# Edmund M. Yeh

Department of Electrical and Computer Engineering
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**Professional Interests**

Networked machine learning; networking and systems for data-intensive engineering, science, health applications; caching, edge computing; wireless network optimization, coding for low latency, network coding, polar codes; interdependent networks, cascading failure, information dissemination; network economics.

**Education**

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| **Massachusetts Institute of Technology** | Cambridge, MA |

Doctor of Philosophy in Electrical Engineering and Computer Science.  September 2001
Thesis Title: *Multiaccess and Fading in Communication Networks.*
Advisor: Professor Robert G. Gallager.
Committee: Robert Gallager, Muriel Medard, Sanjoy Mitter, Philip Whiting
Minor in Mathematics.

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| **Churchill College, University of Cambridge** | Cambridge, England |

Master of Philosophy in Electrical Engineering.  August 1995
Winston Churchill Scholar.
Thesis Title: *Perceptual Distortion Measure for Image Sequences.*
Advisor: Professor Nick Kingsbury.

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| **Stanford University** | Stanford, CA |

Bachelor of Science in Electrical Engineering  March 1994
*with Distinction and Phi Beta Kappa.*

**Highlights**

- Four Best Paper Awards: at IEEE ICC International Conference on Communications Communication Theory Symposium 2015, at WiOpt International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks 2023, at ACM ICN Conference on Information-Centric Networking 2017, and at IEEE ICUFN International Conference on Ubiquitous and Future Networks 2012.

- Best Poster Award, ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), 2023.

- IEEE Communications Society Distinguished Lecturer 2021-2022.

- Humboldt Research Fellowship from Alexander von Humboldt Foundation, 2010, for contributions to cross-layer resource allocation and optimization for wireless networks.

- Army Research Office Young Investigator Program Award, 2003.

- Led and participated in funded research projects worth over $38 million, supported by NSF, DARPA, AFOSR, ARO, DTRA, Cisco, Intel, American Tower, and Raytheon.

- PI for $7.9 million NSF Future Internet Architecture (FIA) grant which launched the Named Data Networking (NDN) project (2010-2014).

- PI for $10 million DARPA Dispersed Computing (DCOMP) Generalized Network Assisted Transport (GNAT) project (2017-2021)

- Lead PI for $1 million NSF CC* SDN-Assisted NDN for Data Intensive Experiments (SANDIE) project (2017-2020), and for $1.025 million NSF CC* NDN for Data Intensive Science Experiments (N-DISE) project (2020-2022) project, which use the NDN architecture and optimized algorithms to significantly improve the performance of the Large Hardon Collider (LHC) global high-energy physics network, the BioGenome and human genome project, and other large-scale data-intensive science and engineering applications.

- Co-PI for the $1.051 million NSF CNS Data-Centric Networks for Distributed Learning project (2021-2025), which utilizes advances in Named Data Networking (NDN) to enable new and improved types of distributed learning algorithms for a vast array of applications, ranging from smart cities to satellite data analysis to augmented reality.

- Co-PI for $6.1 million Platforms for Advanced Wireless Research (PAWR) Project Office, which collaborates with NSF and industry partners to accelerate fundamental research on wireless communication and networking technologies by establishing and overseeing multiple city-scale testing platforms across the U.S. (2017-2022)

- Co-PI on two NSF Critical Resilient Interdependent Infrastructure Systems and Processes (CRISP) Type 2 projects, each worth $2.5 million (2016-2020, 2017-2021).

- Inaugural Area Editor in Networking and Computation for IEEE Transactions on Information Theory (2021-present).

- Associate Editor for IEEE/ACM Transactions on Networking (2017-2019), for IEEE Transactions on Mobile Computing (2012-2015), and for IEEE Transactions on Network Science and Engineering (2014-present).

- Guest Editor-in-Chief for Special Issue on Wireless Networks, Internet Mathematics, 2012.

- Guest Editor for IEEE Journal on Selected Areas in Communications - Special Series on Smart Grid Communications, 2012 - 2014.

- TPC Co-Chair, ACM MobiHoc International Symposium on Mobile Ad Hoc Networking and Computing, 2021.

- General Chair, ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, Boston, MA, 2020.

- General Co-Chair, ACM Conference on Information-Centric Networking (ICN), Boston, MA, 2018.

- Steering Committee Member, IEEE SmartGridComm International Conference on Smart Grid Communications, 2011-2014.

- Treasurer of Board of Governors, IEEE Information Theory Society, 2021-present.

- Secretary of Board of Governors, IEEE Information Theory Society, 2012-2015.

- Chair of U.S. National Academies Panel on Review of the In-house Laboratory Independent Research in Network Sciences at the Army's Research, Development, and Engineering Centers (RDECs), December 2018.

- Member of U.S. National Academies Army Research Program Review and Analysis Committee, January-October 2019.

- Member of U.S. National Academies Panel on Review of the Information Technology Laboratory at the National Institute of Standards and Technology (NIST), June 2018.

- Panelist for Brooklyn 5G Summit, "Edge Cloud Computing, Private Networks and Slicing" session (April 2019), and "Future X Network Architecture (Cloud Technology)" session (April 2018).

- External Committee Member, Drexel University Department of Electrical and Computer Engineering Program Alignment and Review, April 2017.
- Faculty Fellow, Internet Society Project, Yale Law School.
- Founder and President of Mirlo Systems Inc., which develops and commercializes advanced edge computing and content delivery network technology, 2021-present
- Consultant for Verizon Wireless on 5G wireless technology, cloud radio access networks, mobile edge computing and fog computing, 2017-2019.

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| **Professional Experience** | **Department of Electrical and Computer Engineering** | |
| | **Northeastern University** | Boston, MA |
| | Professor. | July 2015 - present |
| | Associate Professor. | July 2011 - June 2015 |
| | (Courtesy Appointment in Khoury School of Computer Sciences) | |

**Department of Electrical Engineering**
**Yale University** — New Haven, CT
Associate Professor. — July 2005 - June 2011
Assistant Professor. — July 2001 - June 2005
(Courtesy Appointments in Computer Science and Statistics)

**Department of Electrical and Computer Engineering**
**NYU Tandon School of Engineering** — New York, NY
Visiting Professor. — October-November 2017

**Department of Electrical Engineering**
**Stanford University** — Stanford, CA
Visiting Professor. — July-August 2017

**Institute for Theoretical Information Technology**
**Technical University of Munich** — Munich, Germany
Alexander von Humboldt Fellow and Visiting Professor — May-August 2012, 2013, 2015

**Yale Law School**
**Yale University** — New Haven, CT
Faculty Fellow, Internet Society Project. — March 2010 - present

**Department of Electrical Engineering and Computer Sciences**
**University of California at Berkeley** — Berkeley, CA
Visiting Professor. — December 2004

**Department of Electrical Engineering**
**Princeton University** — Princeton, NJ
Visiting Professor. — November 2004

**Department of Electrical Engineering and Computer Science**
**Massachusetts Institute of Technology** — Cambridge, MA
Visiting Professor. — September - October 2004

**Information Theory Laboratory**
**Swiss Federal Institute of Technology, Lausanne** — Lausanne, Switzerland
Invited Professor. — Summer 2004

**Mathematical Sciences Research Center**
**Bell Laboratories, Lucent Technologies** — Murray Hill, NJ
Member of Technical Staff. — Summers 1998 and 1999

**Signal Processing Research Department**
**AT&T Bell Laboratories**                                Murray Hill, NJ
Member of Technical Staff.                                Summers 1993 and 1994

**Space and Communications Group**
**Hughes Electronics Corporation**                        El Segundo, CA
Research Staff and Systems Engineer.                      Summers 1991 and 1992

**Awards &**
**Honors**

- Best Paper Award, International Symposium on Modeling and Optimization in Mobile, Ad hoc, and Wireless Networks (WiOpt), Singapore, August 2023, for the paper "Joint Optimization of Storage and Transmission via Coding Traffic Flows for Content Distribution."

- Best Paper Award, ACM Conference on Information-Centric Networking (ICN), Berlin, Germany, September 2017, for the paper "Jointly Optimal Routing and Caching for Arbitrary Network Topologies."

- Best Paper Award, IEEE International Conference on Communications (ICC) Communication Theory Symposium, London, UK, June 2015, for the paper "Optimization-Based Linear Network Coding for General Connections of Continuous Flows."

- Best Paper Award, IEEE International Conference on Ubiquitous and Future Networks (ICUFN), Phuket, Thailand, July 2012, for the paper "Correlated and Cascading Node Failures in Random Geometric Networks: A Percolation View."

- Best Poster Award, ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), May 2023, for the poster "Fair Training of Multiple Federated Learning Models on Resource Constrained Network Devices."

- IEEE Communications Society Distinguished Lecturer 2021-2022.

- Humboldt Research Fellowship from Alexander von Humboldt Foundation, 2010, for contributions to cross-layer resource allocation and optimization for wireless networks, with significant impact on 4G Long Term Evolution (LTE) wireless cellular standard.

- Army Research Office Young Investigator Program Award, 2003.

- College of Engineering Faculty Research Team Award, Northeastern University, 2017.

- Elected Senior Member of the IEEE, 2012.

- Winston Churchill Scholarship for overseas study at University of Cambridge (1 of 10 selected in the United States), 1994.

- Office of Naval Research Graduate Fellowship (1 of 20 selected in the United States), 1994

- National Science Foundation Graduate Research Fellowship, 1994.

- Graduation from Stanford University *with Distinction*, 1994.

- Frederick Emmons Terman Engineering Scholastic Award, Stanford University (top 5% of School of Engineering graduates), 1994.

- Phi Beta Kappa Society Membership, 1994.

- Barry M. Goldwater Scholarship from United States Congress (1 of 300 selected in the United States), 1993.

- Tau Beta Pi Association Membership, 1993.

- President's Award for Academic Excellence (top 3% of freshmen class), Stanford University, 1991.

- Represented Texas at the National Speech and Debate Association National Tournament in International Extemporaneous Speaking, 1989, 1990.

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| **Patents** | 1. Kashayar Kamran and Edmund Yeh. "Network and Method for Servicing a Computation Request." *US Patent 11,677,625*, June 13, 2023. |
| | 2. Milad Mahdian, Armin Moharrer, Efstratios Ioannidis and Edmund Yeh. "Distributing Cached Content in a Network." *US Patent 11,349,948*, May 31, 2022. |
| | 3. Milad Mahdian and Edmund Yeh, "Network and Method for Delivering Content While Minimizing Congestion Costs by Jointly Optimizing Forwarding and Caching Strategies." *US Patent 11,336,473*, May 17, 2022. |
| | 4. Stratis Ioannidis and Edmund Yeh, "Joint Routing and Caching Method for Content Delivery with Optimality Guarantees for Arbitrary Networks." *US Patent 11,258,879*, February 22, 2022. |
| | 5. Edmund Yeh, Tracey Ho, Ying Cui, Michael Burd, Ran Liu, Derek Leong. "System and Method for Joint Dynamic Forwarding and Caching in Content Distribution Networks." *US Patent 10,523,777*, December 31, 2019. |
| | 6. Anand Bedekar, Sem Borst, Kavita Ramanan, Philip Whiting, and Edmund Yeh. "Down-Link Transmission Inter-Cell Scheduling in CDMA Data Networks," *US Patent No. 6,763,009*, July 13, 2004. |
| | 7. Anand Bedekar, Sem Borst, Kavita Ramanan, Philip Whiting, and Edmund Yeh. "Down-Link Transmission Scheduling in CDMA Data Networks," *US Patent No. 6,603,753*, August 5, 2003. |
| | 8. Jelena Kovacevic, Robert J. Safranek, and Edmund M. Yeh. "Method and apparatus for converting an interlaced video frame sequence into a progressively scanned sequence," *US Patent No. 5,661,525*, August 26, 1997. |

**Funded Grants (External)**

Total dollar value: $38,909,671; own share: $6,709,175

1. National Science Foundation, "Collaborative Research: NeTS: Small: TARGET: Latency-aware Edge Computing for VR/AR in 5G and Beyond Networks." 05/15/2024-04/30/2027. PI (33.3%). Collaborators: Prof. Dimitrios Koutsonikolas, Northeastern University, Prof. Mai Vu, Tufts University. Total grant amount: $600,000.

