

Chenye Wu

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Institute for Interdisciplinary Information Sciences • Tsinghua University • Beijing • China

RESEARCH AREAS: Economic Analysis and Optimal Design for Smart Energy Systems

Economic Analysis: Market design with uncertainty in smart energy systems. Recent interests include the vulnerability of machine learning based pricing schemes, the sharing economy for electricity storage facing volatile prices, and economic study for convex hull pricing.

Optimal Design: Stochastic modeling beyond smart energy systems, e.g., smart city applications. Recent interests include the rule designs for optimal online game matchmaking, ride sharing platform analysis and fast delivery's impact on the restaurant industry.

Employment

Tsinghua University / Institute for Interdisciplinary Information Sciences BEIJING, CN
Assistant Professor *Feb. 2017 – present*

ETH Zurich / Electrical Engineering Department ZURICH, CH
wiss. Mitarbeiter (Research Scientist) *June. 2016 – Nov. 2016*

University of California, Berkeley / Mechanical Engineering Department BERKELEY, CA
Postdoctoral Fellow *Nov. 2014 – May. 2016*

Mentors: Prof. Kameshwar Poolla, and Prof. Pravin Varaiya

Carnegie Mellon University / Electrical and Computer Engineering Department PITTSBURGH, PA
Postdoctoral Fellow *Oct. 2013 – Oct. 2014*

Mentors: Prof. Gabriela Hug, and Prof. Soumya Kar.

Education

Tsinghua University / Institute for Interdisciplinary Information Sciences BEIJING, CHINA
Ph.D. in Computer Science and Technology *Aug. 2009 – Jul. 2013*

Advisor: Prof. Andrew C. Yao

Tsinghua University / Department of Electronic Engineering BEIJING, CHINA
B.E. in Electronic Information Science and Technology *Aug. 2005 – Jul. 2009*

Selected Honors

Excellence in Computer Science Teaching Award from Ministry of Education, P.R. China *Nov. 2018*

Excellent Class Mentor Award, Tsinghua University *Sept. 2018*

The Best of Best Paper Award, IEEE PES General Meeting, 4 out of 1,600 papers *Jul. 2013*

IEEE SmartGridComm Best Paper Award *Nov. 2012*

Honorary Academic Rising Star from Ministry of Education, P.R. China *Aug. 2011*

Citation Overview

Source: Google Scholar <https://scholar.google.com/citations?hl=enuser=Eivoa5IAAAAJ>

1. [Total Citation: 1279.](#)
2. Total Citation since 2014 (most recent five years): 1128.
3. [Achieved two ESI Highly Cited Papers.](#)

Publication List

For most up-to-date publication list, please visit my website: www.wuchenye.cn.

