

**School of Electrical and Computer Engineering
Purdue University**

(1/09/2024)

Name: Chih-Chun Wang

Education:

BSEE	June 1999	National Taiwan University, Taiwan
MSEE	May 2002	Princeton University, USA
PhD	Aug. 2005	Princeton University, USA

Professional and Honorary Society Memberships:

Institute of Electrical and Electronics Engineering (IEEE)
Student Member 2002 – 2004
Member 2006 – 2014
Senior Member 2015 – 2023
Fellow 2024 – present
Information Theory Society

Advisor of IEEE Student Chapter at Purdue. (2011-2013)

Honors and Awards:

- [1] President's Awards, National Taiwan University, 1995 - 1999
- [2] B.E. with Highest Honors, National Taiwan University, 1999
- [3] Francis Upton Fellowship, Princeton University, 2000 - 2004
- [4] Wallace Memorial Fellowship, Princeton University, 2004 – 2005
- [5] National Science Foundation Faculty Early Career Development (CAREER) Award, 2009.
- [6] Ruth and Joel Spira Teaching Award, School of Electrical and Computer Engineering, Purdue University, 2011.
- [7] The Motorola Award for Excellence in Teaching, School of Electrical and Computer Engineering, Purdue University, 2012.
- [8] The Motorola Award for Excellence in Teaching, School of Electrical and Computer Engineering, Purdue University, 2021.

- [9] ECE Outstanding Mentor of Engineering Graduate Students Award for academic year 2021-2022
- [9] Elevated to IEEE Fellow, for contributions to graph-based error-correcting codes and network codes in 2024

Professional Experience

Nov. 1999 – June 2000	Development Engineer, COMTREND Corporation, Taiwan
Sep. 2001 – Aug. 2005	Graduate Research Assistant, Department of Electrical Engineering, Princeton University
June 2004 – July 2004	Engineering Intern, Flarion Technologies, Research Division, Bedminster, NJ
Oct. 2005 – Dec. 2005	Postdoctoral Researcher, Department of Electrical Engineering, Princeton University
Jan. 2006 – July 2012	Assistant Professor, School of Electrical and Computer Engineering, Purdue University
August 2012 – July 2017	Associate Professor, School of Electrical and Computer Engineering, Purdue University
August 2017 – present	Professor, School of Electrical and Computer Engineering, Purdue University

Consulting Activities

Zenith Electronics	2/15/2012 to 6/14/2012
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Research Grants and Contracts Received

- [1] Principal Investigator, PRF XR Research Grants “Throughput Enhancement of Multi-Antenna Cellular Systems via Efficient Interference Cancellation,” COEUS number: 07127683 June 2007 – May 2008, \$15,712 (Prof. Wang responsible for \$15,712).
- [2] Principal Investigator, PRF XR Research Grants “Throughput Enhancement of Multi-Antenna Cellular Systems via Efficient Interference Cancellation,” COEUS number: 08126798 June 2008 – May 2009, \$16,375 (Prof. Wang responsible for \$16,375).

- [3] Principal Investigator, NSF, "CAREER: Next Generation Network Coding: Distributed Design Via Coded Feedback," Contract No. CCF-0845968, March 1, 2009 – February 28, 2014, \$397,192. (Prof. Wang responsible for \$397,192.)
- [4] Co-principal Investigator (with Prof. James Krogmeier, PI), Purdue University Provost's Program for Instructional Innovation, "Instructional Infrastructure for the Vertically Integrated Projects Program," March 1, 2009 – August 31 2012, \$67,310. (Prof. Wang responsible for \$0.)
- [5] Senior Personnel (with Prof. James Krogmeier, PI), NSF, "Collaborative Research: The VIP Program – Integrating Undergraduate Design Projects and Graduate Research," Contract No. DUE-0837280, May 01, 2009 – April 30, 2011, \$82,732. (Prof. Wang responsible for \$0.)
- [6] Principal Investigator (with Prof. Y.C. Hu as Co-PI), NSF, "NeTS: Medium: Collaborative Research: Unifying Network Coding and Cross-Layer Optimization for Wireless Mesh Networks: From Theory to Distributed Algorithms to Implementation," Contract No. CNS-0905331, September 01, 2009 – August 31, 2013, \$549,899. (Prof. Wang responsible for \$224,950.)
- [7] Co-principal Investigator (with Prof. James Krogmeier, PI), Aruba Networks, "Voluntary Support for a Vertically Integrated Projects Team Researching Frequency Based Modulation Classification," November 1, 2010 - October 31, 2011, Voluntary Support, \$10,000 (equipment), \$32,585 (cash). (Prof. Wang responsible for \$3000.)
- [8] Co-principal Investigator (with Prof. Husheng Li, PI (@University of Tennessee, Knoxville), NSF, "ECCS: Collaborative Research: Physical Dynamics Aware Coding for Communications in Cyber Physical Systems: Analysis, Algorithms, and Implementation," Contract No. ECCS-1407603, September 1, 2014 - August 31, 2017, \$400,000. (Prof. Wang responsible for \$200,000.)
- [9] Principal Investigator, NSF, "CIF: Small: Network Information Theory Meets Network Optimization: Optimal Linear Network Coding for Packet Erasure Networks," Contract No. CCF-1422997, November 1, 2014 – October 31, 2017, \$493,142. (Prof. Wang responsible for \$493,142.)
- [10] Principal Investigator, NSF, "CIF: Small: Perishable Network Information Flow," Contract No. CCF-1618475, July 1, 2016 – June 30, 2019, \$499,708. (Prof. Wang responsible for \$249,854.)

