

Yang Chen, Ph.D

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EDUCATION

- Ph.D., Department of Mechanical & Industrial Engineering, University of Illinois at Chicago, Jan 2018
 - Major: Industrial Engineering & Operation Research
 - Dissertation: Uncertainty-Aware Transaction Operation for Grid-friendly building cluster.
 - Advisor: [Dr. Mengqi Hu](#).
- M.E., College of Mechanical Engineering, Chongqing University, China, June 2013
 - Major: Industrial Engineering
 - Thesis: Supplies Scheduling in Disaster Logistic.
- B.E., School of Energy Science & Engineering, Henan Polytechnic University, China, June 2010
 - Major: Industrial Engineering

APPOINTMENTS

- Oak Ridge National Laboratory, TN
 - R&D associate staff, Environmental Sciences Division. 11/2019–present
- Oak Ridge National Laboratory, TN
 - Postdoc Research Associate, Environmental Sciences Division. 04/2018–10/2019
- University of Illinois at Chicago, IL.
 - Research/Teaching Assistant, Mechanical & Industrial Engineering. 08/2015–01/2018
- Mississippi State University, MS.
 - Research/Teaching Assistant, Mechanical & Industrial Engineering. 08/2013–08/2015

LIST OF PUBLICATIONS

- **Journal Article.**

19. Guodong Liu, Thomas Ollis, Maximiliano Ferrari, Aditya Sundararajan, [Yang Chen](#), Mohammed Olama, Kevin Tomsovic (2022), Distributed Energy Management for Networked Microgrids in Three-phase Unbalanced Distribution Network, *Frontiers in Energy*. Submitted
18. Kadir Amasyali, [Yang Chen](#), Mohammed Olama (2022), A Data-Driven, Distributed Game-Theoretic Approach for Hierarchical Demand Response, *IEEE Access*. doi: [10.1109/ACCESS.2022.3188642](https://doi.org/10.1109/ACCESS.2022.3188642).

