realtime Video Surveillance System with Stitching*. Proceedings of the ACM Multimedia Conference 2015 (ACMMM 2015), Brisbane, Australia. Oct 2015.