- [11] Co-principal Investigator, NSF, "CIF: Small: Transcoding: A New Approach For Multi-hop Communications," Contract No. CCF-1816013, October 1, 2018 – September 30, 2021, \$499,993. (Prof. Wang responsible for \$233,537.)
- [12] Principal Investigator, NSF, "CIF: Small: Timing Optimization Over Random Network Asynchrony - Theory And Distributed Algorithms," Contract No. CCF-2008527, July 1, 2020 – June 30, 2021, \$165,000. (Prof. Wang responsible for \$165,000.)
- [13] Co-principal Investigator (with Raytheon BBN Technologies [lead], and Purdue PI Christopher Brinton), National Spectrum Consortium (NSC). "Dynamic Spectrum Sharing 5G Network Enhancements Prototype." July 2021 – Dec 2023. (\$8M total, \$1.5M to Purdue, Prof. Wang responsible for \$375,000.)
- [14] Principal Investigator, NSF, "Collaborative Research: CNS Core: Medium: Information Freshness in Scalable and Energy Constrained Machine to Machine Wireless Networks," Contract No. CCF-2008527, October 1, 2021 – September 30, 2025, \$250,000. (Prof. Wang responsible for \$250,000.)
- [15] Co-principal Investigator (with Idaho National Labs [lead], and Purdue PI David Love), Department of Energy (DOE). "5G Analysis and Security Topics in Wireless Communication." Jan 2022 – May 2022. \$50,000. (Prof. Wang responsible for \$25,000.)
- [16] Principal Investigator, NSF, "CIF: Student Travel Support for the 2023 IEEE International Symposium on Information Theory." Contract No. CCF-2310925, Jan 2023 – Dec 2023. \$15,000. (Prof. Wang responsible for \$15,000.)
- [17] Principal Investigator, NSF, "CIF: Small: Fundamental Communication Latency Limits Beyond the Traditional Block-Coding Architecture," Contract No. 2309887, Oct 2023 – Sept 2026. \$599,998. (Prof. Wang responsible for \$599,998.)

Professional Society Activities

Organization: Society of Communications and Networking in China
 Activity: Technical Program Committee, Third International Conference on Communications and Networking in China (ChinaCom), August 2008.

Organization: Society of Communications and Networking in China
Activity: Technical Program Committee, Fourth International Conference on Communications and Networking in China (ChinaCom), August 2009.

Organization: IEEE Communication Society
Activity: Technical Program Committee, Second IEEE International Workshop on Wireless Network Coding (WiNC), June 2009.

Organization: IEEE Communication Society
Activity: Chairing a technical session of IEEE *28th Conference on Computer Communications* (INFOCOM) mini-conference, Rio de Janeiro, Brazil, April 19 – 25, 2009.

Organization: Society of Information Theory and its Applications; and IEEE Information Theory Society
Activity: Technical Program Committee, 2010 International Symposium on Information Theory and Its Applications (ISITA), October 2010.

Organization: International Advisory Council (IAC)
Activity: Technical Program Committee, The 22nd International Teletraffic Congress (ITC), September 2010.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 8th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), June 2010

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *30th Conference on Computer Communications* (INFOCOM), Shanghai, China, April 10 – 15, 2011.

Organization: IEEE Information Theory Society
Activity: Chairing a technical session of *IEEE International Symposium on Information Theory* (ISIT), Saint Petersburg, Russia, July 31 - August 5, 2011.

Organization: International Advisory Council (IAC)
Activity: Technical Program Committee, The 23rd International Teletraffic Congress (ITC), September 2011.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 9th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), May 2011.

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *31st Conference on Computer Communications* (INFOCOM), Orlando, Florida USA, March 25 – 30, 2012.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 10th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Paderbone, Germany, May 2012.

Organization: IEEE Information Theory Society
Activity: Technical Program Committee, The 2012 International Symposium on Network Coding (NetCod), Cambridge, USA, June 2012.

Organization: IEEE Information Theory Society
Activity: Finance Officer, The 2012 North American School of Information Theory, Ithaca, USA, June 2012.

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *32nd Conference on Computer Communications* (INFOCOM), Turin, Italy, April 14 – 19, 2013.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Shanghai, China, April 2013.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 11th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Tsukuba Science City, Japan, May 2013.

Organization: IEEE Communications Society

Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Istanbul, Turkey, April 2014.

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *33rd Conference on Computer Communications* (INFOCOM), Toronto, Canada, April 27 – May 2, 2014.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 12nd International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Hammamet, Tunisia, May 2014.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), New Orleans, USA, March 2015.

