

# Pengcheng You

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🌐 <https://pengcheng-you.github.io/desires-lab/>

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## EDUCATION

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### Zhejiang University

*Ph.D., Control Science and Engineering*

**Hangzhou, China**

*Sep. 2013-Jun. 2018*

### Zhejiang University

*B.S. with honors, Electrical Engineering*

**Hangzhou, China**

*Sep. 2009-Jun. 2013*

## PRIMARY APPOINTMENTS

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### Peking University

*Assistant Professor in Dept. of Industrial Engineering and Management*

**Beijing, China**

*Feb. 2022-Present*

### Johns Hopkins University

*Lecturer in Engineering for Professionals Program*

**Baltimore, MD, US**

*Aug. 2021-Dec.2021*

### Johns Hopkins University

*Postdoctoral Fellow in Depts. of ME and ECE*

**Baltimore, MD, US**

*Oct. 2018-Dec.2021*

### Pacific Northwest National Laboratory

*Research intern in Data Sciences and Analytics Group*

**Richland, WA, US**

*Oct. 2017-Jan. 2018*

### California Institute of Technology

*Visiting graduate student in Dept. of Computing and Mathematical Sciences*

**Pasadena, CA, US**

*Oct. 2016-Oct. 2017*

## AWARDS

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- ACM e-Energy Student Travel Grant (10 awardees) 2018
- Sifang Scholarship, Zhejiang University 2017, 2016
- Outstanding Graduate Student, Zhejiang University 2017, 2016, 2015
- Chu Kochen Honors Bachelor Degree, Zhejiang University (~5% of graduates) 2013
- Excellent Student Scholarship, Chu Kochen Honors College, Zhejiang University 2012, 2010

## TEACHING

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### Instructor.....

- Foundations of Reinforcement Learning

*Johns Hopkins University, Fall 2021*

### Teaching assistant.....

- Energy System Analysis
- Analytical Methods for Network Congestion Control
- Power Systems Analysis
- Linear Systems Analysis

*Johns Hopkins University, Spring 2021*

*Zhejiang University, Summer 2016*

*Zhejiang University, Summer 2015*

*Zhejiang University, Fall 2013*

## PROJECTS

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### Grants awarded.....

1. **PKU College of Engineering Startup Fund:** *Data-Driven Modeling, Analysis and Design for Electricity Markets*, 2022-2024

### Grants as main contributor.....

1. **NSF CPS Medium:** *Enabling DER Integration via Redesign of Information Flows*, 2021-2024
2. **NSFC** (61973163): *Countermeasures for Deception Attack on Networked Control Systems*, 2020-2023
3. **JHU Discovery Award:** *A Data-Driven Approach to Electricity Market Design*, 2019-2021
4. **NSF** (1711188): *An Optimization Decomposition Framework for Principled Multi-Timescale Market Design and Co-Optimization*, 2017-2020
5. **DOE** (DE-EE0008006): *Robust and resilient coordination of feeders with uncertain distributed energy resources: from real-time control to long-term planning*, 2017-2020

## FULL PUBLICATIONS

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(Underlined include students or postdocs advised.)

### Preprints.....

1. P. You, M. A. Fernandez, D. F. Gayme, and E. Mallada. **The Role of Strategic Participants in Two-Stage Settlement Electricity Markets.**
2. P. You, Y. Jiang, E. Yeung, D. F. Gayme, and E. Mallada. **On the Stability, Economic Efficiency and Incentive Compatibility of Electricity Market Dynamics.**

### Book chapters.....

1. P. You. **Scheduling of EV Battery Swapping in Microgrid.** Book chapter 8 in *Distributed Control Methods and Cyber Security Issues in Microgrids* (Editors: X. Wang, W. Meng, S. Liu. ISBN: 9780128169469), Elsevier Academic Press, pp. 203-241, 2020

### Journals.....

1. R. Pates, A. Ferragut, E. Pivo, P. You, F. Paganini, and E. Mallada. **Respect the Unstable: Delays and Saturation in Contact Tracing for Disease Control.** *SIAM Journal on Control and Optimization*, accepted
2. J. Sun, S. Chen, P. You, Q. Yang, and Z. Yang. **Battery-Assisted Online Operation of Distributed Data Centers with Uncertain Workload and Electricity Prices.** *IEEE Transactions on Cloud Computing*, accepted
3. M. Almassalkhi, *et al.* **Hierarchical, Grid-Aware, and Economically Optimal Coordination of Distributed Energy Resources in Realistic Distribution Systems.** *Energies*, vol. 13, no. 23, pp. 6399, Dec. 2020
4. H. Yang, P. You, and C. Shang. **Distributed Planning of Electricity and Natural Gas Networks and Energy Hubs.** *Applied Energy*, vol. 282, Part A, Jan. 2021
5. P. You, J. Z.F. Pang, and S. H. Low. **Online Station Assignment for Electric Vehicle Battery Swapping.** *IEEE Transactions on Intelligent Transportation Systems*, accepted
6. L. Mo, P. You, X. Cao, and Y.-Q. Song. **Event-Driven Joint Mobile Actuators Scheduling and Control in Cyber-Physical Systems.** *IEEE Transactions on Industrial Informatics*, vol. 15, no. 11, pp. 5877 - 5891, Nov. 2019
7. Z. Yang, T. Guo, P. You, Y. Hou, and S. J. Qin. **Distributed Approach for Temporal-Spatial Charging Coordination of Plug-in Electric Taxi Fleet.** *IEEE Transactions on Industrial Informatics*, vol. 15, no. 6, pp. 3185 - 3195, Jun. 2019
8. Y. Zhang, P. You, and L. Cai. **Optimal Charging Scheduling by Pricing for EV Charging Station**

