



Ben Leong

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Research Interests

Wireless Networking: Geographic routing, sensor networks & 3G/4G mobile networks
Distributed Systems: peer-to-peer networking, network coding, networked games.

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 under the supervision of Professor Barbara Liskov (2009 ACM Turing Award winner). Thesis entitled "*New Techniques for Geographic Routing.*"

Professional Experience

Ministry of Education Singapore, July 2014 - present
Appointed as Director, Experimental Systems & Technology Laboratory.
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.
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).
Singapore Armed Forces School of Signals Singapore, January 1998 - May 1999
Held the appointment of Communications Engineering Team Leader, SAF School of Signals. Awarded *Sword of Honour* and *Signal Formation Letter of Commendation* during national service.
The Center for Excellence in Education Cambridge, Summer 1995
Served as a Tutor for the Research Science Institute (<http://www.cee.org/rsi/>).

Honours

NATIONAL UNIVERSITY OF SINGAPORE Singapore
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

PRE-MIT (PRIOR TO FALL 1993) Singapore
Lee Kuan Yew Award for Science and Mathematics
Public Service Commission Overseas Merit Scholarship (Open)

Professional Service

TPC member, CoNEXT 2015
TPC member, ICNP 2014
TPC member, SECON 2014, 2013, 2012, 2011
General Chair & TPC member, APSys 2013
Vice General Chair, APSys 2012
TPC member, NetGames 2012
TPC member, ICDCS 2012
Poster Co-Chair & TPC member, ICNP 2011

Grants Awarded

1. Co-Principal Investigator, “Towards High-Fidelity Datacenter Network Monitoring with Programmable Dataplanes,” 3-year FRC grant (March 2018 to Feb 2021): \$53,400.
2. Principal Investigator, “Teaching Introductory Programming on a Massive Scale,” 2-year LIFT grant (Oct 2013 – Jun 2015): \$70,000.
3. Principal Investigator, “Towards Mobile Aerial Meshes for Interactive Streaming,” 3-year FRC grant (Jan 2013 – Dec 2015): \$123,830.
4. Principal Investigator, “Accessible Fault-Tolerant Computing on Commercial Hardware,” 18-month JPP grant (Jan 2012 – Jun 2013): \$49,800.
5. Principal Investigator, “OpenNAT: Enabling Universal Connectivity in an Increasingly Heterogeneous World,” 2-year FRC grant (Jan 2011 – Dec 2012): \$136,188.
6. Principal Investigator, “Application of Game Mechanics to Improve Student Engagement,” 1-year Teaching Enhancement Grant (Sep 2010 – Aug 2011): \$6,300.
7. 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.
8. Principal Investigator, “Deployment and Evaluation of an Unplanned 802.11x Wireless Mesh Network,” 2-year grant (Sep 2007 – Aug 2009): \$102,000.
9. Principal Investigator, “Hydra: A Peer-to-Peer Architecture for Massively Multiplayer Online Games,” 2-year grant (Jan 2007 – Dec 2008): \$154,314.

Selected Publications

1. Raj Joshi, Ting Qu, Mun Choon Chan, Ben Leong and Boon Thau Loo. *BurstRadar: Practical Real-time Microburst Monitoring for Datacenter Networks*. Proceedings of the 9th ACM Asia-Pacific Workshop on Systems (APSys 2018). Jeju Island, South Korea. Aug 2018.
2. 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.
3. 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.
4. Wei Wang, Ben Leong, and Wei Tsang Ooi. *Mitigating Unfairness due to Physical Layer Capture in Practical 802.11 Mesh Networks*. IEEE Transactions on Mobile Computing. Volume 14, Issue 1, pp 99-112, Apr 2014.
5. Wai Kay Leong, Yin Xu, Ben Leong and Zixiao Wang. *Mitigating Egregious ACK Delays in Cellular Data Networks by Eliminating TCP ACK Clocking*. Proceedings of the 21st IEEE International Conference on Network Protocols (ICNP 2013). Gttingen, Germany. Oct 2013.
6. Manjunath Doddavenkatappa, Mun Choon Chan, and Ben Leong. *Splash: Fast Data Dissemination with Constructive Interference in Wireless Sensor Networks*. Proceedings of the 10th USENIX Symposium on Networked Systems Design and Implementation (NSDI 2013). Lombard, Illinois. Apr 2013.
7. Yin Xu, Ben Leong, Daryl Seah and Ali Razeen. *mPath: High-Bandwidth Data Transfers with Massively-Multipath Source Routing*. IEEE Transactions on Parallel and Distributed Systems. Volume 24, Issue 10, pp 2046-2059, Oct 2013.
8. Yin Xu, Wai Kay Leong, Ben Leong and Ali Razeen. *Dynamic Regulation of Mobile 3G/HSPA Uplink Buffer with Receiver-Side Flow Control*. Proceedings of the 20th IEEE International Conference on Network Protocols (ICNP 2012). Austin, Texas. October 2012.
9. Jiangwei Zhou, Yu Chen, Ben Leong, and Pratibha Sundar Sundaramoorthy. *Practical 3D Geographic Routing for Wireless Sensor Networks*. Proceedings of the 8th ACM Conference on Embedded Networked Sensor Systems (SenSys 2010). Zurich, Switzerland. November 2010.
10. Ben Leong, Barbara Liskov, and Robert Morris, “*Greedy Virtual Virtual Coordinates for Geographic Routing*”. Proceedings of the 15th IEEE International Conference on Network Protocols (ICNP 2007). Beijing, China, October 2007.
11. Tracey Ho, Muriel Mdard, Ralf Koetter, David R. Karger, Michelle Effros, Jun Shi, and Ben Leong, *A Random Linear Network Coding Approach to Multicast*, IEEE Transactions on Information Theory, Vol. 52, No. 10, pp. 4413-4430, October 2006. *Awarded 2009 ComSoc & Information Theory Society Joint Paper Award*.
12. Ben Leong, Barbara Liskov, and Robert Morris, “*Geographic Routing without Planarization*”. Proceedings of the 3rd Symposium on Network Systems Design and Implementation (NSDI 2006). San Jose, CA, May 2006.