2. Northeastern University Center for Research Innovation Spark Fund, "Designing an advanced content delivery platform for adaptive bitrate video streaming." 1/1/2023-12/31/2023. PI (100%). Total grant amount: $50,000.

3. National Science Foundation, "Collaborative Research: CNS Core: Medium: Data-Centric Networks for Distributed Learning." 10/01/2021-09/30/2025. Co-PI (26.2%). (Carnegie-Mellon PI: Carlee Joe-Wong, Northeastern PI: Stratis Ioannidis). Total grant amount: $1,051,532.

4. National Science Foundation, "SII Planning: NASCE: A National Spectrum Center to Conquer, Program, and Protect the Wireless Spectrum." 8/01/2020-7/31/2021. Co-PI (14.3%). (PI: Tommaso Melodia, Co-PIs: Kaushik Chowdhury, Stefano Basagni, Guevara Noubir, Josep Jornet, Manu Gosain, Northeastern University). Total grant amount: $175,000.

5. National Science Foundation, "CC* Integration-Large: N-DISE: NDN for Data Intensive Science Experiments," 10/1/2020-3/31/2024. PI (30%). Collaborators: Prof. Harvey Newman, California Institute of Technology, Prof. Lixia Zhang and Prof. Jason Cong, UCLA, and Prof. Susmit Shannigrahi, Tennessee Tech. Total grant amount: $1,025,000.

6. American Tower Corp., "Wireless Edge Computing: Optimization, Economics, and Applications." 10/1/2019-9/30/2020. PI (100%). Total grant amount: $25,000.

7. Intel Corp., "Joint Optimization of Routing and Caching in Wireless Heterogeneous Networks ." 1/1/2018-12/31/2020. PI (50%). Collaborator: Prof. Andrea Goldsmith, Stanford University. Total grant amount: $369,000.

8. Cisco Systems Inc., "Addressing Mobility/Caching and Security/Privacy Challenges in Wireless/Mobile Edge Content-Centric Networks." 1/1/2018-12/31/2020. PI (50%). Collaborator: Prof. Gene Tsudik, University of California at Irvine. Total grant amount: $180,000.

9. National Science Foundation, "CRISP Type 2: Interdependent Network-based Quantification of Infrastructure Resilience (INQUIRE)." 9/01/2017-8/31/2021. Co-PI (7.92%) (PI: Albert-Laszlo Barabasi, Co-PIs: Kathryn Coronges, Stephen Flynn, Auroop Ganguly, Northeastern University). Total grant amount: $2,554,989.

10. National Science Foundation, "NeTS: Small: Caching Networks with Optimality Guarantees," 9/1/2017-8/31/2021. Co-PI (50%). (PI: Prof. Stratis Ioannidis, Northeastern University). Total grant amount: $499,999.

11. National Science Foundation, "CC* Integration: SANDIE: SDN-Assisted NDN for Data Intensive Experiments," 7/1/2017-6/30/2020. PI (32.24%). Collaborators: Prof. Harvey Newman, California Institute of Technology, Prof. Christos Papadopoulos, Colorado State University. Total grant amount: $1,000,000.

12. Defense Advanced Research Projects Agency (DARPA), "Generalized Network Assisted Transport (GNAT)," 4/11/2017- 4/10/2021. PI (10%). Collaborators: Steve Zabele and Gregory Lauer, Raytheon BBN Technologies, Prof. Muriel Medard, MIT. Total grant amount: $9,977,081.

13. National Science Foundation, "PPO: Platforms for Advanced Wireless Research (PAWR) Project Office." 3/1/2017-2/28/2022. Co-PI (0.35%). (PI: Prof. Tommaso Melodia, Co-PIs: Kaushik Chowdhury, Stefano Basagni, Guevara Noubir, Northeastern University). Total grant amount: $6,116,329.

14. National Science Foundation, "CRISP Type 2: Identification and Control of Uncertain, Highly Interdependent Processes Involving Humans with Applications to Resilient Emergency Health Response," 08/01/2016-07/31/2020. Co-PI (11%) (PI: Prof. Mario Sznaier, Co-PIs: Prof. Octavia Camps, Prof. Lisa Feldman Barrett, Prof. Stacy Marsella, Prof. Jacqueline Griffin, Prof. Ali Abur, Prof. Jerome Hajjar, Peter Boynton, Northeastern University). Total grant amount: $2,498,810.

15. Defense Threat Reduction Agency, "Modeling, Analysis and Control for Robust Interdependent Networks," 09/02/2014-12/31/2019. PI (31.14%). Collaborators: Prof. Ness Shroff (Ohio State University), Prof. Eytan Modiano (MIT). Responsible for the development of analytical models for robustness of interdependent networks, and for the analysis of interdependent network response to attacks. Total grant amount: $1,750,000.

16. National Science Foundation, "I-Corps: Optimized Content Delivery Networks," 10/01/2016-03/31/2017. PI (100%). Total grant amount: $50,000.

17. The Raytheon Company, "Large-Scale Attacks in Multi-Level Interdependent Networks: Emerging Threats, Mitigation, and Recovery," 09/09/2014-09/08/2015. Co-PI (20%) (PI: Prof. Guevara Noubir, Co-PIs: Prof. Alan Mislove, Prof. David Choffnes, Prof. Ravi Sundaram, Northeastern University). Responsible for developing analytical models for multi-level interdependent networks and their response to large-scale attacks. Total grant amount: $100,000.

18. Cisco Systems Inc., "Scalable, Distributed, and Dynamic Forwarding and Caching Algorithms for Named Data Networks," 08/12/2014-02/15/2016. PI (100%). Total grant amount: $99,711.

19. National Science Foundation, "NeTS: Small: Collaborative Research: Dynamic Forwarding and Caching for Data-Centric Networks: Theory and Algorithms," 10/01/2014-09/30/2017. PI (50%). Collaborator: Prof. Tracey Ho, Prof. John Doyle, California Institute of Technology. Responsible for investigating the scalability of forwarding and caching algorithms, their joint optimization with congestion control algorithms,

and their application in mobile wireless networks and sensor networks. Total grant amount: $500,000.

20. Cisco Systems Inc., "Joint Forwarding and Caching Algorithms for Named Data Networking," 01/01/2013-07/01/2014. PI (100%). Total grant amount: $96,841.

21. National Science Foundation Future Internet Architecture (FIA) Program, "FIA: Collaborative Research: Named Data Networking," 09/01/2010-08/31/2014. PI (4.76%). Part of ten-institution research team. Responsible for theoretical and algorithmic research for Named Data Networking future internet architecture project. Total grant amount: $7,900,000.

22. National Science Foundation NeTS, "NeTS: Small: Collaborative Research: Large Scale Networks and Information Flow: From Emergent Behavior to Algorithm Design," 08/01/2009-07/31/2012. PI (50%). Collaborator: Prof. Massimo Franceschetti, University of California at San Diego. Responsible for investigating information dissemination, energy management, and topology control in large-scale wireless networks. Total grant amount: $450,000.

23. Air Force Office of Scientific Research Complex Networks Program, "Connectivity and Resilience in Large-Scale Mobile Wireless Networks," 03/01/2009-02/28/2012. PI (100%). Total grant amount: $336,235.

24. National Science Foundation Cyber Trust, "CT-ISG: Percolation Processes and the Design of Highly Resilient Wireless Networks," 08/01/2007-12/31/2011. PI (100%). Total grant amount: $256,000.

25. Army Research Office, "Percolation Processes and the Design of Large-Scale Wireless Networks," 08/01/2007-07/30/2011. PI (100%). Total grant amount: $300,000.

26. National Science Foundation NeTS-NBD, "NeTS-NBD: Distributed Algorithms for Optimal Control of Mobile Wireless Networks," 09/01/2006-08/31/2010. PI (100%). Total grant amount: $326,000.

27. Air Force Office of Scientific Research, "Theory, Design, and Algorithms for Optimal Control of Wireless Networks," 03/01/2006-11/30/2008. PI (100%). Total grant amount: $251,000.

28. Army Research Office, "Analysis and Design of Highly Resilient Wireless and Sensor Networks," 09/01/2006-08/31/2007. PI (100%). Total grant amount: $55,607.

29. Army Research Office, "Throughput and Delay Optimal Control of Wireless Networks," 07/01/2005-06/30/2006. PI (100%). Total grant amount: $30,000.

30. National Science Foundation Information Technology Research (ITR), "Collaborative Research: ITR: Fundamental Performance Trade-offs for Ad Hoc Networks," 07/15/2003-06/30/2007. PI (88.93%). Collaborator: Prof. Randall Berry, Northwestern University. Responsible for developing throughput and delay optimal control algorithms for multi-hop wireless networks. Total grant amount: $135,537.

31. Army Research Office Young Investigator Award, "Throughput and Delay Optimization in Wireless Networks: A Fundamental Approach," 07/15/2003-07/14/2006. PI (100%). Total grant amount: $150,000,

**Teaching Activities**

**Northeastern University**

- EECE 5644: *Introduction to Machine Learning and Pattern Recognition.* Course covering foundational models and algorithms as well as applications for machine learning, designed for both undergraduate and graduate students. Taught Summer 2023, 2024.

- EECE7323: *Numerical Optimization Methods.* Course presenting the fundamental theory and algorithms for nonlinear and convex optimization for graduate students. Taught Fall 2016, Spring 2020, 2021, 2022, 2023, 2024.

- EECE7366: *Analysis and Design of Data Networks.* Course focusing on analysis and system design of communication networks for graduate students. Taught Fall 2012, Fall 2015, Spring 2019, Fall 2022, 2023.

- EECE7337: *Information Theory.*
  Course which presents information theory as the intellectual foundation for digital communication and networking. Taught Fall 2011, Fall 2013.

- EECE3468: *Noise and Stochastic Processes.*
  Core course on probability and stochastic processes for Electrical and Computer Engineering undergraduates. Taught Spring 2012-2018.

### Yale University

- ENAS 530: *Nonlinear and Convex Optimization.*
  Course presenting the fundamental theory and algorithms for nonlinear and convex optimization for graduate students. Taught Fall 2005.

- ENAS 964: *Communication Networks.*
  Course focusing on analysis and system design of communication networks for advanced undergraduate and graduate students. Taught Spring 2004 and Spring 2010.

- EENG 454/STAT 364/AMTH 364: *Information Theory.*
  Course which presents information theory as the intellectual foundation for digital communication and networking. Taught Spring 2003 and Spring 2005.

- EENG 444/ENAS 944: *Digital Communication Systems.*
  Course which presents the fundamentals of digital communication for advanced undergraduate and graduate students. Taught Spring 2002, Fall 2002, Fall 2003, Fall 2006, Fall 2008, Fall 2009 and Fall 2010.

- ENAS 496: *Probability and Stochastic Processes.*
  Course focusing on stochastic processes for engineering applications geared toward advanced undergraduate and graduate students. Taught Spring 2006, Spring 2007, Spring 2009, Spring 2011.

- EENG 201: *Semiconductors, Computers, and Communications.*
  Course which introduces the core areas in Electrical Engineering to beginning undergraduates. Taught Fall 2003.

### Technical University of Munich

- *Advanced Topics in Signal Processing: Analysis and Design of Data Networks.*
  Master of Science in Communications Engineering (MSCE) Program. Course focusing on analysis and system design of communication networks for graduate students. Taught as Guest Professor, Summer 2013.