Journals and Book Chapters

1. Jian Sun, Nan Gu, **Chenye Wu**, "Strategic Bidding in Extended Locational Marginal Price Scheme", *in joint submission to Control System Letters (L-CSS) and CDC 2020*.
2. Jingshi Cui, Haoxiang Wang, **Chenye Wu**, Yang Yu, "Robust Data-driven Profile-based Pricing Schemes," *in joint submission to Control System Letters (L-CSS) and CDC 2020, arXiv preprint*.
3. Chenbei Lu, Kui Wang, **Chenye Wu**, "Effective End-to-End Learning Framework for Economic Dispatch", *in submission to IEEE Transactions on Power Systems*, Initial Submission: Feb. 2020.
4. Nan Gu, Yaoyu Zhang, **Chenye Wu**, Yang Yu, "Low-carbon Policy's Robustness During China's Electricity Reform", *in submission to Energy Economics*, Initial Submission: Dec. 2019.
5. Jian Sun, **Chenye Wu**, "Market Power in Convex Hull Pricing", *in submission to IEEE Power Engineering Letters*, Initial Submission: Dec. 2019.
6. Haoxiang Wang, **Chenye Wu**, "Understanding Differential Privacy in Non-Intrusive Load Monitorin", *in submission to IEEE Power Engineering Letters*, Initial Submission: Dec. 2019.
7. Jiaman Wu, Zhiqi Wang, **Chenye Wu**, Kui Wang, Yang Yu, "A Data-driven Storage Control Framework for Dynamic Pricing," *in submission to IEEE Transactions on Smart Grid*, initial submission: Nov. 2019, arXiv preprint.
8. Dileep Kalathi, **Chenye Wu**, Kameshwar Poolla, Pravin Varaiya, "The Sharing Economy for Electricity Storage," *IEEE Transactions on Smart Grid*, Vol. 10, No. 1, pp. 556-567, 2019, **ESI Highly Cited Paper**.
9. Jianxiao Wang, Haiwang Zhong, **Chenye Wu**, *et al.*, "Incentivizing Distributed Energy Resource Aggregation in Energy and Capacity Markets: an Energy Sharing Scheme and Mechanism Design", *Applied Energy*, No. 252, 2019.
10. **Chenye Wu**, Gabriela Hug, Soumya Kar, "Smart Inverter for Voltage Regulation: Physical and Market Implementation", *IEEE Transactions on Power Systems*, Vol. 33, No. 5, pp. 6181-6192, 2018.
11. Qixin Chen, Peng Zou, **Chenye Wu**, *et al.*, "A Nash-Cournot Approach to Assessing Flexible Ramping Products," *Applied Energy*, No. 206, pp. 42-50, 2017.
12. **Chenye Wu**, Gabriela Hug, Soumya Kar, "Risk-limiting Economic Dispatch for Electricity Markets with Flexible Ramping Products," *IEEE Transactions on Power Systems*, Vol. 31, No. 3, pp. 1990-2003, 2016.
13. Gabriela Hug, Soumya Kar, **Chenye Wu**, "Consensus + Innovations Approach for Distributed Multi-Agent Coordination in a Microgrid," *IEEE Transactions on Smart Grid*, Vol. 6, No. 4, pp. 1893-1903, 2015.
14. Subhonmesh Bose, **Chenye Wu**, Yunjian Xu, Adam Wierman, Hamed Mohsenian-Rad, "A Unifying Market Power Measure for Deregulated Transmission-Constrained Electricity Markets," *IEEE Transactions on Power Systems*, Vol. 30, No. 5, pp. 2338-2438, 2015.
15. **Chenye Wu**, Yiyu Shi, Soumya Kar, "Exploring the Demand Flexibility in Heterogenous Aggregators: An LMP-based Pricing Scheme," *ACM Transactions on Embedded Computing System*, Vol. 13, No. 2s, Jan, 2014.
16. Yongcai Wang, Lei Song, Xiaohong Hao, **Chenye Wu**, *et al.* "Compressive Tracking The States of Massive Appliances In The Power Load Networks", *ACM Transactions on Embedded Computing System*, Vol. 13, No. 2s, Jan, 2014.
17. **Chenye Wu**, Hamed Mohsenian-Rad, Jianwei Huang, "Communication Requirements to Provide Ancillary Services in Vehicle-to-Grid Power System," *book chapter in Smart Grid Communications and Networking*, Cambridge University Press, 2012.
18. Ajay Kumar, **Chenye Wu**, "Automated Human Identification Using Ear Imaging," *Pattern Recognition*, Vol. 41, No. 5, pp. 956-968, Mar. 2012.
19. **Chenye Wu**, Hamed Mohsenian-Rad, Jianwei Huang. "Vehicle-to-Aggregator Interaction Game," *IEEE Transactions on Smart Grid*, Vol. 3, No. 1, pp. 434-442, Mar. 2012, **ESI Highly Cited Paper**.