17. Yang Chen, Ahmad Abu-Heiba, Saiid Kassae, Chenang liu, Guodong Liu, Michael Starke, Brennan T. Smith, Ayyoub M. Momen (2022), Coupled Heat-Power Operation of Smart Buildings via Modular Pumped Hydro Storage, *Journal of Energy Resources Technology*. doi: [10.1115/1.4053783](https://doi.org/10.1115/1.4053783).
16. Xiaochun Feng, Yang Chen, Jian Zhang, Heejin Cho, Xin Shi (2022), Improved Particle Swarm Algorithm Using Rubik's Cube Topology for Bilevel Building Energy transaction, *Journal of Energy Resources Technology*. doi: [10.1115/1.4053768](https://doi.org/10.1115/1.4053768).
15. Byungkwon Park, Yang Chen, Teja Kuruganti, Mohammed Olama (2021), Optimal Demand Response Incorporating Distribution LMP: Bilevel Optimization Approach, *IEEE Transactions on Power Systems*, doi: [10.1109/TPWRS.2021.3107671](https://doi.org/10.1109/TPWRS.2021.3107671).
14. Bhagyashri Telsang, Kadir Amasyali, Yang Chen, Mohammed Olama, Seddik Djouadi (2021), Power Allocation by Load Aggregator with Heterogeneous Loads using Weighted Projection, *Energy and Buildings*, doi:[10.1016/j.enbuild.2021.110955](https://doi.org/10.1016/j.enbuild.2021.110955).
13. Xiao Kou, Fangxing Li, Jin Dong, Mohammed Olama, Michael Starke, Yang Chen, Helia Zandi (2020), A Comprehensive Scheduling Framework Using SP-ADMM for Residential Demand Response with Weather and Consumer Uncertainties, *IEEE Transactions on Power Systems*, doi:[10.1109/TPWRS.2020.3029272](https://doi.org/10.1109/TPWRS.2020.3029272).
12. Kadir Amasyali, Yang Chen, Bhagyashri Telsang, Mohammed Olama, Seddik Djouadi (2020), Hierarchical Model-Free Transactional Control of Building Loads to Support Grid Services, *IEEE Access*, v8, doi:[10.1109/ACCESS.2020.3041180](https://doi.org/10.1109/ACCESS.2020.3041180).
11. Yang Chen, Byungkwon Park, Xiao Kou, Mengqi Hu, Jin Dong, Fangxing Li, Kadir Amasyali, Mohammed Olama (2020), A Comparison Study on Trading Behavior and Profit Distribution in Local Energy Transaction Games, *Applied Energy*, v280. doi:[10.1016/j.apenergy.2020.115941](https://doi.org/10.1016/j.apenergy.2020.115941).
10. Yang Chen, Fadwa Dababneh, Bei Zhang, Saiid Kassae, Brennan T. Smith, Xiaobing Liu, Ayyoub M. Momen (2020), Surrogate Modeling for Capacity Planning of Charging Station Equipped with PV and Hydropneumatic Energy Storage, *Journal of Energy Resources Technology*, v142(5). doi:[10.1115/1.4045733](https://doi.org/10.1115/1.4045733).
9. Yang Chen, Mengqi Hu (2019), Swarm Intelligence based Distributed Stochastic Model Predictive Control for Transactive Operation of Networked Micro-Grid Clusters, *Energy and Buildings*, v169, p172-184. doi:[10.1016/j.enbuild.2019.06.010](https://doi.org/10.1016/j.enbuild.2019.06.010).
8. Saiid Kassae, Ahmad Abu-Heiba, Moonis Raza Ally, Matthew M. Mench, Xiaobing Liu, Adewale Odukamaiya, Yang Chen, Thomas J. King, Brennan T. Smith, Ayyoub M. Momen (2019), PART 1-Techno-economic Analysis of a Grid Scale Ground-Level Integrated Diverse Energy Storage (GLIDES) Technology, *Journal of Energy Storage*, v25. doi:[10.1016/j.est.2019.100792](https://doi.org/10.1016/j.est.2019.100792).
7. Yang Chen, Adewale Odukamaiya, Saiid Kassae, Patrick O'Connor, Ayyoub M. Momen, Xiaobing Liu, Brennan T. Smith (2019), Preliminary Analysis of Market Potential for a Hydropneumatic Ground-Level Integrated Diverse Energy Storage System, *Applied Energy*, v242, p1237-1247. doi:[10.1016/j.apenergy.2019.03.076](https://doi.org/10.1016/j.apenergy.2019.03.076).
6. Yang Chen, Mengqi Hu (2018), A swarm intelligence based distributed decision approach for transactive operation of networked building clusters, *Energy and Buildings*, v169, p172-184.

[doi:10.1016/j.enbuild.2018.03.047](https://doi.org/10.1016/j.enbuild.2018.03.047).