### Massachusetts Institute of Technology

- 6.451: *Principles of Communications II.*
  Served as assistant to Professor G. David Forney for advanced course on digital communication and coding for graduate students. Taught Spring 2001.

**Advising**

- **Postdoctoral Researchers**
  - Qian Ma, June 2018 - December 2019.
    Associate Professor, Sun Yat-sen University.

- Derya Malak, September 2017 - August 2019.
  Assistant Professor, EURECOM (formerly Assistant Professor at Rensselaer Polytechnic Institute)
- Ying Cui, June 2012 - December 2014.
  Associate Professor, Hong Kong University of Science and Technology (Guangzhou)
- Elona Erez, July 2008 - June 2011.
  Senior Algorithm Researcher, GSI Technology.

- **PhD Students (Graduated)**

  - Jinkun Zhang, Northeastern University, 2024.
    Thesis: *Low-Latency Forwarding, Caching and Computation Placement in Data-Centric Networks.*
  - Yuezhou Liu, Ph.D., Northeastern University, 2023.
    Thesis: *Network Optimization for Distributed Machine Learning over Networks.*
  - Khashayar Kamran, Ph.D., Northeastern University, 2020.
    Thesis: *Optimization of Data-intensive Computing Networks.*
    Software Engineer, Pinterest.
  - Ran Liu, Ph.D., Northeastern University, 2020.
    Thesis: *Optimization of Proactive Services with Uncertain Predictions.*
    Software Engineer, Google.
  - Jianan Zhang, Ph.D. MIT, 2018.
    Thesis: *Modeling, Analysis, and Control of Interdependent Networks.*
    Jointly advised with Eytan Modiano.
    Assistant Professor, Peking University.
  - Milad Mahdian, Ph.D. Northeastern University, 2017.
    Thesis: *Optimization of Content-centric Networks.*
    Software Engineer, Google.
  - Yun Xu, Ph.D. Yale University, 2013.
    Thesis: *Coding and Quantization in Communications and Microeconomics.*
    Partner, Hao Capital Management.
  - Zhenning Kong, Ph.D. Yale University, 2009.
    Thesis: *Percolation Processes and Performance Analysis of Large-Scale Wireless Networks.*
    Winner, Best Paper Award, IEEE International Conference on Ubiquitous and Future Networks (ICUFN), 2012.
    Deputy General Manager and Founding Partner, GF Nest Investment.
  - Yufang Xi, Ph.D. Yale University, 2008.
    Thesis: *Distributed Resource Allocation in Communication Networks.*
    Executive Director, Mizuho Financial Group.
  - Jian Cao, Ph.D. Yale University, 2008.
    Thesis: *Distributed Multiple-access and the Impact of Feedback on Communication Systems.*
    Director, RBC Capital Markets.

- **PhD Students (Current)**

  - Yuanhao Wu, Northeastern University, fifth year.
  - Faruk Volkan Mutlu, Northeastern University, fifth year.

- **Master's Students (Graduated)**

  - Songqi Geng, M.S. Northeastern University, 2023.
    Thesis: *Pricing, Rate Control and Content Placement for Caching Networks.*
  - Yuezhou Liu, M.S. Northeastern University, 2021.
    Thesis: *Optimizations in Caching Networks with Arbitrary Topology.*

- Khashayar Kamran, M.S. Northeastern University, 2018.
  Thesis: *Robustness of Geometric Networks.*
- Ran Liu, M.S. Northeastern University, 2016.
  Thesis: *Joint Caching, Forwarding and Congestion Control in Named Data Networks: Implementation and Experimental Analysis.*
- Milad Mahdian, M.S. Northeastern University, 2014.
  Thesis: *Asymptotic Behavior of Wireless Networks with Named Data Networking Architecture.*
- Melis Yetkinler, M.S. Northeastern University, 2013
  Research on forwarding and caching in content-centric networks.
- Hongda Xiao, M.S. Yale University, 2011
  Research on cascading link failures in large-scale networks, and impact of imperfect information in network games.
- Ran Lin, M.S. Yale University, 2009
  Research on successive decoding in communication networks.

- **Master's Students (Current)**

  - Chaman Singh, M.S. Northeastern University, 2024.

- **Undergraduate Students**

  - Alina Rossi-Conaway, Northeastern University, 2018.
    Numerical experiments on adaptive caching algorithms.
  - Sean Kerr, Northeastern University, 2015.
    Numerical experiments on content-centric networking.
  - Eric Wang, B.S. California Institute of Technology, 2014.
    Senior thesis: *Virtual Backpressure Routing Algorithm.*
  - Kyle Dumont, B.S. Northeastern University, 2013.
    Numerical experiments on content-centric networking.
  - Patrick Cunniff, B.S. Northeastern University, 2013.
    Numerical experiments on content-centric networking.
  - Yuhan Fang, B.S. Yale University, 2011.
    Research on the use of entropy in investment theory.
  - Marjan Firouzgar, B.S. Yale University, 2009.
    Senior thesis: *Directed Percolation in Wireless Communication Networks.*
  - Jason Kaufman, B.S. Yale University, 2009.
    Research on directed percolation in large-scale networks.
  - Anjan Sundaram, B.S. Yale University, 2004.
    Directed reading in wireless communication.
  - Aryesh Mukherjee, B.S. Yale University, 2002.
    Directed reading in information theory.

- **PhD Thesis Committee Member (Northeastern University)**

  - Yuanyuan Li, 2022.
  - Shan Lu, 2018.
  - Matt Higger, 2017.
  - Yu Han, 2016.
  - Bingnan Jiang, 2015.
  - Osso Vahabzadeh, 2013.

- **PhD Thesis Committee Member (Yale University)**

  - Zhiling Tian, 2009.
  - Haiyong Xie, 2008 (Computer Science).

- Jia Fang, 2008.
- Jian Ni, 2008.
- Ming Cao, 2007.
- Feng Shi, 2007.
- Ping Yan, 2007.
- Xiaoning Qian, 2005.
- Jie Lin, 2004.

- **PhD Thesis Committee Member (other universities)**

  - Tareq Si Salem, Universite Cote d'Azur, 2022.
  - Alireza Alizadeh, Tufts University, 2021.
  - Jianan Zhang, MIT, 2018.
  - Balakrishnan Narayanaswamy, Carnegie Mellon University, 2011.
  - Vojislav Gajic, Ecole Polytechnique Federale de Lausanne, Switzerland, 2010.
  - Stephane Musy, Ecole Polytechnique Federale de Lausanne, Switzerland, 2007.

**Service and Professional Development**

- **Service to the Institution**

  - **Department Service**
    - Member, Merit Review Committee, Department of Electrical and Computer Engineering, Northeastern University, 2017-2019, 2022-present.
    - Member, Faculty Search Committee, Department of Electrical and Computer Engineering, Northeastern University, 2022-2023.
    - Member, Tenure and Promotion Committee, Department of Electrical and Computer Engineering, Northeastern University, 2016-2017.
    - Member, Undergraduate Studies Committee, Department of Electrical and Computer Engineering, Northeastern University, 2014-2017.
    - Member, Graduate Affairs Committee, Department of Electrical and Computer Engineering, Northeastern University, 2011-2015.
    - Member, Curriculum Committee, Department of Electrical and Computer Engineering, Northeastern University, 2015-2016.
    - Member, Workload Working Group, Department of Electrical and Computer Engineering, Northeastern University, 2014-2016.
    - Member, ECE Graduate Recruiting Task Force, Department of Electrical and Computer Engineering, Northeastern University, 2014-2015.
    - Member, Faculty Search Committee, Department of Electrical and Computer Engineering, Northeastern University, 2016-2017.
    - Member, Faculty Search Committee on Computation, Systems and Architecture, Department of Electrical and Computer Engineering, Northeastern University, 2014-2015.
    - Member, Faculty Search Committee on Power Systems, Department of Electrical and Computer Engineering, Northeastern University, 2012.
    - Chair, Distinguished Speaker Series Committee, Department of Electrical and Computer Engineering, Northeastern University, 2012-2015
    - Co-organizer, Communications and Digital Signal Processing (CDSP) Research Workshop, Northeastern University, 2012.
    - Member, Curriculum Development Committee, Department of Electrical Engineering, Yale University, 2002-2003, 2005-2009.
    - Founder and organizer, Yale University Communications and Networking Seminar Series, 2002-2011.

- Member, Faculty Recruiting Committee, Department of Electrical Engineering, Yale University, 2002.
- Member, Graduate Admissions Committee, Department of Electrical Engineering, Yale University, 2002-2004, 2007-2009.
- Chairman, Website Development Committee, Department of Electrical Engineering, Yale University, 2008-2009.
- **College Service**
  - Member, College of Engineering Research Affairs Committee, Northeastern University, 2019-present.
  - College of Engineering Coordinator for Network Science PhD Program, Northeastern University, 2013-2017.
  - Member, Faculty Search Committee on Civil Engineering System Informatics, Northeastern University, 2015-2016.
- **University Service**
  - Member, Northeastern University Sustainability and Resilience Advisory Team, 2018-2020.
  - Member, Faculty Search Committee on Network Science, Northeastern University, 2012.
  - Member, Faculty Search Committee on Cyber-physical Security and Cyber Security, Northeastern University, 2012.
  - Resident Fellow, Trumbull College, Yale University, 2002-2011.
  - Faculty advisor and interviewer for Rhodes, Marshall, Gates, and Churchill Scholarship applicants, Northeastern University, 2023-present, Yale University, 2002-2011.
  - Member, Course of Study Committee, Yale University, 2005-2006.
  - Chairman, Winston Churchill Foundation Scholarship Committee, Yale University, 2006-2007.
  - Member, Winston Churchill Foundation Scholarship Committee, Yale University, 2008-2009.
  - Coordinator, Mellon Senior Forum, Trumbull College, Yale University, 2006, 2008-2009.
  - Academic advisor to first- and second-year undergraduates, Yale University, 2002-2011.

- **Service to the Discipline/Profession**
  - **Review Committee**
    - **Member, National Academies Army Research Program Review and Analysis Committee**, January-October 2019.
    - **Chair, National Academies Panel** on Review of the In-house Laboratory Independent Research in Network Sciences at the Army's Research, Development, and Engineering Centers (RDECs), December 2018.
    - **Member, National Academies Panel** on Review of the Information Technology Laboratory at the National Institute of Standards and Technology (NIST), June 2018.
    - **External Committee Member**, Drexel University Department of Electrical and Computer Engineering Program Alignment and Review, April 2017.
  - **Society**
    - **Treasurer of Board of Governors, IEEE Information Theory Society**, 2021 - present.
    - **Secretary of Board of Governors, IEEE Information Theory Society**, 2012 - 2015.

- Member, Committee on New Directions, IEEE Information Theory Society, 2013 - 2015.
- IEEE Smart Grid Activities Liaison Officer, IEEE Information Theory Society, 2011-2015.

- **Journal**
  - Inaugural **Area Editor** in Networking and Computation, *IEEE Transactions on Information Theory*, 2021-present.
  - **Associate Editor**, *IEEE/ACM Transactions on Networking*, 2017-2020.
  - **Associate Editor**, *IEEE Transactions on Network Science and Engineering*, 2014-2017. .
  - **Associate Editor**, *IEEE Transactions on Mobile Computing*, 2012-2015.
  - **Guest Editor**, *IEEE Journal on Selected Areas in Communications - Special Series on Smart Grid Communications*, 2012 - 2014.
  - **Guest Editor-in-Chief**, Special Issue on Wireless Networks, *Internet Mathematics*, 2012.