Organization: IEEE Communication Society
Activity: Technical Program Committee, Distinguished TPC Member (top 25% of the TPC members), IEEE *34th Conference on Computer Communications* (INFOCOM), Hong Kong, China, April 26 – May 1, 2015.

Organization: IEEE Information Theory Society
Activity: Associate Editor of IEEE Transactions on Information Theory, Area: Coding Techniques. May 2014 to April 2017.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 13th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Mumbai, India, May 2015.

Organization: National Science Foundation
Activity: Proposal Panelist, February 2015

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Doha, Qatar, April 2016.

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *35th Conference on Computer Communications* (INFOCOM), San Francisco, USA, April 10 – 15, 2016.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 14th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Tempe, Arizona, May 2016.

Organization: National Science Foundation
Activity: Proposal Panelist, March 2017

Organization: IEEE Information Theory Society
Activity: Technical Program Co-Chair, IEEE Information Theory Workshop, November 2017

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), San Francisco, USA, March 19-22, 2017.

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *International Conference on Computer Communications* (INFOCOM), Atlanta, USA, May 1-4, 2017.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 15th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Paris, France, May 2017.

Organization: National Science Foundation
Activity: Proposal Panelist, March 2018

Organization: IEEE Communication Society
Activity: Technical Program Committee, IEEE *International Conference on Computer Communications* (INFOCOM), Honolulu, USA, April 15-19, 2018.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Barcelona, Spain, April 15-18, 2018.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 16th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Shanghai, China, May 7-11, 2018.

Organization: IEEE Communication Society
Activity: Poster co-chair, 2018 IEEE Communication Theory Workshop (CTW), Miramar Beach, Florida, USA, May 14-16, 2018.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Marrakech, Morocco, April 15-18, 2019.

Organization: IEEE Information Theory Society; and IEEE Control Systems Society
Activity: Technical Program Committee, The 17th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), Avignon, France, June 4-6, 2019.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Seoul, South Korea, April 6-9, 2020.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Computer Communications (INFOCOM) Age-of-Information Workshop, Beijing, China, April 27-30, 2020.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Communications (ICC), Dublin, Ireland, June 7-11, 2020.

Organization: Association for Computing Machinery

Activity: Technical Program Committee, ACM MobiHoc 2020, Shanghai, China, June 30 – July 3, 2020.

Organization: National Science Foundation
Activity: Proposal Panelist, October 2020

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Nanjing, China, March 29 - April 1, 2021.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Computer Communications (INFOCOM), Virtual Conference, May 10-13, 2021.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Austin, Texas, April 10-13, 2022.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Computer Communications (INFOCOM), Virtual Conference, May 2-5, 2022.

Organization: IEEE Communications Society
Activity: Technical Program Committee, AoI Workshop of IEEE International Conference on Computer Communications (INFOCOM), Virtual Conference, May 2-5, 2022.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Glasgow, Scotland, UK, March 26-29, 2023.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Computer Communications (INFOCOM), New York area, USA, May 17-20, 2023.

Organization: National Science Foundation
Activity: Proposal Panelist, November 2023

Organization: IEEE Communications Society

Activity: Technical Program Committee, IEEE Wireless Communications and Networking Conference (WCNC), Dubai, United Arab Emirates, April 21-24, 2024.

Organization: IEEE Communications Society
Activity: Technical Program Committee, IEEE International Conference on Computer Communications (INFOCOM), Vancouver, Canada, May 20-23, 2024.

PhD Thesis Supervision Completed

Abdallah Khreishah	PhD (April, 2010) (co-supervised with Prof. Ness B. Shroff)
Gyu Bum Kyung	PhD (May, 2011)
Xiaohang Li	PhD (January, 2013) (co-supervised with Prof. Xiaojun Lin)
Wei-Cheng Kuo	PhD (May, 2015)
Jaemin Han	PhD (May, 2016)
Imad Ahmad	PhD (May, 2016)
Dennis Ogbe	PhD (April, 2020) (co-supervised with Prof. David Love)
Chih-Hua Chang	PhD (February, 2021)
Cho-Hsin Tsai	PhD (March, 2022)
Jia Zhang	PhD (July, 2022)

Master's Thesis Supervision Completed

None.