5. Yang Chen, Mengqi Hu, Zhi Zhou (2017), A Data-Driven Analytical Approach to Enable Optimal Emerging Technologies Integration in the Co-Optimized Electricity and Ancillary Service Markets, *Energy*, v122, p613-626. [doi:10.1016/j.energy.2017.01.102](https://doi.org/10.1016/j.energy.2017.01.102).
 4. Yang Chen, Mengqi Hu (2016), Balancing Collective and Individual Interests in Transactive Energy Management of Interconnected Micro-Grid clusters, *Energy*, v109, p1075-1085. [doi:10.1016/j.energy.2016.05.052](https://doi.org/10.1016/j.energy.2016.05.052).
 3. Yanqing Kuang, Yang Chen, Mengqi Hu, Dong Yang (2016), Influence Analysis of Driver Behavior and Building Category on Economic Performance of Electric Vehicle to Grid and Building Integration, *Applied Energy*, v207, p427-437. [doi:10.1016/j.apenergy.2017.07.006](https://doi.org/10.1016/j.apenergy.2017.07.006).
 2. Yang Chen, Shu Yang, Mengqi Hu, Yao-Jan Wu (2016), A Reliability-based Transit Trip Planning Model under Transit Network Uncertainty, *Public Transport*, v8, p477-496. [doi:10.1007/s12469-016-0134-y](https://doi.org/10.1007/s12469-016-0134-y).
 1. Rui Dai, Mengqi Hu, Dong Yang, Yang Chen (2015), A collaborative operation decision model for distributed building clusters, *Energy*, v84, p759-773. [doi:10.1016/j.energy.2015.03.042](https://doi.org/10.1016/j.energy.2015.03.042).
- **Conference proceeding.**
20. Yang Chen, Kadir Amasyali, Mohammed Olama, Byungkwon Park (2022), Robust Solution Approach for Bilevel Demand Response Game at Distribution Level, *Proceedings of IEEE PES general meeting 2022, Accepted*.
 19. Krisha Maharjan, Jian Zhang, Heejin Cho, Yang Chen, (2022), Distributed Energy Systems Design Optimization with Multi-Objectives on Life Cycle Environmental and Economic Impacts, *ASME Energy Sustainability conference 2022, Accepted*.
 18. Kadir Amasyali, Christopher Winstead, Yang Chen, Jeffrey Munk, Mohammed Olama, Justin Hill (2021), Hierarchical Model-Free Transactive Control of Residential Building Loads: An Actual Deployment, *2022 IEEE PES Innovative Smart Grid Technologies Conference, Location: New Orleans, Louisiana, USA, Apr 24-28, 2022*. [doi:10.1109/ISGT50606.2022.9817561](https://doi.org/10.1109/ISGT50606.2022.9817561)
 17. Byungkwon Park, Kadir Amasyali, Yang Chen, Mohammed Olama (2021), Hierarchical Transactive Control of Flexible Building Loads Under Distribution LMP, *2022 IEEE PES Innovative Smart Grid Technologies Conference, Location: New Orleans, Louisiana, USA, Apr 24-28, 2022*. [doi:10.1109/ISGT50606.2022.9817478](https://doi.org/10.1109/ISGT50606.2022.9817478)
 16. Yang Chen, Kadir Amasyali, Byungkwon Park, Mohammed Olama, Bhagyashri Telsang, Seddik Djouadi (2021), Stochastic Pricing Game for Aggregated Demand Response Considering Comfort Level, *The 53rd North American Power Symposium, Nov 14-16, 2021, USA. Virtual Conference due to Covid-19*. [doi:10.1109/NAPS52732.2021.9654659](https://doi.org/10.1109/NAPS52732.2021.9654659)
 15. Yang Chen, Mohammed Olama (2021), Collaborative Decision Approach for Electricity Pricing-demand Response Stackelberg Game, *The 5th IEEE International Conference on Smart City Innovations, Oct 18-21, 2021, USA. Virtual Conference due to Covid-19*. [doi:10.1109/SWC50871.2021.00058](https://doi.org/10.1109/SWC50871.2021.00058)
 14. Zhangyue Shi, Chenang Liu, Chen Kan, Wenmeng Tian, Yang Chen (2021), A Blockchain-Enabled Approach for Online Stream Sensor Data Protection in Cyber-Physical Manufac-