- **Conference**
  - **Technical Program Committee Co-chair**, ACM MobiHoc International Symposium on Mobile Ad Hoc Networking and Computing, 2021.
  - **General Chair**, ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems, Boston, MA, 2020.
  - **General Co-Chair**, ACM Conference on Information-Centric Networking (ICN), Boston, MA, 2018.
  - **Steering Committee Member**, IEEE International Conference on Smart Grid Communications (SmartGridComm), 2011-2014.
  - **General Co-chair**, DIMACS (Center for Discrete Mathematics and Theoretical Computer Science) Workshop on Connectivity and Resilience for Large-Scale Networks, Rutgers University, Piscataway, NJ, Spring 2012.
  - **General Co-chair**, Workshop on Spatial Stochastic Models for Wireless Networks (SpaSWiN), 2010 (Avignon, France).
  - **Technical Program Committee Member**:
    * ACM Conference on Information-Centric Networking (ICN), 2021.
    * ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2019-2020.
    * *IEEE JSAC Special issue on Caching for Communication Systems and Networks*, 2018.
    * ACM Conference on Information-Centric Networking (ICN), 2017.
    * Content Caching and Delivery in Wireless Networks Workshop (CCDWN), 2017.
    * International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2016.
    * IEEE Information Theory Workshop, 2015.
    * IEEE International Conference on Smart Grid Communications (SmartGridComm), 2012.
    * ACM SIGCOMM Workshop on Information Centric Networking, 2012.
    * ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc), 2012.
    * MobiHoc Workshop on Emerging Name-Oriented Mobile Networking Design: Architecture, Algorithms, Applications, 2012.
    * IEEE Conference on Computer Communications (INFOCOM), 2012.

* IEEE INFOCOM Workshop on Emerging Design Choices in Named-Oriented Networking (NOMEN), 2012.
* IEEE International Conference on Communications (ICC) Communication Theory Symposium, 2012.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2012.
* IEEE International Conference on Smart Grid Communications (SmartGridComm), 2011.
* IEEE Smart Grid World Forum, 2011.
* ACM SIGCOMM Workshop on Information Centric Networking, 2011.
* IEEE Conference on Computer Communications (INFOCOM), 2011.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2011.
* IEEE International Workshop on Network Science for Communication Networks (NetSciCom), 2011.
* IEEE International Workshop on Quality of Service (IWQoS), 2011.
* IEEE Conference on Computer Communications (INFOCOM), 2010.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2010.
* ACM SIGCOMM Workshop on the Economics of Networked Systems (NetEcon), 2010.
* IEEE Conference on Computer Communications (INFOCOM), 2009.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2009.
* Workshop on Spatial Stochastic Models for Wireless Networks (SpaSWiN), 2009.
* IEEE International Workshop on Wireless Network Coding (WiNC), 2009.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2008.
* International Wireless Internet Conference (WICON), 2008.
* IEEE Conference on Computer Communications (INFOCOM), 2007.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2007.
* Workshop on Resource Allocation in Wireless Networks (RAWNET), 2007.
* International Workshop on Wireless Networks: Communication, Cooperation and Competition (WNC3), 2007.
* IEEE Conference on Computer Communications (INFOCOM), 2006.
* International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), 2006
* IEEE International Workshop on Quality of Service (IWQoS), 2006.
* IEEE Conference on Computer Communications (INFOCOM), 2005.
* IEEE Global Telecommunications Conference (GLOBECOM), 2004.
- **Session Organizer**:
* "Caching in Wireless Networks," Asilomar Conference on Signals, Systems, and Computers, 2015, Pacific Grove, CA.
* "Power Networks," Asilomar Conference on Signals, Systems, and Computers, 2013, Pacific Grove, CA.
* "Resource Allocation in Wireless Networks," Conference on Decision and Control (CDC), 2009.

* "Performance of Large-scale Wireless Networks," Wireless Internet Conference (WICON), 2008, Maui, Hawaii.
* "Wireless Resource Allocation," Conference on Information Sciences and Systems (CISS), 2004, Princeton, NJ.

- **Review**
  - **Panelist**:
    * National Science Foundation NeTS Panel, 2019.
    * National Science Foundation NeTS CAREER Panel, 2017.
    * National Science Foundation Trustworthy Computing CAREER Panel, 2008.
    * National Science Foundation Cyber Trust ISG Panel on Network Security, 2008.
    * National Science Foundation Formal and Mathematical Foundations (FMF) Cluster Review Panel, 2004.
  - **Reviewer**: *IEEE Transactions on Information Theory*, *IEEE/ACM Transactions on Networking*, *IEEE Transactions on Wireless Communications*, *ACM Transactions on Sensor Networks*, *IEEE Transactions on Communications*, *IEEE Communications Letters*, *IEEE Signal Processing Magazine*, *IEEE Signal Processing Letters*, IEEE International Symposium on Information Theory (ISIT), IEEE Conference on Computer Communications (INFOCOM), IEEE Global Telecommunications Conference (GLOBECOM), IEEE International Conference on Communications (ICC), IEEE Wireless Communications and Networking Conference (WCNC), International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Wireless Internet Conference (WICON), Workshop on Spatial Stochastic Models for Wireless Networks (SpaSWiN), Workshop on Resource Allocation in Wireless Networks (RAWNET), Workshop on Wireless Networks: Communication, Cooperation and Competition (WNC3), IEEE International Workshop on Quality of Service (IWQoS), Army Research Office, Air Force Office of Scientific Research, Qatar National Research Fund, HKUST - MIT Research Alliance Consortium.

- **Service to the Community/Public**
  - Member of national selection committee, Winston Churchill Scholarships, 2002.

- **Professional Development**
  - Faculty Fellow, Yale Law School Information Society Project.
  - Member of IEEE, Tau Beta Pi, Phi Beta Kappa, New York Academy of Sciences.

**Industrial Interactions**

1. Partnership with Raytheon BBN Technologies (and MIT) in winning $10 million DARPA research grant, 2017.
2. Panelist for Brooklyn 5G Summit, New York, 2018, 2019.
3. Research grants from Cisco Systems, 2013, 2014, 2018.
4. Research grant from Intel Corp., 2018.
5. Research grant from American Tower Corp., 2019.
6. Research grant from The Raytheon Company, 2014.
7. Founder and President of Mirlo Systems Inc., which develops and commercializes advanced edge computing and content delivery network technology, 2021-present
8. Consultant with Verizon Wireless on the topics of 5G wireless technology, cloud radio access networks, mobile edge computing and fog computing, 2017-.
9. Interactions with industrial members of the Named Data Networking (NDN) consortium, including Cisco, Intel, Panasonic, ViaSat, Fujitsu, and Juniper Networks.

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|---|---|
| **Books and Monographs** | 1. Edmund M. Yeh, "Fundamental Performance Limits in Cross-layer Wireless Optimization: Throughput, Delay, and Energy." *Foundations and Trends in Communications and Information Theory*, Vol. 9, No. 1, pp. 1-112, December 2012. |
| **Book Chapters** | 2. Dirk Bergemann, Ji Shen, Yun Xu and Edmund M. Yeh, "Mechanism Design with Limited Information: the Case of Nonlinear Pricing," *Game Theory for Networks: Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*, Vol. 0075, May 2012, pp. 1-10. Co-authored with graduate student. |
| **Refereed Journal Publications (Published/ Accepted)** | 3. Derya Malak, Volkan Mutlu, Jinkun Zhang and Edmund Yeh, "Joint Power Control and Caching for Transmission Delay Minimization in Wireless HetNets." Accepted by *IEEE/ACM Transactions on Networking*. To appear. |

4. Yuanyuan Li, Yuezhou Liu, Lili Su, Edmund Yeh, Stratis Ioannidis, "Experimental Design Networks: A Paradigm for Serving Heterogeneous Learners under Networking Constraints." *IEEE/ACM Transactions on Networking.* Vol. 31, No. 5, October 2023, pp. 2236-2250.

5. Bahman Abolhassani, John Tadrous, Atilla Eryilmaz, Edmund Yeh, "Fresh Caching of Dynamic Content over the Wireless Edge." *IEEE/ACM Transactions on Networking.* Vol. 30, No. 5, October 2022, pp. 2315-2327.

6. Khashayar Kamran, Edmund Yeh, and Qian Ma, "DECO: Joint Computation, Caching and Forwarding in Data-Centric Computing Networks." *IEEE/ACM Transactions on Networking.* Vol. 30, No. 3, June 2022, pp. 1058-1072. Co-authored with graduate student.

7. Dirk Bergemann, Edmund Yeh, and Jinkun Zhang, "Nonlinear Pricing with Finite Information." *Games and Economic Behavior.* Vol. 130, November 2021, pp. 62-84. Co-authored with graduate student.

8. Qian Ma, Edmund Yeh, and Jianwei Huang, "Selfish Caching Games on Directed Graphs." *IEEE/ACM Transactions on Networking.* Vol. 29, No. 2, April 2021, pp. 709-722.

9. Yuezhou Liu, Yuanyuan Li, Qian Ma, Stratis Ioannidis, Edmund Yeh, "Fair Caching Networks." *ACM SIGMETRICS Performance Evaluation Review.* Vol. 48, No. 3, December 2020, pp. 89-90. Co-authored with graduate student.

10. Milad Mahdian, Armin Moharrer, Stratis Ioannidis, and Edmund Yeh, "Kelly Cache Networks." *IEEE/ACM Transactions on Networking.* Vol. 28, No. 3, June 2020, pp. 1130-1143. Co-authored with graduate student.

11. Jianan Zhang, Edmund Yeh, and Eytan Modiano, "Robustness of Interdependent Random Geometric Networks." *IEEE Transactions on Network Science and Engineering.* Vol. 6, No. 3, July-Sept. 2019, pp. 474-487. Co-authored with graduate student.

12. An Liu, Vincent Lau, Wenchao Ding, and Edmund Yeh, "Mixed-Timescale Online PHY Caching for Dual-Mode MIMO Cooperative Networks." *IEEE Transactions on Wireless Communications.* Vol. 18, No. 5, May 2019, pp. 2722-2736.

13. Derya Malak, Muriel Medard, and Edmund Yeh, "Tiny Codes for Guaranteeable Delay." *IEEE Journal on Selected Areas in Communications.* Vol. 37, No. 4, April 2019, pp. 809-825.

14. Ran Liu, Edmund Yeh, and Atilla Eryilmaz, "Proactive Caching for Low Access-Delay Services under Uncertain Predictions." *Proceedings of the ACM on Measurement and Analysis of Computing Systems - SIGMETRICS.* Vol. 3, No. 1, March 2019, Article No. 2. Co-authored with graduate student.

15. Ying Cui, Muriel Medard, Edmund Yeh, Douglas Leith, and Ken Duffy, "Optimization-Based Linear Network Coding for General Connections of Continuous Flows." *IEEE/ACM Transactions on Networking.* Vol. 26, No. 5, October 2018, pp. 2033-2047.

16. Stratis Ioannidis and Edmund Yeh, "Jointly Optimal Routing and Caching for Arbitrary Network Topologies." *IEEE Journal on Selected Areas in Communications.* Vol. 36, No. 6, June 2018, pp. 1258-1275.

17. Milad Mahdian, N. Prakash, Muriel Medard and Edmund Yeh, "Updating Content in Cache-Aided Coded Multicast." *IEEE Journal on Selected Areas in Communications.* Vol. 36, No. 6, June 2018, pp. 1203-1216. Co-authored with graduate student.

18. Stratis Ioannidis and Edmund Yeh, "Adaptive Caching Networks with Optimality Guarantees." *IEEE/ACM Transactions on Networking.* Vol. 26, No. 2, April 2018, pp. 737-750.

19. Ying Cui, Muriel Medard, Edmund Yeh, Douglas Leith, Fan Lai, and Ken Duffy, "A Linear Network Code Construction for General Integer Connections Based on the Constraint Satisfaction Problem." *IEEE/ACM Transactions on Networking.* Vol. 25, No. 6, December 2017, pp. 3441-3454.