Master's and PhD Thesis Students Currently Being Supervised (serving as chair or co-chair)

2017 - present

Pin-Wen Su	PhD
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2021 - present

Wonjun Lee	PhD
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2021 - present

Giles Birschoff	PhD
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Master's Committee Membership (not serving as chair)

Yousef Mohammad Hajjat	MS thesis
Ritesh Nagpal	MS thesis
Manu Sharma	MS thesis
Soumyadip Banerjee	MS non-thesis
Min-hee Jun	MS non-thesis
Misook Kim	MS non-thesis
Jaeyoung Park	MS non-thesis
Akshya Gupta	MS non-thesis

Ph.D. Committee Membership (not serving as chair)

Mayur Agrawal	PhD
Ziad Ahmad	PhD
Mohammad Yousef Hajjat	PhD
Po-Kai Huang	PhD
Landis M. Huffman	PhD
Venkata Venkatachalam Jayaraman	PhD
Myeong Kang	PhD
Joon Young Kim	PhD
Dimitrios Koutsonikolas	PhD
Mu-Sheng Lin	PhD
Hung-Yi Lo	PhD
Mir Hamza Mahmood	PhD
Song Noh	PhD
Joo Sung Park	PhD
Tariq Rashid Qureshi	PhD
Sarah Sellke	PhD
Donghoon Shin	PhD
Shun-Te Tseng	PhD
Dawei Ying	PhD
Bin Zhao	PhD
Can Zhao	PhD
Shizhen Zhao	PhD
Yihan Zhou	PhD
Henry Su	PhD
Eric Ruzomberka	PhD
Matt Bliss	PhD

ECE Project (495, 496, 695, 696, 697) Supervision Completed

Faculty co-advisor	Software-Defined Radio Team of VIP	Fall 08 --- Spring 18
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Faculty co-advisor Beyond 5G Team of VIP

Fall 19 ---
Spring 24

Courses Developed

EE 695C Inference Methods for Codes on Graphs (Fall 2007, Fall 2009, Spring 2012)

Courses "In Charge Of"

EE 695C Inference Methods for Codes on Graphs (Fall 2007, Fall 2009, Spring 2012)

School Committee Activities

Committee: Communications, Networking, Signal and Image Processing
Area Committee

Activity: Member, 2006 – present;
Chair, 2021 – present.

Committee: Admission Committee

Activity: Member, 2006 – present

Committee: Qualification Exam Committee

Activity: Member, 2007 – 2009

Committee: Curriculum Committee

Activity: Member, 2009 – 2011, 2018 – 2021

Committee: Faculty Load Committee

Activity: Member, 2019 - 2020

Committee: Professor of Practice Faculty Recruiting Committee

Activity: Member, 2021 - 2022

Engineering-Wide Committee Activities

None.

University-Wide Committee Activities

None.

Research Book Contributions and Books Published

None.

Serial Journal Articles

- [1] C.-C. Wang, S.R. Kulkarni, and H.V. Poor, "Density Evolution for Asymmetric Memoryless Channels," *IEEE Transactions on Information Theory*, vol. 51, no. 12, pp. 4216 – 4236, December 2005.
- [2] C.-C. Wang, S.R. Kulkarni, and H.V. Poor, "Arbitrary Side Observations in Bandit Problems," *Advances in Applied Mathematics, special issue dedicated to Dr. David P. Robbins*, vol. 34, no. 4, pp. 903 - 938, May 2005.
- [3] C.-C. Wang, S.R. Kulkarni, and H.V. Poor, "Bandit Problems with Side Observations," *IEEE Transactions on Automatic Control*, vol. 50, no. 5, pp. 338 - 355, May 2005.
- [4] C.-C. Wang, S.R. Kulkarni, and H.V. Poor, "Finite-Dimensional Bounds on Zm and Binary LDPC Codes with Belief Propagation Decoders," *IEEE Transactions on Information Theory*, vol. 53, no. 1, pp. 56 – 81, January 2007.
- [5] D. Guo and C.-C. Wang, "Multiuser Detection of Sparsely Spread CDMA," *IEEE Journal on Selected Areas in Communications*, vol. 26, no. 3, pp. 421 – 431, April 2008.
- [6] C.-C. Wang, S.R. Kulkarni, and H.V. Poor, "Finding All Small Error-Prone Substructures in LDPC Codes," *IEEE Transactions on Information Theory*, vol. 55, no. 5, pp. 1976 – 1998, May 2009.
- [7] A. Khreishah, C.-C. Wang, and N.B. Shroff, "Cross-layer Optimization for Wireless Multihop Networks with Pairwise Intersession Network Coding," *IEEE Journal on Selected Areas in Communications*, vol. 27, no. 5, pp. 606 – 621, June 2009.
- [8] C.-C. Wang, "Pruning Network Coding Traffic By Network Coding - A New Class of Max-Flow Algorithms," *IEEE Transactions on Information Theory*, vol. 56, no. 4, pp. 1909-1929, April 2010.
- [9] A. Khreishah, C.-C. Wang, and N.B. Shroff, "Rate Control with Pairwise Inter-session Network Coding," *IEEE Transactions on Networking*, vol. 18, no. 3, pp. 816 – 829, June 2010.
- [10] C.-C. Wang and Ness B. Shroff, "Pairwise Intersession Network Coding On Directed Networks," *IEEE Transactions on Information Theory*, vol. 56, no. 8, pp. 3879-3900, August 2010.