- turing Systems, *ASME IDETC-CIE Conference, Aug 17-19, 2021, USA*. doi:10.1115/DETC2021-72023
13. Yang Chen, Ahmad Abu-Heiba, Saiid Kassae, Chenang liu, Guodong Liu, Michael Starke, Brennan T. Smith, Ayyoub M. Momen (2021), Heat Based Power Augmentation for Modular Pumped Hydro Storage In Smart Buildings Operation, *ASME Energy Sustainability conference 2021, June 16-18, USA. Virtual Conference due to COVID-19*. doi:10.1115/ES2021-60517
 12. Xiaochun Feng, Yang Chen, Jian Zhang, Heejin Cho, Xin Shi (2021), Rubik's Cube Topology Based Particle Swarm Algorithm for Bilevel Building Energy Transaction, *ASME Energy Sustainability conference 2021, June 16-18, USA. Virtual Conference due to COVID-19*. doi:10.1115/ES2021-62982
 11. Yang Chen, Xiao Kou, Mohammed Olama, Helia Zandi, Chenang Liu, Saiid Kassae, Brennan Smith, Ahmad Abu-Heiba, Ayyoub Momen (2020), Bi-Level Optimization for Electricity Transaction in Smart Community With Modular Pump Hydro Storage, *ASME IDETC-CIE Conferences 2020. Location: St. Louis, Missouri, USA, Aug 17-19. Virtual Conference due to COVID-19*. doi:10.1115/DETC2020-22368
 10. Kadir Amasyali, Yang Chen, Mohammed Olama (2020), Genetic Algorithm for Demand Response: A Stackelberg Game Approach, *Spring Simulation Conference 2020. Location: Fairfax, Virginia, USA, May 18-21. Virtual Conference due to COVID-19*. doi:10.22360/SpringSim.2020.MSSES.002
 9. Yang Chen, Mohammed Olama, Xiao Kou, Kadir Amasyali, Jin Dong, Yaosuo Xue (2020), Distributed Solution Approach for Stackelberg Pricing Game of Aggregated Demand Response, *IEEE PES general meeting 2020. Location: Montreal, Canada, Aug 3-6, Virtual Conference due to COVID-19*. doi:10.1109/PESGM41954.2020.9281620
 8. Yang Chen, Olufemi A. Omitaomu, Mengqi Hu, Saiid Kassae, Adewale Odukamaiya, Patrick O'Connor, Ayyoub M. Momen, Brennan T. Smith, Xiaobing Liu (2019), Allocation and Operation of A Hydropneumatic Energy Storage with Building Microgrid, *Proceedings of IEEE PES general meeting 2019. Location: Atlanta, Georgia, USA, Aug 4-8*. doi:10.1109/PESGM40551.2019.8973702
 7. Yang Chen, Fadwa Dababneh, Bei Zhang, Saiid Kassae, Brennan T. Smith, Xiaobing Liu, Ayyoub M. Momen (2019), Surrogate Modeling for Capacity Planning of Charging Station Equipped with PV and Hydropneumatic Energy Storage, *Proceedings of ASME 2019 Energy Sustainability, recommended to ASME journal. Location: Bellevue, Washington State, USA, July 14-17*. doi:10.1115/ES2019-3831
 6. Rui Dai, Hadi Charkhgard, Yang Chen, Yanqing Kuang (2019), Balancing Benefit Distribution for Energy Storage Sharing based on Nash Bargaining Solution, *Proceedings of IEEE PES general meeting 2019, selected as one of best papers. Location: Atlanta, Georgia, USA, Aug 4-8*. doi:10.1109/PESGM40551.2019.8973488
 5. Yang Chen, Mohammed Olama, Tanmay Rajpurohit, Jin Dong, Yaosuo Xue (2019), Game-Theoretic Approach for Electricity Pricing Between Distribution System Operator and Load Aggregators, *The 3rd International Conference on Smart Grid and Smart Cities. Location: University of California, Berkeley, USA, June 25-28*. doi:10.1109/ICSGSC.2019.00005

4. Xiaochun Feng, Yang Chen, Xiangpei Hu (2018), Co-optimizing Capacity Planning with Order Acceptance and Scheduling in Make-to-Order Production System, *proceedings of IISE Annual Conference and Expo 2018*. Location: Orlando, Florida, U.S.A, May 19-22. ISBN: 9781510869356
 3. Yang Chen, Mengqi Hu (2017), A Guided Particle Swarm Optimizer for Distributed Operation of Electric Vehicle to Building Integration, *2017 ASME IDETC-CIE*. Location: Cleveland, Ohio, USA, Aug 8-9. doi:10.1115/DETC2017-67530
 2. Mengqi Hu, Yang Chen, Xiaopeng Li, Kaiqi Xiong (2017), An Agent-Based Simulation Model for Distributed Vehicle Sharing Operations, *Proceedings of 2017 INFORMS Winter Simulation Conference*. Location: Las Vegas, Nevada, USA, Dec 3-6. doi:10.1109/WSC.2017.8247878
 1. Yang Chen, Mengqi Hu, O'Neil Zheng (2015), A Collaborative Decision Model for Low Energy Building Design Optimization, *2015 ASME IDETC-CIE*. Location: Boston, Massachusetts, USA, Aug 2-5. doi:10.1115/DETC2015-47288
- **Expo and Workshops.**
 2. Participation in Hydropower Industry Expo in HydroVision International Conference 2019, Portland, Oregon, USA, July 23-25
 1. Participation in Water Power Program Peer Reviews 2019 hold by Department of Energy, Alexandria, Virginia, USA, Oct 8-10
 - **Technical Reports.**
 1. Mengqi Hu, Yao-Jan Wu, Yang Chen, Shu Yang (2015), Technical Report: A Real-Time On-line Decision Support System for Intermodal Passenger Travel. U.S. Department of Transportation, Funding: NCITEC Project No.2013-13 <https://rosap.ntl.bts.gov/view/dot/30725>
 - **Dissertation.**
 1. Yang Chen (2018), Uncertainty-Aware Transactive Operation Decisions for Grid-Friendly Building Clusters, Ph.D Dissertation, Mechanical & Industrial Engineering, University of Illinois at Chicago, IL. <https://hdl.handle.net/10027/22722>