20. Milad Mahdian and Edmund M. Yeh, "Throughput and Delay Scaling of Content-Centric Ad Hoc and Heterogeneous Wireless Networks." *IEEE/ACM Transactions on Networking.* Vol. 25, No. 5, October 2017, pp. 3030-3043. Co-authored with graduate student.

21. Ying Cui, Edmund M. Yeh, and Ran Liu, "Enhancing the Delay Performance of Dynamic Backpressure Algorithms." *IEEE/ACM Transactions on Networking.* Vol. 24, No. 2, April 2016, pp. 954-967. Co-authored with graduate student.

22. Ying Cui, Vincent Lau, and Edmund M. Yeh, "Delay-Optimal Buffered Decode-and-Forward for Two-hop Networks with Random Link Connectivity" *IEEE Transactions on Information Theory*, Vol. 61, No. 1, January 2015, pp. 404-425.

23. Elona Erez, Minji Kim, Muriel Medard, Yun Xu, and Edmund M. Yeh, "Deterministic Model Revisited: An Algebraic Network Coding Approach." *IEEE Transactions on Information Theory*, Vol. 60, No. 8, August 2014, pp. 4867-4879. Co-authored with graduate student.

24. Eren Sasoglu, Emre Telatar, and Edmund M. Yeh, "Polar Codes for the Two-user Multiple-access Channel." *IEEE Transactions on Information Theory*, Vol. 59, No. 10, October 2013, pp. 6583-6592.

25. Zhenning Kong, Edmund M. Yeh, and Emina Soljanin, "Coding Improves the Throughput-Delay Tradeoff in Mobile Wireless Networks." *IEEE Transactions on Information Theory*, Vol. 58, No. 11, November 2012, pp. 6894-6906. Co-authored with graduate student.

26. Hongda Xiao and Edmund M. Yeh, "The Impact of Incomplete Information on Games in Parallel Relay Networks." *IEEE Journal on Selected Areas in Communications: Special Issue on Game Theory in Wireless Communications*, Vol. 30, No. 1, January 2012, pp. 176-187. Co-authored with graduate student.

27. Zhenning Kong and Edmund M. Yeh, "Resilience to Degree-dependent and Cascading Node Failures in Random Geometric Networks." *IEEE Transactions on Information Theory*, Vol. 56, No. 11, November 2010, pp. 5533-5546. Co-authored with graduate student.

28. Yufang Xi and Edmund M. Yeh, "Throughput Optimal Distributed Power Control for Stochastic Wireless Networks." *IEEE/ACM Transactions on Networking*, Vol. 18, No. 4, August 2010, pp. 1054-1066. Co-authored with graduate student.

29. Yufang Xi and Edmund M. Yeh, "Distributed Algorithms for Minimum Cost Multicast with Network Coding." *IEEE/ACM Transactions on Networking*, Vol. 18, No. 2, April 2010, pp. 379-392. Co-authored with graduate student.

30. Yufang Xi and Edmund M. Yeh. "Node-Based Optimal Distributed Power Control, Routing, and Congestion Control in Wireless Networks." *IEEE Transactions on Information Theory*, Vol. 54, No. 9, September 2008, pp. 4081-4106. Co-authored with graduate student.

31. Edmund M. Yeh and Randall A. Berry, "Throughput Optimal Control of Cooperative Relay Networks." *IEEE Transactions on Information Theory: Special Issue on Models, Theory, and Codes for Relaying and Cooperation in Communication Networks*, Vol. 53, No. 10, October 2007, pp. 3827-3833.

32. Jian Cao and Edmund M. Yeh, "Asymptotically Optimal Multiple-access Communication via Distributed Rate Splitting." *IEEE Transactions on Information Theory*, Vol. 53, No. 1, January 2007, pp. 304-319. Co-authored with graduate student.

33. Philip A. Whiting and Edmund M. Yeh, "Broadcasting Over Uncertain Channels with Decoding Delay Constraints." *IEEE Transactions on Information Theory*, Vol. 52, No. 3, March 2006, pp. 904-921.

34. Randall A. Berry and Edmund M. Yeh, "Cross-layer Wireless Resource Allocation." *IEEE Signal Processing Magazine*, Vol. 21, No. 5, September 2004, pp. 59–68.

35. Jelena Kovacevic, Robert J. Safranek, and Edmund M. Yeh, "Deinterlacing by Successive Approximation." *IEEE Transactions on Image Processing.* Vol. 6, No. 2, February 1997, pp. 339–344.

**Publications in Selective Conferences**

36. Yuanyuan Li, Lili Su, Carlee Joe-Wong, Edmund Yeh and Stratis Ioannidis, "Distributed Experimental Design Networks." *Proceedings of the Conference on Computer Communications (INFOCOM)*, May 20-23, 2024. Acceptance Rate: 19.6%.

37. Jinkun Zhang and Edmund Yeh, "Congestion-aware Routing and Content Placement in Elastic Cache Networks." *Proceedings of the Conference on Computer Communications (INFOCOM)*, May 20-23, 2024. Acceptance Rate: 19.6%. Co-authored with graduate student.

38. Yuezhou Liu, Lili Su, Carlee Joe-Wong, Stratis Ioannidis, Edmund Yeh, and Marie Siew, "Cache-Enabled Federated Learning Systems. *Proceedings of ACM MobiHoc*, October 23-26, 2023. Acceptance Rate: 21.9%. Co-authored with graduate student.

39. Yuezhou Liu, Yuanyuan Li, Lili Su, Edmund Yeh, and Stratis Ioannidis, "Experimental Design Networks: A Paradigm for Serving Heterogeneous Learners under Networking Constraints." *Proceedings of the Conference on Computer Communications (INFOCOM)*, May 2-5, 2022. Acceptance Rate: 19.9%. Co-authored with graduate student.

40. Armin Moharrer, Khashayar Kamran, Edmund Yeh and Stratis Ioannidis, "Robust Regression via Model Based Methods." *Proceedings of the European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD)*, September 13-17, 2021. Acceptance Rate: 21%. Co-authored with graduate student.

41. Khashayar Kamran, Armin Moharrer, Stratis Ioannidis, and Edmund Yeh, "Rate Allocation and Content Placement in Cache Networks." *Proceedings of the Conference on Computer Communications (INFOCOM)*, May 10-13, 2021. Acceptance Rate: 19.9%. Co-authored with graduate student.

42. Bahman Abolhassani, John Tadrous, Atilla Eryilmaz, and Edmund Yeh, "Fresh Caching for Dynamic Content." *Proceedings of the Conference on Computer Communications (INFOCOM)*, May 10-13, 2021. Acceptance Rate: 19.9%.

43. Yuezhou Liu, Yuanyuan Li, Qian Ma, Stratis Ioannidis and Edmund Yeh, "Fair Caching Networks." *Proceedings of the International Symposium on Computer Performance, Modeling, Measurements and Evaluation (IFIP Performance)*, Milan, Italy, November 2-6, 2020. Co-authored with graduate student.

44. Khashayar Kamran, Edmund Yeh, and Qian Ma, "DECO: Joint Computation, Forwarding and Data Placement in Data-Centric Computing Networks." *Proceedings of ACM MobiHoc*, Catania, Italy, July 2-5, 2019. Acceptance Rate: 23.7%. Co-authored with graduate student.

45. Qian Ma, Edmund Yeh, and Jianwei Huang, "How Bad is Selfish Caching?" *Proceedings of ACM MobiHoc*, Catania, Italy, July 2-5, 2019. Acceptance Rate: 23.7%

46. Ran Liu, Edmund Yeh, and Atilla Eryilmaz, "Proactive Caching for Low Access-Delay Services under Uncertain Predictions." *Proceedings of ACM SIGMETRICS*, Phoenix, AZ, June 24-28, 2019. Acceptance Rate: 16%. Co-authored with graduate student.

47. Milad Mahdian, Armin Moharrer, Stratis Ioannidis, and Edmund Yeh, "Kelly Cache Networks." *Proceedings of the Conference on Computer Communications (INFOCOM)*, Paris, France, April 29-May 2, 2019. Acceptance Rate: 19.7%. Co-authored with graduate student.

48. Stratis Ioannidis and Edmund Yeh, "Jointly Optimal Routing and Caching for Arbitrary Network Topologies." *Proceedings of ACM Conference on Information-Centric Networking (ICN)*, Berlin, Germany, September 26-28, 2017. **Best Paper Award**. Acceptance rate: 27.5%.

49. Fan Lai, Feng Qiu, Wenjie Bian, Ying Cui, Edmund Yeh, "Scaled VIP Algorithms for Joint Dynamic Forwarding and Caching in Named Data Networks." *Proceedings of ACM Conference on Information-Centric Networking (ICN)*, Kyoto, Japan, September 26-28, 2016. Acceptance Rate: 32%.

50. Stratis Ioannidis and Edmund Yeh, "Adaptive Caching Networks with Optimality Guarantees." *Proceedings of ACM SIGMETRICS*, Antibes Juan-les-Pins, June 14-18, 2016, pp. 113-124. Acceptance Rate: 13.5%.

51. Cesar Ghali, Gene Tsudik, Christopher A. Wood, and Edmund Yeh, "Practical Accounting in Content-Centric Networking." *Proceedings of IEEE/IFIP Network Operations and Management Symposium (NOMS)*, Istanbul, Turkey, April 25-29, 2016. Acceptance Rate: 25.3%.

52. Ying Cui, Muriel Medard, Edmund Yeh, Douglas Leith, and Ken Duffy, "Optimization-Based Linear Network Coding for General Connections of Continuous Flows." *Proceedings of IEEE International Conference on Communications (ICC) - Communication Theory Symposium*, London, UK, June 8-12, 2015. **Best Paper Award**. Acceptance Rate: 38%.

53. Edmund M. Yeh, Tracey Ho, Ying Cui, Michael Burd, Ran Liu, and Derek Leong, "VIP: A Framework for Joint Dynamic Forwarding and Caching in Named Data Networks." *Proceedings of ACM Conference on Information-Centric Networking (ICN)*, Paris, France, September 24-26, 2014, pp. 117-126. Acceptance rate: 18%. Co-authored with graduate student.

54. Dirk Bergemann, Ji Shen, Yun Xu, and Edmund M. Yeh, "Multi-Dimensional Mechanism Design with Limited Information." *Proceedings of ACM Conference on Electronic Commerce (EC)*, Valencia, Spain, June 4-8, 2012, pp. 162-178. Acceptance rate: 33%. Co-authored with graduate student.

55. Zhenning Kong and Edmund M. Yeh, "On the Latency for Information Dissemination in Mobile Wireless Networks." *Proceedings of the Ninth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, May 26-30, 2008, pp. 139-148. Acceptance Rate: 14.7% Co-authored with graduate student.

56. Yufang Xi and Edmund M. Yeh, "Pricing, Competition, and Routing for Selfish and Strategic Nodes in Multi-hop Networks." *Proceedings of the Conference on Computer Communications (INFOCOM)*, Phoenix, AZ, April 15-17, 2008, pp. 2137-2145. Acceptance Rate: 20.3%. Co-authored with graduate student.

57. Zhenning Kong and Edmund M. Yeh, "Connectivity and Latency in Large-Scale Wireless Networks with Unreliable Links." *Proceedings of the Conference on Computer Communications (INFOCOM)*, Phoenix, AZ, April 15-17, 2008, pp. 394-402. Acceptance Rate: 20.3% Co-authored with graduate student.

58. Yufang Xi and Edmund M. Yeh, "Distributed Algorithms for Spectrum Allocation, Power Control, Routing, and Congestion Control in Wireless Networks." *Proceedings of the Eighth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, Montreal, Canada, September 9-14, 2007, pp. 180-189. Acceptance Rate: 18.5% Co-authored with graduate student.