- [11] G. Kyung and C.-C. Wang, "Towards a Practical Scheme for Binary Broadcast Channels with Varying Channel Quality Using Dirty Paper Coding," *IEEE Transactions on Communications*, vol. 59, no. 4, pp. 1009-1018, April 2011.
- [12] X. Li, C.-C. Wang, and X. Lin "On The Capacity of Immediately-Decodable Coding Schemes for Wireless Stored-video Broadcast with Hard Deadline Constraints," *IEEE Journals on Selected Areas of Communication*, vol. 29, no. 5, pp. 1094-1105, May 2011.
- [13] D. Koutsonikolas, Y.C. Hu, and C.-C. Wang, "Efficient Network Coding Based Opportunistic Routing Through Cumulative Coded Acknowledgment," *IEEE Transactions on Networking*, vol. 19, no. 5, pp. 1368-1381, October 2011.
- [14] D. Koutsonikolas, C.-C. Wang, Y.-C. Hu, and N.B. Shroff, "FEC-Based AP Downlink Transmission Schemes For Multiple Flows: Combining The Reliability and Throughput Enhancement of Intra- and Inter-flow Coding," *Elsevier Performance Evaluation (PEVA)*, vol. 68, no. 11, pp. 1118-1135, November 2012.
- [15] C.-C. Wang, "On The Capacity of 1-to-K Broadcast Packet Erasure Channels with Channel Output Feedback," *IEEE Transactions on Information Theory*, vol. 58, no. 2, pp. 931-956, February 2012.
- [16] C.-C. Wang, "On the Capacity of Wireless 1-Hop Intersession Network Coding – A Broadcast Packet Erasure Channel Approach," *IEEE Transactions on Information Theory*, vol. 58, no. 2, pp. 957-988, February 2012.
- [17] G.B. Kyung and C.-C. Wang, "Finding The Exhaustive List of Small Fully Absorbing Sets and Designing The Corresponding Low Error-Floor Decoder," *IEEE Transactions on Communications*, vol. 60, no. 6, pp. 1487-1498, June 2012.
- [18] D. Koutsonikolas, Y.-C. Hu, and C.-C. Wang, "Pacifier: High-Throughput, Reliable Multicast Without Crying Babies in Wireless Mesh Networks," *IEEE Transactions of Networking*, vol. 20, no. 5, pp. 1375-1388, October 2012.
- [19] P.-K. Huang, X. Lin, and C.-C. Wang, "A Low-Complexity Congestion Control and Scheduling Algorithm for Multihop Wireless Networks With Order-Optimal Per-Flow Delay," *IEEE Transactions of Networking*, vol. 21, no. 2, pp. 495-508, April, 2013.

- [20] W.-C. Kuo and C.-C. Wang, "Two-Flow Capacity Region Of The COPE Principle For Two-Hop Wireless Erasure Networks," *IEEE Transactions on Information Theory*, vol. 59, no. 11, pp. 7553-7575, November 2013.
- [21] C.-C. Wang and J. Han, "The Capacity Region of Two-Receiver Multiple-Input Broadcast Packet Erasure Channels With Channel Output Feedback," *IEEE Transactions on Information Theory*, vol. 60, no. 9, pp. 5597-5626, September 2014.
- [22] Z. Ahmad, Z. Chance, D.J. Love, and C.-C. Wang, "Concatenated Coding Using Linear Schemes for Gaussian Broadcast Channels with Noisy Channel Output Feedback," *IEEE Transactions on Communications*, vol. 63, no. 11, pp. 4576-4590, November 2015.
- [23] D. Shin, S. Bagchi, and C.-C. Wang, "Toward Optimal Distributed Monitoring of Multi-Channel Wireless Networks," *IEEE Transactions on Mobile Computing*, vol. 15, no. 7, pp. 1826-1838, June 2016.
- [24] J. Han and C.-C. Wang, "General Capacity Region For The Fully-Connected 3-node Packet Erasure Network", *IEEE Transactions on Information Theory*, vol. 62, no. 10, pp. 5503-5523, October 2016.
- [25] C.-C. Wang and M. Chen, "Sending Perishable Information: Coding Improves Delay-Constrained Throughput Even for Single Unicast", *IEEE Transactions on Information Theory*, vol. 63, no. 1, pp. 252-279, January 2017.
- [26] W.-C. Kuo and C.-C. Wang, "Robust And Optimal Opportunistic Scheduling For Downlink 2-Flow Network Coding With Varying Channel Quality and Rate Adaptation," *IEEE/ACM Transactions on Networking*, vol. 25, no. 1, pp. 465-479, February 2017.
- [27] X. Li, C.-C. Wang, and X. Lin, "Inter-Session Network Coding Schemes for Two Unicast Sessions with Sequential Hard Deadline Constraints", *IEEE/ACM Transactions on Networking*, vol. 25, no. 1, pp. 624-638, February 2017.
- [28] L. Deng, C.-C. Wang, M. Chen, and S. Zhao, "Timely Wireless Flows with General Traffic Patterns: Capacity Region and Scheduling Algorithms," *IEEE/ACM Transactions on Networking*, vol. 25, no. 6, pp. 3473-3486, September 2017.
- [29] I. Ahmad and C.-C. Wang, "When Can Intelligent Helper Node Selection Improve the Performance of Distributed Storage Networks?" *IEEE Transactions on Information Theory*, vol. 64, no. 3, pp. 2142-2171, March 2018.