- with Dual Charging Modes.** *IEEE Transactions on Intelligent Transportation Systems*, vol. 20, no. 9, pp. 3386 - 3396, Sep. 2019
9. P. You, S. H. Low, L. Zhang, R. Deng, G. B. Giannakis, Y. Sun, and Z. Yang. **Scheduling of EV Battery Swapping, II: Distributed Solutions.** *IEEE Transactions on Control of Network Systems*, vol. 5, no. 4, pp. 1920-1930, Dec. 2018
  10. P. You, S. H. Low, W. Tushar, G. Geng, C. Yuen, Z. Yang, and Y. Sun. **Scheduling of EV Battery Swapping, I: Centralized Solution.** *IEEE Transactions on Control of Network Systems*, vol. 5, no. 4, pp. 1887-1897, Dec. 2018
  11. Y. Zhou, D. K.Y. Yau, P. You, and P. Cheng. **Optimal-Cost Scheduling of Electrical Vehicle Charging under Uncertainty.** *IEEE Transactions on Smart Grid*, vol. 9, no. 5, pp. 4547-4554, Sep. 2018
  12. H. Ma, Z. Yang, P. You, and M. Fei. **Multi-objective Biogeography-based Optimization for Dynamic Economic Emission Load Dispatch Considering Plug-in Electric Vehicles Charging.** *Energy*, vol. 135, pp. 101-111, Sep. 2017
  13. P. You, Z. Yang, Y. Zhang, S. H. Low, and Y. Sun. **Optimal Charging Schedule for a Battery Switching Station Serving Electric Buses.** *IEEE Transactions on Power Systems*, vol. 31, no. 5, pp. 3473-3483, Sep. 2016
  14. P. You, Z. Yang, M.-Y. Chow, and Y. Sun. **Optimal Cooperative Charging Strategy for a Smart Charging Station of Electric Vehicles.** *IEEE Transactions on Power Systems*, vol. 31, no. 4, pp. 2946-2956, Jul. 2016
  15. Z. Yang, R. Wu, J. Yang, K. Long, and P. You. **Economical Operation of Microgrid with Various Devices via Distributed Optimization.** *IEEE Transactions on Smart Grid*, vol. 7, no. 2, pp. 857-867, Mar. 2016
  16. Z. Yang, K. Long, P. You, and M.-Y. Chow. **Joint Scheduling of Large-Scale Appliances and Batteries via Distributed Mixed Optimization.** *IEEE Transactions on Power Systems*, vol. 30, no. 4, pp. 2031-2040, Jul. 2015

#### Conference proceedings.....

1. R. K. Bansal, P. You, D. F. Gayme, and E. Mallada. **A Market Mechanism for Truthful Bidding with Energy Storage.** *Power Systems Computation Conference (PSCC)*, Porto, Portugal, 2022
2. K. Lin, B. Wang, and P. You. **Mechanism Design for Efficient Nash Equilibrium in Oligopolistic Markets.** *Hawaii International Conference on System Sciences (HICSS)*, Maui Island, US, 2022
3. P. You, and E. Mallada. **Saddle Flow Dynamics: Observable Certificates and Separable Regularization.** *American Control Conference (ACC)*, New Orleans, US, 2021
4. R. K. Bansal, P. You, D. F. Gayme, and E. Mallada. **Storage Degradation Aware Economic Dispatch.** *American Control Conference (ACC)*, New Orleans, US, 2021
5. P. You, D. F. Gayme, and E. Mallada. **The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets.** *IEEE Conference on Decision and Control (CDC)*, Nice, France, 2019
6. H. Fan, P. You, Z. Guo, S. Chen, and Z. Yang. **Online Pricing Mechanism for Electric Vehicles Charging Based on Operational Condition of A Charging Station.** *Chinese Control Conference (CCC)*, Guangzhou, China, 2019
7. H. Fan, S. Chen, Z. Guo, P. You, and Z. Yang. **Coordinated Scheduling Strategy of Charging Station Considering Cost and Efficiency.** *IEEE International Conference on Control & Automation (ICCA)*, Edinburgh, Scotland, 2019
8. P. You\*, J. Z.F. Pang\*, and E. Yeung\*. **Deep Koopman Controller Synthesis for Cyber-Resilient Market-Based Frequency Regulation** (\*all authors contributed equally). *IFAC Symposium on Control of Power and Energy Systems (CPES)*, Tokyo, Japan, 2018
9. P. You, J. Z.F. Pang, and E. Yeung. **Stabilization of Power Networks via Market Dynamics.** *ACM e-Energy*, Karlsruhe, Germany, 2018
10. P. You, J. Z.F. Pang, S. H. Low, and P. Cheng. **Efficient Online Station Assignment for EV Battery**

