Minghua Chen

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Positions Held

2020 - present, Assistant Director, Hong Kong Institute for Data Science

2019 - present, Professor, School of Data Science, City University of Hong Kong

2013 - 2019, Associate Professor, Information Engineering, The Chinese University of Hong Kong

2007 - 2013, Assistant Professor, Information Engineering, The Chinese University of Hong Kong

2015 - 2019, Adjunct Associate Professor, Tsinghua University, China

2006 - 2007, PostDoc Researcher, Microsoft Research at Redmond, USA

Education

Ph.D. (2006), Electrical Engineering and Computer Sciences, University of California at Berkeley

B.E. (1999), M.S. (2001), Electronic Engineering, Tsinghua University, Beijing, China

Selected Awards and Recognition

ACM e-Energy Best Paper Award, 2023

Election to IEEE Fellow, 2021

ACM Distinguished Scientist, 2020

ACM e-Energy Best Paper Award Candidate/Finalist (2015, 2016, 2018, 2019, 2022)

ACM MobiHoc Best Paper Award Candidate (top 3), 2014

The Chinese University of Hong Kong: Young Researcher Award, 2013

ACM Multimedia Best Paper Award, 2012

IEEE Transactions on Multimedia Prize Paper Award (Best Paper Award), 2009

IEEE International Conference on Multimedia and Expo (ICME) Best Paper Award, 2009

University of California at Berkeley: Eli Jury Award, 2007

Selected Publication

C. Liu, E. Liang, and M. Chen, "Characterizing ResNet's Universal Approximation Capability", in Proceedings of 41st International Conference on Machine Learning (ICML), Vienna, Austria, July 21 - 27, 2024.

W. Huang, M. Chen, and S. H. Low, "Unsupervised Learning for Solving AC Optimal Power Flows: Design, Analysis, and Experiment", IEEE Transactions on Power Systems, early access, 2024.

E. Liang and M. Chen, "Generative Learning for Solving Non-Convex Problem with Multi-Valued Input-Solution Mapping", in Proceedings of 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 7-11, 2024.

H. Huang, M. Chen, and X. Qiao, "Generative Learning for Financial Time Series with Irregular and Scale-Invariant Patterns", in Proceedings of 12th International Conference on Learning Representations (ICLR), Vienna, Austria, May 7-11, 2024. (Spotlight - top 5%; sole winner of Gradient AI Research Award 2024 for innovative contributions to financial AI.)

E. Liang, M. Chen, and S. H. Low, "Low Complexity Homeomorphic Projection to Ensure Neural-Network Solution Feasibility for Optimization over (Non-)Convex Set", in Proceedings of 40th International Conference on Machine Learning (ICML), Honolulu, Hawaii, July 23 - 29, 2023. (An extended version is accepted after minor revision by Journal of Machine Learning Research in 2024)

J. Su, Q. Lin, and M. Chen, "Follow the Sun and Go with the Wind: Carbon Footprint Optimized Timely E-Truck Transportation", in Proceedings of 14th International Conference on Future Energy Systems (ACM e-Energy 2023), Orlando, Florida, June 20 - 23, 2023.

T. Zhao, X. Pan, M. Chen, and S. H. Low, "Ensuring DNN Solution Feasibility for Optimization Problems with Linear Constraints", in Proceedings of 11th International Conference on Learning Representations (ICLR), Kigali, Rwanda, May 1-5, 2023. (Oral; top 25% of the accepted papers)

M. Zhou, M. Chen, and S. H. Low, "DeepOPF-FT: One Deep Neural Network for Multiple AC-OPF Problems with Flexible Topology", IEEE Transactions on Power Systems, accepted for publication.

W. Xu, Q. Liu, M. Chen, and H. Zeng, "Ride the Tide of Traffic Conditions: Opportunistic Driving Improves Energy Efficiency of Long-Haul Timely Truck Transportation", IEEE Transactions on Intelligent Transportation Systems, accepted for publication. (Conference version in ACM BuildSys 2019).

W. Xu*, T. Cui*, and M. Chen, "Optimizing Two-Truck Platooning with Deadlines", IEEE Transactions on Intelligent Transportation Systems, accepted for publication. (*: Co-primary authors.)

X. Pan, M. Chen, T. Zhao, and S. H. Low, "DeepOPF: A Feasibility-Optimized Deep Neural Network Approach for AC Optimal Power Flow Problems", IEEE Systems Journal, accepted, 2022.