- [30] I. Ahmad and C.-C. Wang, “Locally Repairable Regenerating Codes: Node Unavailability and the Insufficiency of Stationary Local Repair,” *IEEE Transactions on Information Theory*, vol. 64, no. 5, pp. 3493-3512, May 2018.
- [31] S. Kamath, V. Anantharam, D. Tse, and C.-C. Wang, “The two-unicast problem”, *IEEE Transactions on Information Theory*, vol. 64, no. 5, pp. 3865-3882, May 2018.
- [32] C.-H. Chang and C.-C. Wang, “A New Capacity-Approaching Scheme for General 1-to-K Broadcast Packet Erasure Channels with ACK/NACK”, *IEEE Transactions on Information Theory*, vol. 66, no. 5, pp. 3000-3025, May 2020.
- [33] C.-H. Tsai and C.-C. Wang, “Unifying AoI Minimization and Remote Estimation — Optimal Sensor/Controller Coordination with Random Two-way Delay” *IEEE/ACM Transactions on Networking*, vol. 30, no. 1, pp. 229-242, February 2022.
- [34] V. Suresh, E. Ruzomberka, C.-C. Wang and D.J. Love, “Causal Adversarial Channels with Feedback Snooping” *IEEE Journal on Selected Areas in Information Theory*, vol. 3, no. 1, pp. 69-84, March 2022.
- [35] P.-W. Su, Y.-C. Huang, S.-C. Lin, I.-H. Wang, and C.-C. Wang, “Random Linear Streaming Codes in the Finite Memory Length and Decoding Deadline Regime — Part I: Exact Analysis”, *IEEE Transactions on Information Theory*, vol. 68, no. 10, pp. 6356-6387, May 2022.
- [36] C.-H. Chang, B. Peleato, and C.-C. Wang, “Coded Caching with Full Heterogeneity: Exact Capacity of The Two-User/Two-File Case,” *IEEE Transactions on Information Theory*, vol. 68, no. 11, pp. 7060-7076, November 2022.
- [37] C.-H. Tsai and C.-C. Wang, “Distribution-oblivious Online Algorithms for Age-of-Information Penalty Minimization,” *IEEE/ACM Transactions on Networking*, vol. 31, no. 4, pp. 1779-1794, August 2023.
- [38] D. Ogbe, C.-C. Wang, and D.J. Love, “On The Optimal Delay Growth Rate of Multi-hop Line Networks: Asymptotically Delay-Optimal Designs And The Corresponding Error Exponents,” *IEEE Transactions on Information Theory*, vol. 69, no. 10, pp. 6167-6193, October 2023.

- [39] E. Ruzomberka, D. Love, C. Brinton, A. Gupta, C. Wang, and H. V. Poor, “Challenges and Opportunities for Beyond-5G Wireless Security” *IEEE Security & Privacy*, vol. 21, no. 5, pp. 55-66, September-October 2023.
- [40] M. Bliss, C.-C. Wang, and D.J. Love, “Optimal Single-Bit Relaying Strategies with Multi-Relay Diversity” *IEEE Transactions on Information Theory*, vol. 69, no. 10, pp. 6518-6536, October 2023.
- [41] E. Ruzomberka, C.-C. Wang, and D.J. Love “Channel Capacity for Adversaries With Computationally Bounded Observations” *IEEE Transactions on Information Theory*, vol. 70, no. 1, pp. 75-92, January 2024.

Serial Journal Correspondence or Letters

None.

Serial Journal Abstracts

None.

Conference Proceedings and Presentations (* for poster / presentation only)

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- [73] P.-W. Su, Y.-C. Huang, S.-C. Lin, I.-H. Wang, and C.-C. Wang, "Error Rate Analysis for Random Linear Streaming Codes in the Finite Memory Length Regime," in *Proceedings of the IEEE Int'l Symp. Information Theory (ISIT)*, Los Angeles, USA, June 21-26, 2020, virtual conference, 6 pages.
- [74] C.-H. Tsai and C.-C. Wang, "Age-of-Information Revisited: Two-way Delay and Distribution-oblivious Online Algorithm," in *Proceedings of the IEEE Int'l Symp. Information Theory (ISIT)*, Los Angeles, USA, virtual conference, June 21-26, 2020, 6 pages.
- [75] C.-H. Tsai and C.-C. Wang, "Unifying AoI Minimization and Remote Estimation - Optimal Sensor/Controller Coordination with Random Two-way Delay," in *Proceedings of the IEEE International Conference on Computer Communications (INFOCOM)*, Toronto, Canada, virtual conference July 6-9, 2020, 10 pages.
- [76] D. Ogbe, C.-C. Wang, and D. J. Love, "Backhauling many devices: Relay schemes for massive random access networks," Accepted for presentation at: 2020 IEEE Global Communications Conference (GLOBECOM), Dec. 2020.