59. Zhenning Kong and Edmund M. Yeh, "Distributed Energy Management Algorithm for Large-Scale Wireless Sensor Networks." *Proceedings of the Eighth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, Montreal, Canada, September 9-14, 2007, pp. 209-218. Acceptance Rate: 18.5% Co-authored with graduate student.

**Other Conference Publications**

60. Jinkun Zhang and Edmund Yeh, "Delay-Optimal Service Chain Forwarding and Offloading in Collaborative Edge Computing." *Proceedings of the IEEE International Conference on Communications (ICC)*, June 9-13, 2024.

61. Faruk Volkan Mutlu and Edmund Yeh, "Cost-aware Joint Caching and Forwarding in Networks with Heterogeneous Cache Resources." *Proceedings of the IEEE International Conference on Communications (ICC)*, June 9-13, 2024.

62. Jinkun Zhang, Edmund Yeh, Faruk Volkan Mutlu, and Andrea Goldsmith, "Energy Minimization via Joint Caching and Power Control in Wireless Heterogeneous Networks." *Proceedings of the IEEE Wireless Communications and Networking Conference (WCNC)*, April 21-24, 2024.

63. Ming Xiang, Stratis Ioannidis, Edmund Yeh, Carlee Joe-Wong, and Lili Su, "Towards Bias Correction of FedAvg over Nonuniform and Time-Varying Communications." *Proceedings of the IEEE Conference on Decision and Control (IEEE CDC)*, Singapore, December 13-15, 2023.

64. Derya Malak, Yuanyuan Li, Stratis Ioannidis, Edmund Yeh, and Muriel Medard, "Joint Optimization of Storage and Transmission via Coding Traffic Flows for Content Distribution." *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Singapore, August 24-27, 2023. **Best Paper Award**.

65. Y. Wu, F. Mutlu, Y. Liu, E. Yeh, R. Liu, C. Iordache, J. Balcas, H. Newman, R. Sirvinskas, M. Lo, S. Song, J. Cong, L. Zhang, S. Timilsina, S. Shannigrahi, D. Pesavento, J. Shi, L. Benmohamed, "N-DISE: NDN-based Data Distribution for Large-Scale Data-Intensive Science Experiments" *Proceedings of ACM Conference on Information-Centric Networking (ICN)*, Osaka, Japan, September 19-21, 2022.

66. Jinkun Zhang, Yuezhou Liu, and Edmund Yeh, "Optimal Congestion-aware Routing and Offloading in Collaborative Edge Computing." *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Turin, Italy, September 19-23, 2022.

67. Derya Malak, F. Volkan Mutlu, Jinkun Zhang, Edmund Yeh, "Transmission Delay Minimization via Joint Power Control and Caching in Wireless HetNets." *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Philadelphia, PA, October 18-21, 2021.

68. Yuezhou Liu, Alireza Alizadeh, Mai Vu and Edmund Yeh, "Joint User Association and Caching in Wireless Heterogeneous Networks with Backhaul." *Proceedings of the IEEE International Conference on Communications (ICC)*, June 14-23, 2021.

69. Borna Sayedana, Aditya Mahajan and Edmund Yeh, "Transmission of Bursty Traffic over Fading Channels with Adaptive Decision Feedback." *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Volos, Greece, June 15-19, 2020.

70. Catalin Iordache, Ran Liu, Justas Balcas, Raimondas Srivinskas, Yuanhao Wu, Chengyu Fan, Susmit Shannigrahi, Harvey Newman, and Edmund Yeh, "Named Data Networking based File Access for XRootD." *Proceedings of the International Conference on Computing in High Energy and Nuclear Physics (CHEP)*, Adelaide, Australia, November 4-8, 2019.

71. Derya Malak, Muriel Medard and Edmund Yeh, "Spatial Soft-Core Caching." *Proceedings of the International Symposium on Information Theory (ISIT)*, Paris, France, July 7-12, 2019.

72. Derya Malak, Ohad Elishco, Muriel Medard and Edmund Yeh, "Throughput and Delay Analysis for Coded ARQ." *Proceedings of the International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Avignon, France, June 3-7, 2019.

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**Posters**

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**Conference Presentations**

151. "Experimental Design Networks." Information Theory and Applications Workshop, San Diego, CA, February 17, 2023.

152. "NDN for Data-Intensive Experiments (N-DISE)." Internet Research Task Force (IRTF) Information-Centric Networking Research Group (ICNRG) Meeting, March 25, 2022.

153. "NDN for Data Intensive Science Experiments (N-DISE): Overview and Recent Developments." Named Data Networking Community Meeting, NIST, October 28, 2021.

154. "NDN for Data-Intensive Experiments." Internet Research Task Force (IRTF) Information-Centric Networking Research Group (ICNRG) Virtual Meeting, December 1, 2020.

155. "Data-Centric Ecosystems for Large-Scale Data-Intensive Science." Named Data Networking Community Meeting, Virtual Event hosted by NIST, September 10, 2020.

156. "SDN/NDN Integrated Big Data System for Big Science." Large Scale Networking (LSN) Workshop on Huge Data, April 14, 2020.

157. "Data-Centric Networking: Lessons and Impact." International Conference on Network Games, Control and Optimization. New York, NY, November 16, 2018.

158. "Named Data Networking for Data Distribution in High Energy Physics." Open Science Grid All-Hands Meeting, Salt Lake City, UT, March 20, 2018.

159. "Interdependent Random Geometric Networks." Information Theory and Applications Workshop, San Diego, CA, February 16, 2018.

160. "Adaptive Algorithms for Caching Networks with Optimality Guarantees." Information Theory and Applications Workshop, San Diego, CA, February 16, 2017.

161. "Congestion Control in Named Data Networks." Information Theory and Applications Workshop, San Diego, CA, February 5, 2016.

162. "Throughput and Delay Characteristics of Content-centric Wireless Networks." Workshop on Cognition and Control, Gainesville, FL, January 15-16, 2016.

163. "Named Data Networking: Theory and Optimization for a New Internet Architecture." Workshop on the Frontiers of Networks: Theory and Algorithms, ACM MobiHoc, June 22, 2015.

164. "VIP: Joint Dynamic Forwarding and Caching in Named Data Networks." Information Theory and Applications Workshop, San Diego, CA, February 3, 2015.

165. "Pricing with Limited Information: a Quantization Approach." Southern California Symposium on Network Economics and Game Theory, Los Angeles, CA, November 7-8, 2013.

166. "Network Resilience to Correlated and Cascading Failures: A Percolation View." DIMACS/CCICADA Workshop on Cascading Failures of Power Transmission Systems: Models and Algorithms, New Brunswick, NJ, February 23, 2013.

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168. "Network Resilience to Correlated and Cascading Failures: A Percolation View." INFORMS Computing Society Conference, Santa Fe, New Mexico, January 8, 2013.

169. "Connectivity and Resilience of Large-scale Wireless Networks: A Percolation View." Graph Exploitation Symposium, Dedham, MA, April 17-18, 2012.

170. "The Impact of Incomplete Information on Games in Parallel Relay Networks." Conference on Information Sciences and Systems, Princeton, NJ, March 21, 2012.

171. "The Impact of Incomplete Information on Games in Parallel Relay Networks." Information Theory and Applications Workshop, San Diego, CA, February 10, 2012.

172. "Polar Codes for Multiple Access Channels." Information Theory and Applications Workshop, University of California at San Diego, February 8, 2011.

173. "Cascading Failure in Power Networks: a Percolation-Based Analysis." DIMACS Workshop on Algorithmic Decision Theory for the Smart Grid, New Brunswick, NJ, October 26, 2010.

174. "Connectivity, Mobility, and Information Dissemination." Information Theory and Applications Workshop, University of California at San Diego, February 4, 2010.

175. "Network Science: Information Spread, Epidemics, Mobility and Cascading Failures." Workshop on "Network Science: New Directions in Control Systems," IEEE Conference on Decision and Control (CDC), December 15, 2009.

176. "Throughput Optimal Control of Wireless Networks Under an SINR Model." Twenty-third IEEE Annual Computer Communications Workshop, Lenox, MA, October 18-21, 2009.

177. "Information Dissemination in Mobile Wireless Networks." Workshop on Mathematical Modelling and Analysis of Wireless Networks, Toronto, Canada, May 8, 2008.

178. "Distributed Optimization Algorithms for Network Coding." INFORMS Annual Meeting, Pittsburgh, PA, November 6, 2006.

179. "Throughput Optimal Control of Cooperative Relay Networks." Workshop on the Mathematics of Relaying and Cooperation in Communication Networks, Mathematical Sciences Research Institute, Berkeley, CA, April 10 - 12, 2006.

180. "Queueing, Stability, and Throughput Optimal Control of Cooperative Relay Networks." 2005 IEEE Communication Theory Workshop, Park City, UT, June 14, 2005.

181. "Optimal Control of Stochastic Cooperative Networks." Workshop on Mathematical Modeling and Analysis of Computer Networks, Networking 2005, Waterloo, Canada, May 6, 2005.

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**Technical Reports**

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**Demos**

187. Edmund Yeh, Harvey Newman, Lixia Zhang, Jason Cong, Susmit Shannigrahi, Yuanhao Wu, Volkan Mutlu, Yuezhou Liu, Catalin Iordache, Justas Balcas, Raimondas Sirvinskas, Sichen Song, Michael Lo, Sankalpa Timilsina, Davide Pesavento, Chengyu Fan, "N-DISE: NDN for Data Intensive Science Experiments." SC23 Network Research Exhibition: Demonstration NRE-027. International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 23), Denver, CO, November 14-17, 2023.

188. Edmund Yeh, Harvey Newman, Lixia Zhang, Jason Cong, Susmit Shannigrahi, Yuanhao Wu, Volkan Mutlu, Yuezhou Liu, Catalin Iordache, Justas Balcas, Raimondas Sirvinskas, Sichen Song, Michael Lo, Sankalpa Timilsina, Davide Pesavento, Chengyu Fan, "N-DISE: NDN for Data Intensive Science Experiments." SC22 Network Research Exhibition: Demonstration NRE-001. International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 22), Dallas, TX, November 14-17, 2022.

189. Edmund Yeh, Harvey Newman, Lixia Zhang, Jason Cong, Susmit Shannigrahi, Yuanhao Wu, Volkan Mutlu, Yuezhou Liu, Catalin Iordache, Justas Balcas, Raimondas Sirvinskas, Sichen Song, Michael Lo, Sankalpa Timilsina, Davide Pesavento, Chengyu Fan, "N-DISE: NDN for Data Intensive Science Experiments." SC21 Network Research Exhibition: Demonstration NRE-018. International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 21), St. Louis, MO, November 15-18, 2021.

190. Edmund Yeh, Ran Liu, Yuanhao Wu, Volkan Mutlu, Yuezhou Liu, Harvey Newman, Catalin Iordache, Raimondas Sirvinskas, Justas Balcas, Susmit Shannigrahi, Chengyu Fan, and Craig Partridge "SANDIE: SDN-Assisted NDN for Data Intensive Experiments." SC19 Network Research Exhibition: Demonstration NRE-035. International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 19), Denver, CO, November 18-21, 2019.

191. Edmund Yeh, Ran Liu, Yuanhao Wu, Harvey Newman, Justas Balcas, Catalin Iordache, Shashwitha Puttaswany, Christos Papadopoulos, Susmit Shannigrahi, and Chengyu Fan, "SANDIE: SDN-Assisted NDN for Data Intensive Experiments." SC18 Network Research Exhibition: Demonstration NRE-022. International Conference for High Performance Computing, Networking, Storage, and Analysis (SC 18), Dallas, TX, November 12-15, 2018.