Q. Lin, Y. Mo, J. Su, and M. Chen, "Competitive Online Optimization with Multiple Inventories: A Divide-and-Conquer Approach", in Proceedings of ACM SIGMETRICS / IFIP Performance, Mumbai, India, June 6-10, 2022.

T. Zhao, H. Yi, M. Chen, C. Wu, and Y. Xu, "Efficient and Robust Equilibrium Strategies of Utilities in Day-ahead Market with Load Uncertainty", IEEE Systems Journal, accepted, 2021.

W. Huang, X. Pan, M. Chen, and S. H. Low, "DeepOPF-V: Solving AC-OPF Problems Efficiently", IEEE Transactions on Power Systems, vol. 37, no. 1, pp. 800 - 803, Jan. 2022.

X. Pan, T. Zhao, M. Chen, and S. Zhang, "DeepOPF: A Deep Neural Network Approach for Security-Constrained DC Optimal Power Flow", IEEE Transactions on Power Systems, vol. 36, issue 3, pp. 1725 - 1735, May 2021. (Conference version in IEEE SmartGridComm 2019.)

Q. Lin, W. Xu, M. Chen, and X. Lin, "A Probabilistic Approach for Demand-Aware Ride-Sharing Optimization", in Proceedings of ACM MobiHoc, Catania, Italy, July 2-5, 2019.

Q. Lin, H. Yi, J. Pang, M. Chen, A. Wierman, M. Honig, and Y. Xiao, "Competitive Online Optimization under Inventory Constraints", in Proceedings of ACM SIGMETRICS / IFIP Performance, Phoenix, Arizona, June 24 - 28, 2019. (The first two authors contribute equally to the work.)

H. Yi, M. Hajiesmaili, Y. Zhang, M. Chen, and X. Lin, "Impact of Uncertainty of Distributed Renewable Generation on Deregulated Electricity Supply Chain", IEEE Transactions on Smart Grid, vol. 9, issue 6, November 2018.

Y. Zhang, L. Deng, M. Chen, and P. Wang, "Joint Bidding and Geographical Load Balancing for Datacenters: Is Uncertainty a Blessing or a Curse?", IEEE/ACM Transactions on Networking, vol. 26, issue 3, June 2018.(Conference version in IEEE INFOCOM 2017.)

Q. Liu, H. Zeng, and M. Chen, "Energy-Efficient Timely Truck Transportation for Geographically-Dispersed Tasks", accepted for publication in IEEE Trans. on Intelligent Transportation Systems. (Conference version in ACM e-Energy 2018 as a Best Paper Award Finalist.)

Q. Lin, L. Deng, J. Sun, and M. Chen, "Optimal Demand-Aware Ride-Sharing Routing", in Pro-

ceedings of IEEE INFOCOM, Honolulu, HI, USA, April 16-19, 2018.

L. Deng, M. Hajiesmaili, M. Chen, and H. Zeng, "Energy-Efficient Timely Transportation of Long-Haul Heavy-Duty Trucks", IEEE Trans. on Intelligent Transportation Systems, vol 19, issue 7, July 2018. (Conference version in ACM e-Energy 2016 as a Best Paper Award Candidate.)

L. Deng, C. Wang, M. Chen, and S. Zhao, "Timely Wireless Flows with Arbitrary Traffic Patterns: Capacity Region and Scheduling Algorithms", IEEE/ACM Trans. on Networking, vol. 25, no. 6, pp. 3473-3486, December 2017. (Conference version in IEEE INFOCOM 2016.)

S. Zhang, L. Huang, M. Chen, and X. Liu, "Proactive Serving Decreases User Delay Exponentially: The Light-tailed Service Time Case", IEEE/ACM Trans. on Networking, vol. 25, no. 2, pp. 708 - 723, April 2017. (Conference versions in ACM SIGMETRICS 2014 and ACM MAMA 2015.)

C. Wang and M. Chen, "Sending Perishable Information: Coding Improves Delay-Constrained Throughput Even for Single Unicast", IEEE Trans. on Information Theory, vol. 63, no. 1, pp. 252 - 279, January 2017. (Conference version in IEEE ISIT 2014.)

H. Hou, K. W. Shum, M. Chen, and H. Li, "BASIC Codes: Low-Complexity Regenerating Codes for Distributed Storage Systems", IEEE Transactions on Information Theory, vol. 62, issue 6, pp. 3053 – 3069, June 2016. (Conference version in IEEE ISIT 2013.)