- [77] S.-C. Lin, C.-C. Wang, I.-H. Wang, Y.-C. Huang, Y.-C. Lai, “On finite-length analysis and channel dispersion for broadcast packet erasure channels with feedback,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Melbourne, Australia, USA, July 12-20, 2021, virtual conference, 6 pages.
- [78] P.-W. Su, Y.-C. Huang, S.-C. Lin, I.-H. Wang, and C.-C. Wang, “Random Linear Streaming Codes in the Finite Memory Length and Decoding Deadline Regime,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Melbourne, Australia, USA, July 12-20, 2021, virtual conference, 6 pages.
- [79] C.-H. Tsai and C.-C. Wang, “Jointly Minimizing AoI Penalty and Network Cost Among Coexisting Source-Destination Pairs,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Melbourne, Australia, USA, July 12-20, 2021, virtual conference, 6 pages.
- [80] S.-C. Lin, Y.-C. Lai, Y.-C. Huang, C.-C. Wang, I.-H. Wang, “Optimal finite-length linear codes and the corresponding channel dispersion for broadcast packet erasure channels with feedback”, in *Proceedings of the 2021 IEEE Information Theory Workshop (ITW)*, Kanazawa, Japan, October 17-21, 2021, virtual conference, 6 pages.
- [81] E. Ruzomberka, C.-C. Wang and D. Love, “Channel Capacity for Adversaries With Computationally Bounded Observations,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Espoo, Finland, June 26 – July 1, 2022, 6 pages.
- [82] P.-W. Su, Y.-C. Huang, S.-C. Lin, I.-H. Wang, and C.-C. Wang, “Sequentially Mixing Randomly Arriving Packets Improves Channel Dispersion Over Block-Based Designs,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Espoo, Finland, June 26 – July 1, 2022, 6 pages.
- [83] C.-C. Wang, “How Useful is Delayed Feedback in AoI Minimization - A Study on Systems With Queues in Both Forward and Backward Directions”, in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Espoo, Finland, June 26 – July 1, 2022, 6 pages.
- [84] C.-C. Wang and D. Love, “Optimal Learning Rate of Sending One Bit Over Arbitrary Acyclic BISO-Channel Networks,” in *Proceedings of the IEEE Int’l Symp. Information Theory (ISIT)*, Taipei, Taiwan, June 25-30, 2023, 6 pages.

- [85] P.-W. Su, Y.-C. Huang, S.-C. Lin, I.-H. Wang, and C.-C. Wang, "Detailed Asymptotics of the Delay-Reliability Tradeoff of Random Linear Streaming Codes," in *Proceedings of the IEEE Int'l Symp. Information Theory (ISIT)*, Taipei, Taiwan, June 25-30, 2023, 6 pages.
- [86] G. Yao, C.-C. Wang, and N.B. Shroff, "Age Minimization with Energy and Distortion Constraints," in *Proceedings of the 24th International Symposium on Theory, Algorithmic Foundations, and Protocol Design for Mobile Networks and Mobile Computing (ACM MobiHoc)*, Washington DC, USA, October 23-26, 2023.

Invited Lectures and Short Visits

- [1] "Low-Density Parity-Check Codes for Symmetric and Non-symmetric Channels," Northwestern University, Evanston, Illinois, April 8, 2005.
- [2] "Recent Graph-theoretic Progress of Network Coding - from Characterization Theorems to new Graph Algorithms," Workshop on Information Theory and Wireless Communications, McMaster University, Hamilton, Ontario, Canada, July 6, 2008.
- [3] "On the Capacity of Practical Wireless 2-Hop Relay Networks with Intersession Network Coding," Department of Electrical Engineering, University of Notre Dame, Notre Dame, Indiana, USA, February 11, 2010.
- [4] "Bringing Structures Back to Random Linear Network Coding (NC) - From Capacity Results of Wireless 1-Hop Intersession NC to Practical Network Coding Protocols," Department of Electrical Engineering and Computer Science, University of California, Berkeley, CA, USA, March 12, 2010.
- [5] "Capacity-Achieving Network Code Design For Wireless 1-Hop Networks," Department of Electrical Engineering, National Tsing-Hua University, Hsin-Chu, Taiwan, May 31, 2010.
- [6] "Capacity Analysis of Wireless 1-Hop Networks with Message Side Information and with Channel Output Feedback," Department of Communication Engineering, National Chiao Tung University, Hsin-Chu, Taiwan, June 3, 2010.