**Editorials**

192. Nada Golmie, Anna Scaglione, Lutz Lampe, Edmund Yeh, Sean Smith, Lang Tong, "Guest Editorial: Smart Grid Communications," *IEEE Journal on Selected Areas in Communications*, Vol. 31, No. 7, July 2013, pp. 1169-1171.

193. Edmund Yeh, "Special Issue on Wireless Networks," *Internet Mathematics*, Vol. 9, Issue 2-3, June 2013, p. 135.

194. Nada Golmie, Anna Scaglione, Lutz Lampe, Edmund Yeh, "Guest Editorial: Smart Grid Communications," *IEEE Journal on Selected Areas in Communications*, Vol. 30, No. 6, July 2012, pp. 1025-1026.

**Panel Reports**

195. National Academies of Sciences, Engineering, and Medicine. 2020. Assessment of the In-House Laboratory Independent Research at the Army's Research, Development, and Engineering Centers. Washington, DC: The National Academies Press. https://doi.org/10.17226/25611.

196. National Academies of Sciences, Engineering, and Medicine. 2018. An Assessment of Four Divisions of the Information Technology Laboratory at the National Institute of Standards and Technology: Fiscal Year 2018. Washington, DC: The National Academies Press. https://doi.org/10.17226/25283.

**Plenary Lectures**

1. "Data-Centric Networking: From Architecture, Theory, and Algorithms, to Experimentation and Implementation." International Workshop on Computer and Networking Experimental Research using Testbeds (CNERT), IEEE International Conference on Computer Communications (INFOCOM), May 20, 2024.

2. "Networking for Big Data: Theory, Algorithms, and Applications." IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN), July 11, 2022.

3. "Data-Centric Networking" IEEE Signal Processing and Communications Applications Conference (SIU), June 9-11, 2021.

4. "Data-Centric Networking: Lessons and Impact." International Workshop on Content Caching and Delivery in Wireless Networks (CCDWN), May 7, 2018.

**Invited Panels**

1. Panelist for "Edge Cloud Computing, Private Networks and Slicing" session, Brooklyn 5G Summit, New York, April 25, 2019.

2. Panelist for "Future X Network Architecture (Cloud Technology)" session, Brooklyn 5G Summit, New York, NY, April 26, 2018.

**Invited Tutorials**

1. "Delay and Throughput Optimality in Cache Networks with Arbitrary Topologies," International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), May 11, 2018.

2. "Throughput and Delay Optimality in ICN Design." ACM Conference on Information-Centric Networking, Kyoto, Japan, September 26-28, 2016.

**Invited Short Courses**

1. "Polar Codes: An Introduction." Technical University of Munich, Germany, July 17-25, 2013.

**Invited Lectures**

1. "Data-Centric Networking: Theory, Algorithms, and Applications." Cisco Research Talk, Cisco Systems Inc., June 14, 2022.

2. "Data-Centric Networking: Theory, Algorithms, and Applications." Electrical Engineering Seminar Series, John A. Paulson School of Engineering and Applied Sciences, Harvard University, April 29, 2022.

3. "Data-Centric Networking: Theory, Algorithms, and Applications." Communications and Signal Processing Seminar, Department of Electrical and Computer Engineering, University of Michigan, December 9, 2021.

4. "Networking for Big Data: Theory, Algorithms and Applications." Data Science Initiative Seminar, Brown University, Providence, RI, February 14, 2020.

5. "Networking for Big Data: Theory, Algorithms and Applications." Computer Science Seminar, Department of Computer Science, University of California at Los Angeles, November 12, 2019.

6. "Adaptive Caching Algorithms with Optimality Guarantees for Arbitrary Network Topologies." ECE Seminar, Department of Electrical and Computer Engineering, Tufts University, Medford, MA, October 5, 2018.

7. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical Engineering, Columbia University, April 27, 2018.

8. "Adaptive Caching Algorithms with Optimality Guarantees for Arbitrary Network Topologies" EE Systems Seminar, Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, March 7, 2018.

9. "Adaptive Algorithms for Caching Networks with Optimality Guarantees." Department of Electrical and Computer Engineering, New York University Tandon School of Engineering, November 3, 2017.

10. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical and Systems Engineering, Washington University, St. Louis, MO, October 27, 2017.

11. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical Engineering, Princeton University, October 25, 2017.

12. "Networking for Big Data: Theory and Optimization for NDN." Laboratory for Information and Decision Systems Seminar, Department of Electrical Engineering and Computer Science, MIT, September 19, 2017.

13. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical Engineering, University of Southern California, Los Angeles, CA, August 22, 2017.

14. "Adaptive Algorithms for Caching Networks with Optimality Guarantees." Department of Electrical Engineering, Stanford University, Stanford, CA, July 27, 2017.

15. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH, May 30, 2017.

16. "Named Data Networking for 5G Wireless." NYU Wireless, Department of Electrical and Computer Engineering, New York University Tandon School of Engineering, Janary 27, 2017.

17. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical and Computer Engineering, Rice University, Houston, TX, May 5, 2016.

18. "Networking for Big Data: Theory and Optimization for NDN." Department of Electrical and Computer Engineering, Carnegie Mellon University, Pittsburgh, PA, March 3, 2016.

19. "Throughput and Delay Scaling in Content-Centric Ad Hoc and Heterogeneous Wireless Networks." Department of Electrical Engineering and Computer Science, MIT, February 23, 2016.

20. "Named Data Networking: Theory and Optimization for a New Internet Architecture." Technical University of Berlin, July 13, 2015.

21. "Named Data Networking: Theory and Optimization for a New Internet Architecture." INRIA, Paris, France, July 8, 2015.

22. "Named Data Networking: Theory and Optimization for a New Internet Architecture." Cisco Systems, Paris, France, July 7, 2015.

23. "Named Data Networking: Theory and Optimization for a New Internet Architecture." Institute of Theoretical Information Technology, Technical University of Munich, May 13, 2015.

24. "VIP: A Framework for Joint Dynamic Forwarding and Caching in Named Data Networks." Information Systems Laboratory Colloquium, Stanford University, Stanford, CA, October 22, 2014.

25. "VIP: A Framework for Joint Dynamic Forwarding and Caching in Named Data Networks." Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, September 10, 2014.

26. "Named Data Networking: A New Architecture for the Internet." Center for Complex Network Research Lab (CCNR) & Barabasi Lab Seminar, Northeastern University, Boston, MA, April 10, 2014.

27. "Pricing with Limited Information: a Quantization Approach." EECS Seminar, Northwestern University, Evanston, IL, November 19, 2013.

28. "VIP: Joint Dynamic Forwarding and Caching in Named Data Networks." Department of Electrical and Computer Engineering, University of California at San Diego, November 15, 2013.

29. "Quantization in Economics: Mechanism Design with Limited Information." Department of Electrical Engineering and Computer Science, MIT, October 29, 2013.

30. "Polar Codes and Pricing via Quantization." Department of Electrical and Computer Engineering, Polytechnic Institute of New York University, September 26, 2013.

31. "Polar Codes and Pricing via Quantization." Department of Information Technology and Electrical Engineering, ETH Zurich, Swiss Federal Institute of Technology, August 26, 2013.

32. "Quantization in Economics: Mechanism Design with Limited Information." Department of Electrical Engineering, University of California at Los Angeles, February 8, 2013.

33. "Quantization in Economics: Mechanism Design with Limited Information." Rigorous Systems Research Group (RSRG) Seminar, California Institute of Technology, Pasadena, CA, February 7, 2013.

34. "Polar Codes for Multiple Access Channels." Technical University of Munich, Germany, June 8, 2012.

35. "Polar Codes for Multiple Access Channels," Mathematical and Algorithmic Sciences Research Center, Alcatel-Lucent Bell Laboratories, Murray Hill, NJ, April 11, 2012.

36. "Polar Codes and Power Blackouts." Department of Electrical Engineering, Columbia University, May 3, 2011.

37. "From Where to What: A New Architecture for the Internet." Yale Law School, March 4, 2011.

38. "Network Science: Information Dissemination, Mobility, and Resilience." Department of Electrical and Computer Engineering, University of Wisconsin at Madison, February 24, 2011.

39. "Polar Codes and Power Blackouts." Department of Electrical Engineering, University of Southern California, February 14, 2011.

40. "Network Science: Information Dissemination, Mobility, and Power Blackouts." Department of Electrical Engineering, University of California at Los Angeles, February 10, 2011.

41. "Polar Codes and Power Blackouts." Department of Electrical Engineering, California Institute of Technology, February 2, 2011.

42. "Wireless Communication Networks: Information Spread, Mobility, and Resilience." Department of Mathematics Seminar, Yale University, December 1, 2010.

43. "Network Science: Information Dissemination, Mobility, and Power Blackouts." Department of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Michigan, November 11, 2010.

44. "Polar Codes for Multiple Access Channels." Applied Mathematics Seminar, Yale University, November 9, 2010.

45. "Network Science: Information Dissemination, Mobility, and Power Blackouts." Department of Electrical and Computer Engineering, University of California at San Diego, November 3, 2010.

46. "Network Science for Wireless Communication: Information Dissemination, Mobility, and Resilience." University of Massachusetts at Amherst, October 18, 2010.

47. "Network Science for Wireless Communication: Information Dissemination, Mobility, and Resilience." PARC (Palo Alto Research Center), October 11, 2010.

48. "Wireless Computing Networks: Mobility, Connectivity, and Epidemics." Department of Electrical Engineering, Duke University, Durham, NC, March 22, 2010.

49. "Network Science for Wireless Communication: Information Spread, Mobility, and Resilience." Mathematical and Algorithmic Sciences Research Center, Alcatel-Lucent Bell Laboratories, Murray Hill, NJ, March 5, 2010.

50. "Network Science: Power Grids, Wireless Communication, and Epidemics." Department of Electrical Engineering, University of Southern California, February 8, 2010.

51. "Network Science for Wireless Communication: Information Spread, Mobility and Resilience." Wireless Institute, Department of Electrical Engineering, University of Notre Dame, December 10, 2009.

52. "Network Science: Information Spread, Epidemics, Mobility and Cascading Failures." Department of Electrical Engineering, Columbia University, December 7, 2009.

53. "Network Science for Wireless Communication: Information Spread, Mobility and Resilience." Department of Electrical Engineering and Computer Science, MIT, December 4, 2009.

54. "Network Science: Information Spread, Epidemics, Mobility and Cascading Failures." ECE Colloquium, School of Electrical and Computer Engineering, Cornell University, November 17, 2009.

55. "Network Science for Wireless Communication: Information Spread, Mobility and Resilience." Electrical Engineering Systems Seminar, Department of Electrical Engineering, California Institute of Technology, November 13, 2009.

56. "Network Science for Wireless Communication: Information Spread, Mobility and Resilience." Information Systems Laboratory Colloquium, Department of Electrical Engineering, Stanford University, November 12, 2009.

57. "Percolation Theory and Large-scale Wireless Networks: Connectivity and Transmission Delay." Department of Information Technology and Electrical Engineering, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, August 17, 2009.

58. "Pricing, Competition, and Routing in Relay Networks." Statistical Laboratory, University of Cambridge, August 12, 2009.

59. "Percolation Theory and Large-scale Wireless Networks: Connectivity and Transmission Delay." Heinrich Hertz Institute and Technical University of Berlin, Berlin, Germany, August 6, 2009.

60. "Wireless Network Resilience to Degree-Dependent and Cascading Node Failures." Applied Mathematics Seminar, Yale University, May 7, 2009.

61. "Percolation Theory and Large-Scale Wireless Networks: Connectivity and Transmission Delay." Department of Electrical Engineering, Rice University, Houston, TX, November 24, 2008.

