



Ben Leong

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Research Interests

Computer Networking: Wireless routing, peer-to-peer networking, network coding & Distributed Systems: Organization, architecture and programming models, 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. Thesis entitled “*New Techniques for Geographic Routing.*”

Professional Experience

National University of Singapore Singapore, September 2001 - present
Assistant Professor from July 2006 to present.
The Center for Excellence in Education/Fudan University Shanghai, China, Summer 2006
Assistant Director of the Research Science Institute-Fudan 2006 (<http://www.rsi.fudan.edu.cn/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 under the supervision of Professor Barbara Liskov. Supported mostly by Research Assistantships.
PSC Secretariat, Public Service Division, PMO Singapore, May 1999 - August 2001
Held appointments of Assistant Director(Discipline) and Assistant Director(Legal Service). Job scope included the formulation of policies relating to Civil Service Discipline matters and the human resource management for the Singapore Legal Service.
Singapore Armed Forces School of Signals Singapore, January 1998 - May 1999
Awarded *Sword of Honour* and *Signal Formation Letter of Commendation*. Held the appointment of Communications Engineering Team Leader, SAF School of Signals during fulltime national service, and attained rank of First Lieutenant. Subsequently appointed as a Node Commander in the 2nd Signals Battalion.
The Center for Excellence in Education Cambridge, Summer 1995
Served as a Tutor for the Research Science Institute (<http://www.cee.org/rsi/>).

Honours

MASSACHUSETTS INSTITUTE OF TECHNOLOGY Cambridge, MA
MIT IDEAS Competition 2002: Co-leader of team awarded third prize.
MIT Varsity Letter Award: 4-year varsity letter winner ('93-'97).
NRA All-American Pistol Team 1996: Elected to All-American Second team (Free Pistol and Air Pistol).
Van Schaick Award 1996: for outstanding contributions to the pistol team.
MIT Individual Straight 'T' Award 1996
Malcolm G. Kisbert Award: for being the Male Scholar-Athlete of the Year (1997).
MIT Team Straight 'T' Award 1997

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

RAFFLES JUNIOR COLLEGE (1991-1992) Singapore
Ministry of Education Pre-University Scholarship
Old Rafflesian Association (ORA) Scholarship
RJC Certificate of Merit
RJC Plaque Award
RJC 1992 Student of the Year Award
RJC 1992 Top Pure Science Student Award

RAFFLES INSTITUTION (1987-1990) Singapore
Hullett Scholarship for Science and Mathematics
Raffles Institution Merit Prize
Raffles Institution Service Award

- Grants Awarded**
1. 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.
 2. Principal Investigator, “Deployment and Evaluation of an Unplanned 802.11x Wireless Mesh Network” (R-252-000-311-112), 2-year grant (Sep 2007 – Aug 2009): \$102,000.
 3. Principal Investigator, “Hydra: A Peer-to-Peer Architecture for Massively Multiplayer Online Games” (R-252-050-281-101/ R-252-050-281-133), 2-year grant (Jan 2007 – Dec 2008): \$154,314.
- Selected Publications**
1. Ben Leong, Barbara Liskov, and Robert Morris, “*Greedy Virtual Coordinates for Geographic Routing*”. Proceedings of the 15th IEEE International Conference on Network Protocols (ICNP 2007). Beijing, China, October 2007.
 2. 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.
 3. Ben Leong, Sayan Mitra, and Barbara Liskov, “*Path Vector Face Routing: Geographic Routing with Local Face Information*”. Proceedings of the 13th IEEE International Conference on Network Protocols (ICNP 2005). Boston, MA, November 2005.
 4. Tracey Ho, Ben Leong, Ralf Koetter and Muriel Médard. “*Distributed Asynchronous Algorithms for Multicast Network Coding*”, Proceedings of the 1st Workshop on Network Coding (NETCOD 2005), Riva del Garda, Italy, April 2005.
 5. Tracey Ho, Ben Leong, Yu-Han Chang, Yonggang Wen and Ralf Koetter. “*Network monitoring in multicast networks using network coding*”, Proceedings of the 2005 IEEE International Symposium on Information Theory (ISIT 2005), Adelaide, Australia. September 2005.
 6. Ben Leong, and Ji Li, “*Achieving One-Hop DHT Lookup and Strong Stabilization by Passing Tokens*”, Proceedings of the 12th International Conference on Networks 2004 (ICON 2004), Singapore, November 2004.
 7. Ben Leong, Barbara Liskov, and Erik D. Demaine, “*EpiChord: Parallelizing the Chord Lookup Algorithm with Reactive Routing State Management*”, Proceedings of the 12th International Conference on Networks 2004 (ICON 2004), Singapore, November 2004. Awarded *Best Paper Award*.
 8. Tracey Ho, Ben Leong, Muriel Médard, Ralf Koetter, Yu-Han Chang, and Michelle Effros, “*On the Utility of Network Coding in Dynamic Environments*”, Proceedings of the International Workshop on Wireless Ad-hoc Networks (IWWAN) 2004, Finland, June 2004. Awarded *Best Student Paper Award*.
 9. Tracey Ho, Ben Leong, Ralf Koetter, Muriel Médard, Michelle Effros, and David Karger, “*Byzantine Modification Detection in Multicast Networks using Randomized Network Coding*”, Proceedings of the 2004 IEEE International Symposium on Information Theory (ISIT), Chicago, IL. June 2004.
- Reports**
1. Ben Leong, “*New Techniques for Geographic Routing without Planarization*”. Ph.D. Thesis, MIT, June 2006.
 2. Ben Leong, Barbara Liskov, and Erik D. Demaine, “*EpiChord: Parallelizing the Chord Lookup Algorithm with Reactive Routing State Management*”, Technical Report MIT-LCS-TR-963, August 2004.
- Public Lectures & Presentations**
1. “*Greedy Virtual Coordinates for Geographic Routing*”. 15th IEEE International Conference on Network Protocols (ICNP 2007). 17 October 2007. Beijing, China.
 2. “*Geographic Routing without Planarization*”. 3rd Symposium on Network Systems Design and Implementation (NSDI 2006). 10 May 2006. San Jose, CA.
 3. “*Path Vector Face Routing: Geographic Routing with Local Face Information*”. 13th IEEE International Conference on Network Protocols (ICNP 2005). 8 November 2005. Boston, MA.
 4. “*pDNS: Parallelizing DNS Lookups to Improve Performance*”. Work-in-Progress Report. 6th Symposium on Operating Systems Design and Implementation (OSDI '04). 7 December 2004. San Francisco, CA.
 5. “*EpiChord: Parallelizing the Chord Lookup Algorithm with Reactive Routing State Management*”. Singapore-MIT Alliance Computer Science Seminar. 19 November 2004. Singapore.
 6. “*EpiChord: Parallelizing the Chord Lookup Algorithm with Reactive Routing State Management*”. 12th International Conference on Networks 2004 (ICON 2004). 17 November 2004. Singapore.
 7. “*Achieving One-Hop DHT Lookup and Strong Stabilization by Passing Tokens*”. 12th International Conference on Networks 2004 (ICON 2004). Singapore, 17 November 2004.