Conference Proceedings

1. Jian Sun, Nan Gu, **Chenye Wu**, "Strategic Bidding in Extended Locational Marginal Price Scheme", *in joint submission to Control System Letters (L-CSS) and CDC 2020*.
2. Jingshi Cui, Haoxiang Wang, **Chenye Wu**, Yang Yu, "Robust Data-driven Profile-based Pricing Schemes," *in joint submission to Control System Letters (L-CSS) and CDC 2020, arXiv preprint*.
3. Jiasheng Zhang, Nan Gu, Yang Yu, **Chenye Wu**, "Value of Storage for Renewable Portfolio Standard", *accepted by IEEE PES General Meeting 2020, arXiv preprint*.
4. Jian Sun, Yaoyu Zhang, Yang Yu, **Chenye Wu**, "Storage Control for Carbon Emission Reduction: Opportunities and Challenges", *accepted by IEEE PES General Meeting 2020, arXiv preprint*.
5. Kui Wang, Jian Sun, **Chenye Wu**, Yang Yu, "Conductor Galloping Prediction on Imbalanced Datasets: SVM with Smart Sampling", *accepted by IEEE PES General Meeting 2020, arXiv preprint*.
6. Jingshi Cui, Haoxiang Wang, **Chenye Wu**, Yang Yu, "Vulnerable Analysis for Data Driven Pricing Schemes", *accepted by IEEE PES General Meeting 2020, arXiv preprint*.
7. Zhiqi Wang, Kui Wang, Yang Yu, **Chenye Wu**, "An Algorithmic View on Optimal Storage Sizing," *In Proceedings of IEEE ISGT, Washington D.C., Feb. 2020, arXiv preprint*.
8. **Chenye Wu**, Yang Yu, "Optimal Control for Electricity Storage Against Three-tier ToU Pricing", *In Proceedings of IEEE APSIPA, Hawaii, Nov. 2018*.
9. Xingyu Gao, Kui Wang, **Chenye Wu**, "Who Should Pay for the Mileage Payment?," *In Proceedings of IEEE SmartGridComm, Aalborg, Denmark, June, 2018*.
10. **Chenye Wu**, Gabriela Hug, Soumya Kar, "Distributed Voltage Regulation in Distribution Power Grids: Utilizing the Photovoltaics Inverters", *In Proceedings of IEEE ACC 2017, Seattle, WA, May, 2017*.
11. **Chenye Wu**, Dileep Kalathil, Kameshwar Poolla, Pravin Varaiya "Sharing Electricity Storage," *In Proceedings of IEEE CDC 2016, Las Vegas, NV, Dec, 2016*.
12. **Chenye Wu**, Wenyuan Tang, Kameshwar Poolla, Ram Rajagopal, "Predictability, Constancy and Contingency in Electric Load Profiles," *In Proceedings of IEEE SmartGridComm 2016, Sydney, Australia, Nov, 2016*.
13. **Chenye Wu**, Jared Porter, Kameshwar Poolla, "Community Storage for Firming," *In Proceedings of IEEE SmartGridComm 2016, Sydney, Australia, Nov, 2016*.
14. **Chenye Wu**, Soumya Kar, Gabriela Hug, "Enhanced Secondary Frequency Control via Distributed Peer-to-Peer Communication," *In Proceedings of European Control Conference 2016, Aalborg, Denmark, Jun, 2016*.
15. **Chenye Wu**, Gabriela Hug, Soumya Kar, "A Functional Approach to Assessing Flexible Ramping Product's Impact on Electricity Market", *In Proceedings of IEEE PES-ISGT 2015*.
16. **Chenye Wu**, Hossein Akhavan-Hejazi, Hamed Mohsenian-Rad, Jianwei Huang, "PEV-based P-Q Control in Line Distribution Networks with High Requirement for Reactive Power Compensation", *In Proceedings of IEEE ISGT 2014, 19-22 Feb. 2014, Washington DC, USA*.
17. **Chenye Wu**, Subhomensh Bose, Adam Wierman, Hamed Mohsenian-Rad, "A Unifying Approach to Assessing Market Power in Deregulated Electricity Markets," *In Proceedings of IEEE PES General Meeting 2013, Vancouver, BC, Canada, Jul. 2013, Best of Best Paper Award Winner*.
18. **Chenye Wu**, Soumya Kar, "LMP-based Real Time Pricing for Optimal Capacity Planning with Maximal Wind Power Integration," *In Proceedings of IEEE SmartGridComm '12, pp. 67-72, Tainan, Taiwan, Nov. 2012*.
19. **Chenyw Wu**, Hamed Mohsenian-Rad, Jianwei Huang, "PEV-based Reactive Power Compensation for Wind DG Units: A Stackelberg Game Approach," *In Proceedings of IEEE SmartGridComm '12, pp. 504-509, Tainan, Taiwan, Nov. 2012, Best Paper Award Winner*.
20. Xiaohong Hao, Yongcai Wang, **Chenye Wu**, *et al.*, "Smart Meter Deployment for Efficient Appliance State Monitoring," *In Proceedings of IEEE SmartGridComm '12, pp. 25-30, Tainan, Taiwan, Nov. 2012*.