62. "Pricing, Competition, and Routing for Selfish and Strategic Nodes in Multi-hop Relay Networks." Information Systems Laboratory Colloquium, Department of Electrical Engineering, Stanford University, Stanford, CA, October 2, 2008.

63. "Connectivity, Latency, and Resilience in Large-scale Wireless Networks." Department of Electrical Engineering, University of Southern California, Los Angeles, CA, September 19, 2008.

64. "Connectivity, Latency, and Resilience in Large-scale Wireless Networks." Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, September 18, 2008.

65. "Percolation Theory and Large-Scale Wireless Networks: Critical Density, Transmission Delay, and Network Resilience." Applied Mathematics Seminar, Yale University, June 3, 2008.

66. "Percolation Theory and Large-Scale Wireless Networks: Critical Density, Transmission Delay, and Network Resilience." Networking, Communications, and DSP Seminar, Department of Electrical Engineering and Computer Science, University of California at Berkeley, May 28, 2008.

67. "Percolation Theory and Large-Scale Wireless Networks: Critical Density, Transmission Delay, and Network Resilience." Laboratory for Information and Decision Systems (LIDS), MIT, Cambridge, MA, May 15, 2008.

68. "On the Critical Density for Percolation in Random Geometric Graphs." Department of Statistics Seminar, Yale University, April 28, 2008.

69. "Pricing, Competition, and Routing for Selfish and Strategic Nodes in Multi-hop Networks." Department of Electrical and Computer Engineering, University of California at San Diego, January 25, 2008.

70. "Pricing, Competition, and Routing for Selfish and Strategic Nodes in Multi-hop Networks." Department of Economics, Yale University, December 11, 2007.

71. "Distributed Algorithms for Optimal Control of Wireless Networks." Mathematical Research Center, Bell Laboratories, Lucent Technologies, Murray Hill, NJ, August 7, 2007.

72. "On the Critical Density for Percolation in Random Geometric Graphs." Departement d'informatique, Ecole Normale Superieure, Paris, France, July 12, 2007.

73. "Distributed Algorithms for Optimal Control of Wireless Networks." *Summer Research Institute*, Information Theory Laboratory, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, July 11, 2007.

74. "Distributed Algorithms for Optimal Control of Wireless Networks." Heinrich Hertz Institute and Technical University of Berlin, Berlin, Germany, July 4, 2007.

75. "Distributed Algorithms for Optimal Control of Wireless Networks." Wireless Networking and Communications Seminar, Department of Electrical and Computer Engineering, University of Texas at Austin, April 6, 2007.

76. "Distributed Algorithms for Optimal Control of Wireless Networks." Networking, Communications, and DSP Seminar, Department of Electrical Engineering and Computer Sciences, University of California at Berkeley, February 26, 2007.

77. "Distributed Algorithms for Optimal Control of Wireless Networks." Information Systems Laboratory Seminar, Department of Electrical Engineering, Stanford University, Stanford, CA, November 2, 2006.

78. "Distributed Algorithms for Optimal Control of Wireless Networks." Coordinated Sciences Laboratory Communications Group Seminar, University of Illinois at Urbana-Champaign, IL, May 1, 2006.

79. "Optimal Distributed Power Control, Routing, and Congestion Control in Wireless Networks." Laboratory for Information and Decision Systems (LIDS) Colloquium, MIT, Cambridge, MA, May 10, 2005.

80. "Throughput and Delay Optimal Control of Stochastic Wireless Networks." Department of Electrical Engineering, University of Notre Dame, South Bend, IN, April 22, 2005.

81. "Optimal Distributed Power Control, Routing, and Congestion Control in Wireless Networks." Communications and Networking Seminar, Department of Electrical Engineering, Yale University, New Haven, CT, March 30, 2005.

82. "Optimal Distributed Power Control, Routing, and Congestion Control in Wireless Networks." U.S. Army Research Laboratory, Adelphi, MD, February 23, 2005.

83. "Optimal Distributed Power Control, Routing, and Congestion Control in Wireless Networks." *Information Sciences and Systems Seminar*, Department of Electrical Engineering, Princeton University, Princeton, NJ, February 17, 2005.

84. "Optimal Resource Allocation in Stochastic Wireless Networks." California Institute for Telecommunications and Information Technology, Department of Electrical and Computer Engineering, University of California at San Diego, December 8, 2004.

85. "Optimal Resource Allocation in Stochastic Wireless Networks." Networking, Communications, and DSP Seminar, Department of Electrical Engineering and Computer Science, University of California at Berkeley, December 6, 2004.

86. "Optimal Resource Allocation in Stochastic Wireless Networks." Information Systems Colloquium, Department of Electrical Engineering, Stanford University, Stanford, CA, December 2, 2004.

87. "Optimal Resource Allocation in Stochastic Wireless Networks." Institute for Information and Signal Processing, Department of Electrical Engineering, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland, August 10, 2004.

88. "Information Theory, Queueing, and Resource Allocation in Multi-user Wireless Communications." Department of Electrical and Computer Engineering, Boston University, Boston, MA, April 16, 2004.

89. "Information Theory, Queueing, and Resource Allocation in Multi-user Wireless Communications." Department of Electrical Engineering, Columbia University, New York, NY, February 27, 2004.

90. "Throughput and Delay Optimal Resource Allocation in Multi-user Fading Channels." *Laboratory for Information and Decision Systems (LIDS) Colloquium*, MIT, Cambridge, MA, October 7, 2003.

91. "Throughput and Delay Optimal Resource Allocation in Multi-user Fading Channels." Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, September 29, 2003.

92. "Throughput and Delay Optimal Resource Allocation in Multi-user Fading Channels." Motorola Inc., Arlington Heights, IL, September 30, 2003.

93. "Optimal Resource Allocation in Queued Multi-user Communication." *Summer Research Institute*, Information Theory Laboratory, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, July 24, 2003.

94. "Throughput and Delay Optimal Resource Allocation in Multiple Access Fading Channels." *Information Sciences Seminar*, Department of Electrical Engineering, California Institute of Technology, Pasadena, CA, June 4, 2003.

95. "Three Fundamental Problems in Wireless Communications." Sandia National Laboratories, Livermore, CA, May 15, 2003; Albuquerque, NM, June 3, 2003.

96. "Cross-layer Wireless Resource Allocation." U.S. Army Research Laboratory, Adelphi, MD, April 25, 2003.

97. "Throughput and Delay Optimal Resource Allocation in Multiple Access Fading Channels." *Information Sciences and Systems Seminar*, Department of Electrical Engineering, Princeton University, Princeton, NJ, April 10, 2003.

98. "Delay-Optimal Multiple Access Communications." Department of Electrical and Systems Engineering, University of Pennsylvania, Philadelphia, PA, October 14, 2002.

99. "Delay-Optimal Queue Control in Multiple Access Communications." School of Electrical and Computer Engineering, Cornell University, Ithaca, NY, September 17, 2002.

100. "Delay-Optimal Queue Control in Multiple Access Communications." Mathematical Research Center, Bell Laboratories, Lucent Technologies, Murray Hill, NJ, August 29, 2002.

101. "Delay-Optimal Queue Control in Multiple Access Communications." Department of Electrical and Computer Engineering, University of Toronto, Toronto, Canada, August 21, 2002.

102. "Majorization, Stochastic Coupling, and Multiple Access Communications." *Department of Statistics Seminar*, Yale University, New Haven, CT, April 1, 2002.

103. "Optimal Queue Control in Multiple Access Communications." *Center for Systems Science Seminar*, Department of Electrical Engineering, Yale University, New Haven, CT, October 12, 2001.

104. "Multi-user Interference and Fading in Wireless Communication Networks." Department of Electrical and Computer Engineering, University of Maryland, College Park, MD, April 12, 2001.

105. "Multi-user Interference and Fading in Wireless Communication Networks." Department of Aeronautics and Astronautics, Massachusetts Institute of Technology, Cambridge, MA, April 3, 2001.

106. "Information-Theoretic Perspectives on Wireless Communication Networks." Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, March 29, 2001.

107. "Perspectives on Wireless Communication Networks." Division of Engineering and Applied Sciences, Harvard University, Cambridge, MA, March 22, 2001.

108. "Perspectives on Wireless Communication Networks." Department of Electrical Engineering, University of California, Santa Cruz, CA, March 16, 2001.

109. "Perspectives on Wireless Communication Networks." Jet Propulsion Laboratory, Pasadena, CA, March 15, 2001.

110. "Perspectives on Wireless Communication Networks." Electrical Engineering Department, University of California, Los Angeles, CA, March 13, 2001.

111. "Perspectives on Wireless Communication Networks." Department of Electrical and Computer Engineering, Duke University, Durham, NC, March 8, 2001.

112. "Perspectives on Wireless Communication Networks." Department of Electrical Engineering, Yale University, New Haven, CT, March 1, 2001.

113. "Optimal Encoding Over Uncertain Block-Fading Channels with Decoding Delay Constraints." Mathematics Research Center, Bell Laboratories, Lucent Technologies, Murray Hill, NJ, August 4, 1999.

| Press Coverage | |
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**Press Coverage**

1. "Can pre-saving Taylor Swifts new album help speed its delivery on launch day?" Northeastern Global News, April 17, 2024. URL: https://news.northeastern.edu/2024/04/17/pre-save-taylor-swift-tortured-poets/

2. "Will Taylor Swifts new album, The Tortured Poets Department, break Spotify? Content delivery expert explains how streaming services work," Northeastern Global News, April 15, 2024. URL: https://news.northeastern.edu/2024/04/15/taylor-swift-new-album-spotify/

3. "Bartlett Highlights American Towers Interest in Edge Computing," AGL Media Group, May 20, 2020. URL: https://www.aglmediagroup.com/bartlett-highlights-americans-interest-in-edge-computing/

4. "5G in the Workplace," Connected World, June 2019, URL: https://connectedworld.com/june-5g-in-the-workplace/

5. "Department of Defense Grant to Spur Development of Wireless Networks," news@Northeastern, June 15, 2017, URL: http://news.northeastern.edu/2017/06/department-of-defense-grant-to-spur-development-of-wireless-networks/

6. "How to Fix the Internet's Plumbing Problem," physics.org, April 25, 2014, URL: https://phys.org/news/2014-04-internet-plumbing-problem.html

7. "How to Fix the Internet's Plumbing Problem," news@Northeastern, April 24, 2014, URL: http://www.northeastern.edu/news/2014/04/yeh/

8. "The Problem of Pricing Wine," news@Northeastern, September 13, 2012, URL: http://www.northeastern.edu/news/2012/09/the-problem-of-pricing-wine/

9. "Professor to Develop Improved Wireless Technologies on Prestigious German Fellowship," news@Northeastern, May 18, 2012, URL: http://www.northeastern.edu/news/2012/05/yeh-fellowship/

10. "Internet Architecture," Academic Minute, WAMC, Northeast Public Radio, May 3, 2012. URL: http://wamc.org/post/dr-edmund-yeh-northeastern-university-internet-architecture

11. "Smart Funding for the Smart Grid," news@Northeastern, February 13, 2012, URL: http://www.northeastern.edu/news/2012/02/smart-funding-for-the-smart-grid/

12. "Reconstructing the Web," news@Northeastern, September 19, 2011, URL: http://www.northeastern.edu/news/2011/09/edmund_yeh/

13. "Restructuring the Internet," Yale Scientific Magazine, April 3, 2011, URL: http://www.yalescientific.org/2011/04/restructuring-the-internet/

14. "Accelerating Wireless Communications," Yale Scientific Magazine, February 14, 2011, URL: http://www.yalescientific.org/2011/02/accelerating-wireless-communications/

15. "Wireless Networks for the Future." Yale Scientific Magazine, Summer 2004, URL: http://ysm.research.yale.edu/article.jsp?articleID=69

**Background**    U.S. citizen.