- [7] “Quantifying and Achieving the Capacity of Wireless 1-Hop Network Coding --- A Code-Alignment-Based Approach,” Institute of Network Coding, Department of Information Engineering, The Chinese University of Hong Kong, Shatin, Hong Kong, June 4, 2010.
- [8] “Quantifying and Achieving the Capacity of Wireless 1-Hop Network Coding --- A Code-Alignment-Based Approach: Part I: XOR in The Air, Part II: The Capacity of Packet Erasure Channel with Channel Output Feedback,” Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, USA, August 13, 2010.
- [9] “Quantifying and Achieving the Capacity of Wireless 1-Hop Network Coding --- A Code-Alignment-Based Approach,” Department of Electrical Engineering, University of South California, Los Angeles, USA, November 12, 2010.
- [10] “Capacity of Wireless 1-Hop Relay Networks — From Message Side Information to Joint Scheduling and Network Coding with Delayed Channel Status Feedback,” Department of Electrical and Computer Engineering, The Ohio State University, Columbus, Ohio, USA, April 27-28, 2011.
- [11] Short-term scholar visit to Intel-NTU Connected Context Computing Center, Taipei, Taiwan, May 23 – June 3, 2011.
- [12] “Exotic Routing Protocols for Wireless Mesh Networks,” Department of Electrical Engineering, National Taiwan University, Taipei, Taiwan, May 23, 2011.
- [13] “Capacity of Wireless 1-Hop Relay Networks — From Message Side Information to Joint Scheduling and Network Coding with Delayed Channel Status Feedback,” Research Center for Information Technology Innovation, Academia Sinica, New Taipei City, Taiwan, May 26, 2011.
- [14] “Regulating Network Coded Traffic by Network Coded Feedback - An Online Opportunistic Routing Protocol For Wireless Mesh Networks,” Department of Electrical Engineering, National Tsing-Hua University, Hsin-Chu, Taiwan, May 30, 2011.
- [15] “Capacity of Wireless 1-Hop Relay Networks — From Message Side Information to Joint Scheduling and Network Coding with Delayed Channel Status Feedback,” Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, USA, August 29, 2011.

- [16] “Introduction of Network Coding: From fundamental principles to protocol design to grand challenges,” 2-day short course, National Chiao Tung University, Hsin-Chu, Taiwan, June 9--10, 2012.
- [17] “Multi-Unicast Capacity of Packet-Level Network Coding on Small Wireless Networks,” Institute of Network Coding, Department of Information Engineering, The Chinese University of Hong Kong, Shatin, Hong Kong, August 21, 2013.
- [18] “Multi-Unicast Capacity of Packet-Level Network Coding on Small Wireless Networks,” University of Hong Kong, November 8, 2013.
- [19] “Multi-Unicast Capacity of Packet-Level Network Coding on Small Wireless Networks,” Intel-NTU Connected Context Computing Center, Taipei, Taiwan, November 25, 2013.
- [20] “Multi-Unicast Capacity of Packet-Level Network Coding on Small Wireless Networks,” University of Toronto, Canada, April 29, 2014.
- [21] “Toward Practical Implementation of Throughput-Optimal Network Codes - Issues and New Theoretic Development,” Research Center for Information Technology Innovation, Academia Sinica, New Taipei City, Taiwan, August 13, 2014.
- [22] “Toward Practical Implementation of Throughput-Optimal Network Codes - Issues and New Theoretic Development,” University of Tennessee, Knoxville, TN, USA, October 13, 2014.
- [23] “Transcoding – A New Strategy for Relay Channels,” Auburn University, ECE, Auburn, AL, USA, November 28, 2018.
- [24] “Applications of Fourier Transforms on Analog and Digital Communications,” A 2-week 18-credit-hour short course, Department of Electrical Engineering, National Cheng Kung University, Tainan City, Taiwan. May 2022. This short-course is developed under the Purdue MS – NCKU BS Dual Degree Program.

Published Reviews

None.

Technical Reports

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Patents Approved and Patent Applications

D. J. Love and C.-C. Wang, "Transcoding Wireless Communication System,"
U.S. Patent # 10,715,278, July 14, 2020.

Activities as a Referee

2005 – present	IEEE Transactions on Information Theory
2011 – 2014	IEEE Transactions on Parallel and Distributed Systems
2008 – 2013	Elsevier Computer Networks (COMNET), The International Journal of Computer and Telecommunications Networking
2004 – present	IEEE Transactions on Communications
2008 – present	IEEE Transactions on Networking
2008 – 2011	IEEE Transactions on Vehicular Technology
2003, 2009	IEEE Transactions on Signal Processing
2009	IEEE Communication Letters
2008	Defense Threat Reduction Agency
2008	IEEE Transactions on Wireless Communications
2004 – 2014	IEEE Transactions on Automatic Control
2008	IEEE Journal on Selected Areas in Communications
2006	Annals of Statistics
2004	Annals of Applied Probability
2004	Journal Mathematical Modeling and Analysis
2007 – 2012	IEEE International Symposium on Information Theory
2009	IEEE Vehicular Technology Conference
2009	IEEE International Conference on Communications
2007	IEEE Wireless Communications and Networking Conference
2006	IEEE GLOBECOM
2005	ACM SIGCOMM Asia Workshop
2005	International Symposium on Power-Line Communications and its Applications
2003	Proceedings of the International Symp. on Turbo Codes and its Related Topics.

Editorial Positions

2014 – 2017 Associate Editor of IEEE Transactions on Information Theory; Area: Coding Techniques.

Special Projects, Short Courses, etc. -- Contribution

None.

Short Courses and Workshops Attended:

None.

Other Activities:

Attended the 3-day Multicultural Forum of Purdue University, in Tecumseh Leadership Center, October 16-18, 2006.