Y. Zhang, M. Hajiesmaili, and M. Chen, "Peak-Aware Online Economic Dispatching for Microgrids", IEEE Transactions on Smart Grid, April 2016. (Conference version in ACM e-Energy 2015.)

C. Dong, H. Zeng, and M. Chen, "Online Algorithms for Automotive Idling Reduction with Effective Statistics", IEEE Trans. on Computer-Aided Design of Integrated Circuits and Systems, vol. 34, no. 11, August 2015. (Conference version in ACM/IEEE DAC 2014.)

X. Ying, J. Zhang, L. Yan, G. Zhang, M. Chen, and R. Chandra, "Exploring Indoor White Spaces in Metropolises", in Proceedings of ACM MobiCom, Miami, Fl, USA, Sept. 30 - Oct. 4, 2013.

L. Lu, J. Tu, C. Chau, M. Chen, and X. Lin, "Online Energy Generation Scheduling for Microgrids with Intermittent Energy Sources and Co-Generation", Proceedings of ACM SIGMETRICS, Pittsburgh, PA, US, June 17 - 21, 2013. (The first two authors are in alphabetical order.)

T. Lu, M. Chen, and L. Andrew, "Simple and Effective Dynamic Provisioning for Power-Proportional Data Centers", IEEE Trans. on Parallel and Distributed Systems, Special Issue on Cloud Computing, vol. 24, no. 6, June 2013. (Conference version in CISS 2012 as an invited paper.)

X. Chen, M. Chen, B. Li, Y. Zhao, Y. Wu, and J. Li, "Celerity: A Low Delay Multiparty Conferencing Solution", IEEE Journal on Selected Areas in Communications, Special Issue on Emerging Technologies in Communications, vol. 31, no. 9, Sept. 2013. (Conference version in ACM Multimedia 2011.)

M. Chen, S. Liew, Z. Shao, and C. Kai, "Markov Approximation for Combinatorial Network Optimization", IEEE Trans. on Info. Theory, Oct. 2013. (Conf. version in IEEE INFOCOM 2010.)

Y. Li, M. Chen, Q. Li, and W. Zhang, "Enabling Multi-Level Trust in Privacy Preserving Data Mining", IEEE Trans. on Knowledge and Data Engineering, Sept. 2012. (Another work along this line with X. Xiao and Y. Tao appears in VLDB 2009.)

M. Chen, M. Ponec, S. Sengupta, J. Li, and P. A. Chou, "Utility Maximization in Peer-to-peer Systems with Applications to Video Conferencing", IEEE/ACM Trans. on Networking, June 2012. (Conference version in ACM SIGMETRICS 2008.)

S. Sengupta, S. Liu, M. Chen, M. Chiang, J. Li, and P. A. Chou, "Peer-to-Peer Streaming Capacity", IEEE Trans. on Info. Theory, August 2011.

C. Chau, M. Chen, and S. Liew, "Capacity of Large Scale CSMA Wireless Networks", IEEE/ACM

Trans. on Networking, June 2011. (Conference version in ACM MobiCom 2009.)

S. Zhang, Z. Shao, M. Chen, and L. Jiang, "Optimal Distributed P2P Streaming under Node Degree Bounds", IEEE/ACM Trans. on Networking, vol. 22, issue 3, June 2014. (Conference version in IEEE ICNP 2010.)

S. Liu, M. Chen, S. Sengupta, M. Chiang, J. Li, and P. A. Chou, "Peer-to-Peer Streaming Capacity under Node Degree Bound", Proceedings of IEEE ICDCS 2010, Genoa, Italy, June 21-25, 2010.

Y. Li, H. Yao, M. Chen, S. Jaggi, and A. Rosen, "RIPPLE Authentication for Network Coding", IEEE/ACM Trans. on Networking, to appear. (Conference version in IEEE INFOCOM 2010.)

M. Chen and A. Zakhor, "Multiple TFRC Connections Based Rate Control for Wireless Networks", IEEE Trans. on Multimedia, Oct. 2006 (Conference versions in IEEE INFOCOM 2004 and 2006.)

M. Chen, Y. He and R. L. Lagendijk, "A Fragile Watermark Error Detection Scheme For Wireless Video Communications", IEEE Trans. on Multimedia, April 2005.