RESEARCH PROJECTS

- Projects as PI
 1. Sep 2021–present. PSH cost estimating. Sponsor: U.S. Department of Energy, Water Power Technologies office, Multi-lab project with Principal Investigator: Vignesh Ramasamy (NREL) and Yang Chen (ORNL), Funding: \$300 K
- On-going projects
 3. Feb 2022–present. COMMANDER project. Sponsor: U.S. Department of Energy via Building Technologies office to UT-Battle LLC under Contract number: DE-AC05-00OR22725, Principal Investigator: Dr.Ben Ollis, Funding: \$4.926 M
 2. Feb 2021–present. Hydropower Fleet Intelligence. Sponsor: U.S. Department of Energy via Water Power Technologies office to UT-Battle LLC under Contract number: DE-AC05-

00OR22725, Principal Investigator: Dr.Pradeep Ramuhalli, Funding: \$500 K

1. Feb 2021–present. Forecasting and Mapping Power Restoration Time Following Extreme Events. *Sponsor: U.S. Department of Energy via Office of Cybersecurity, Energy Security and Emergency Response to UT-Battle LLC under Contract number: DE-AC05-00OR22725*, Principal Investigator: Dr.Bandana Kar, Funding: \$835 K
- Completed projects
3. Nov 2018–Nov 2021. Hierarchical Model-Free Transactive Control of Building Loads to Support Grid Service. *Sponsor: U.S. Department of Energy via Building Technologies Office to UT-Battle LLC under Contract number: DE-AC05-00OR22725*, Principal Investigator: Dr.Mohammed Olama, Funding: \$2.1 M
 2. Apr 2018–Jan 2021. Ground Level Integrated Diverse Energy Storage (GLIDES). *Sponsor: U.S. Department of Energy via Water Power Technologies Office to UT-Battle LLC under Contract number: DE-AC05-00OR22725*, Principal Investigator: Dr.Ayyoub M. Momen, Funding: \$1.6 M
 1. Aug 2013–Aug 2015. A Real-time Online Decision Support System for Intermodal Passenger Travel. *Sponsor: U.S. Department of Transportation via National Center for Intermodal Transportation Economic Competitiveness*, Funding Number: NCITEC Project No.2013-13, Principal Investigator: Dr.Mengqi Hu, Funding: \$150 K

SERVICES IN RESEARCH SOCIETIES

- Conference organizer
 - Co-chair for Track: Sustainability, Society, and Education. Proceedings of ASME 2021 Energy Sustainability (June 16–June 18, 2021, Virtual due to COVID-19).
 - Session organizer for Track: Nexus-Energy, Water and Climate. Proceedings of ASME 2019 Energy Sustainability (July 15–July 18, 2019, WA).
 - Session organizer for Track: Sustainable Infrastructure and Transportation. Proceedings of ASME 2019 Energy Sustainability (July 15–July 18, 2019, WA).
- Invited seminar/talks
 - Swarm Intelligence Based Distributed Transactive Operation of networked Micro-grid Cluster, Industrial & System Engineering Department, University of Tennessee at Knoxville (09/14/2018). Host: Dr. Mingzhou Jin, <https://ise.utk.edu/graduate/graduate-seminars/dryangchen9-7-18/>

STUDENT ADVISING AND MENTORSHIP ACTIVITIES

- Ph.D. Committee
 - Mohammed Alqahtani, Department of Mechanical & Industrial Engineering, University of Illinois at Chicago, 2020.
- Student Interns

- Leland Bradyn Goldston, Department of Mechanical Engineering, Tennessee Technological University, 2020 (summer, canceled due to COVID-19).
- Mukunzi Irmuva, Department of Electrical Engineering, Texas A&M University-Texarkana, 2020 (summer, canceled due to COVID-19).