21. Yongcai Wang, Xiaohong Hao, Lei Song, **Chenye Wu**, *et al.* "Tracking States of Massive Electrical Appliances by Lightweight Metering and Sequence Decoding," *In Proceedings of SensorKDD '12*, pp. 34-42, Beijing, China, Aug. 2012.
22. Zhihao Li, **Chenye Wu**, Jiong Chen, *et al.* "Power Distribution Network Reconfiguration for Bounded Transient Power Loss," *In Proceedings of IEEE PES ISGT Asia 2012*, May 21-24, 2012, Tianjin, China.
23. **Chenye Wu**, Hamed Mohsenian-Rad, Jianwei Huang, *et al.* "PEV-Based Combined Frequency and Voltage Regulation for Smart Grid," *In Proceedings of IEEE ISGT 2012*, Washington DC, USA, Jan. 2012.
24. **Chenye Wu**, Hamed Mohsenian-Rad, Jianwei Huang, "Wind Power Integration via Aggregator-Consumer Coordination: A Game Theoretic Approach," *In Proceedings of IEEE ISGT 2012*, Washington DC, USA, Jan. 2012.
25. **Chenye Wu**, Hamed Mohsenian-Rad, Jianwei Huang, *et al.* "Demand Side Management for Wind Power Integration in Microgrid Using Dynamic Potential Game Theory," *In Proceedings of IEEE GLOBECOM 2011 Workshop on SG-COMNETS*, pp. 1199-1204, Houston, Texas, USA, Dec. 2011.
26. Siyu Yue, Jiong Chen, Yuantao Gu, **Chenye Wu**, Yiyu Shi, "Dual-pricing Policy for Controller-side Strategies in Demand Side Management," *In Proceedings of IEEE SmartGridComm '11*, pp. 357-362, Brussels, Belgium, Oct. 2011.

Newsletter Articles

1. Subhonmesh Bose, **Chenye Wu**, Hamed Mohsenian-Rad, Adam Wierman, "Assessing Market Power in Deregulated Electricity Markets", *IEEE Smart Grid Newsletter*, Jan. 2014.

Professional Services

TPC Member for:

ACM Future Energy Systems (e-Energy) since 2017
 IEEE Smart Grid Communications Conference (SmartGridComm) since 2014
 IEEE International Conference on Cloud Networking (CloudNet) since 2014
 IEEE Vehicular Technology Conference (VTC) since 2014

Reviewer for:

IEEE Transactions on Power Systems
 IEEE Transactions on Smart Grid
 European Journal of Operational Research
 IEEE Transactions on Sustainable Energy
 IEEE Transactions on Industrial Informatics
 Journal on Selected Topics in Signal Processing
 IEEE Transactions on Dependable and Secure Computing
 ACM Future Energy Systems (e-Energy)
 IEEE International Conference on Computer Communications (Infocom)
 IEEE Smart Grid Communications Conference (SmartGridComm)
 IEEE PES Conference on Innovative Smart Grid Technologies (ISGT)
 Power Systems Computation Conference (PSCC)
 IEEE Global Communications Conference (Globecom)
 IEEE PES General Meeting (PESGM)
 IEEE American Control Conference (ACC)
 IEEE Conference on Decision and Control (CDC)
 International Computing and Combinatorics Conference (COCOON)
 IEEE Vehicular Technology Conference (VTC)
 IEEE Vehicle Power and Propulsion Conference (VPPC)
 International Conference on Network Games Control and Optimization (NetGCoop)