- Swapping** (poster abstract). *ACM e-Energy*, Karlsruhe, Germany, 2018
11. X. Liu, P. You, and Z. Yang. **Bilaterally Open Electricity Markets with High Penetration of Renewables**. *IEEE International Conference on Control & Automation (ICCA)*, Anchorage, US, 2018
  12. Z. Yu, P. You, and Z. Yang. **Residential Load Reduction Scheduling with Optimal Power Flow and Segmented Incentives**. *IEEE PES General Meeting*, Portland, US, 2018
  13. J. Z.F. Pang, P. You, and M. Chen. **The Role of Information in Temporally Networked Cournot Markets: Second Chance in Power Markets**. *Hawaii International Conference on System Sciences (HICSS)*, Hawaii, US, 2018
  14. P. You, J. Z.F. Pang, M. Chen, S. H. Low, and Y. Sun. **Battery Swapping Assignment for Electric Vehicles: A Bipartite Matching Approach**. *IEEE Conference on Decision and Control (CDC)*, Melbourne, Australia, 2017
  15. H. Ma, P. You, K. Liu, Z. Yang, and M. Fei. **Optimal Battery Charging Strategy Based on Complex System Optimization**. *International Conference on Intelligent Computing for Sustainable Energy and Environment (ICSEE)*, Nanjing, China, 2017
  16. P. You, Y. Sun, J. Z.F. Pang, S. H. Low, and M. Chen. **Battery Swapping Assignment for Electric Vehicles: A Bipartite Matching Approach** (extended abstract). *Greenmetrics*, Urbana-Champaign, US, 2017
  17. T. Guo, P. You, and Z. Yang. **Recommendation of Geo-Distributed Charging Stations for EVs: A Game Theoretical Approach**. *IEEE PES General Meeting*, Chicago, US, 2017
  18. H. Ma, Z. Yang, P. You, and M. Fei. **Complex System Optimization for Economic Emission Load Dispatch**. *International Conference on Control*, Belfast, Northern Ireland, UK, 2016
  19. E. Liu, P. You, and P. Cheng. **Optimal Privacy-Preserving Load Scheduling in Smart Grid**. *IEEE PES General Meeting*, Boston, US, 2016
  20. P. You, S. H. Low, Z. Yang, Y. Zhang, and L. Fu. **Real-Time Recommendation Algorithm of Battery Swapping Stations for Electric Taxis**. *IEEE PES General Meeting*, Boston, US, 2016
  21. L. Mo, P. You, X. Cao, Y.-Q. Song, and J. Chen. **Decentralized Multi-Charger Coordination for Wireless Rechargeable Sensor Networks**. *International Performance Computing and Communications Conference (IPCCC)*, Nanjing, China, 2015
  22. P. You, Z. Yang, and Y. Zhang. **Efficient Battery Charging Schedule of Battery-Swapping Station for Electric Buses**. *European Control Conference (ECC)*, Linz, Austria, 2015
  23. P. You, and Z. Yang. **Efficient Optimal Scheduling of Charging Station with Multiple Electric Vehicles via V2V**. *IEEE SmartGridComm*, Venice, Italy, 2014

## MENTORSHIP

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**Advisor**.....

**Co-mentor**.....

**Rajni Kant Bansal**

**Johns Hopkins University**

*Ph.D. student since 2018*

Research interest: Electricity Market Design for Storage

**Xianglu Liu**

**Zhejiang University**

*M.Sc. 2019*

*Next hop: State Grid*

Thesis: Reformed Electricity Market with Deep Penetration of Renewables

**Ziwen Yu**

**Zhejiang University**

*M.Sc. 2018*

*Next hop: Hikvision*

Thesis: Experimental Testbed and Optimal Load Scheduling for Demand Response Management in Smart Grid

**Tianci Guo**

**Zhejiang University**

*M.Sc. 2017*

*Next hop: Huawei*

## ACADEMIC ACTIVITIES

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### Editorial board.....

- Guest editor
  1. Frontiers in Energy Research 2022  
*Special Issue on Transactive Energy*

### Conference organization.....

- Session chair
  1. SIAM Conference on Control and Its Applications Jul. 2021  
*Analysis and Control of Nonlinear Systems*
  2. Conference on Information Sciences and Systems Mar. 2021  
*Power System Control, Optimization and Economics I & II*  
*Systems and Control*
  3. Conference on Information Sciences and Systems Mar. 2019  
*Security and Privacy*
- TPC member
  1. IEEE Global Communications Conference Dec. 2022
  2. IEEE Global Communications Conference Dec. 2021
  3. Conference on Information Sciences and Systems Mar. 2021
  4. International Workshop on Cyberspace Security Dec. 2020

### Peer review.....

- Journal: TAC, TCNS, TCST, TPS, TSG, TSE, TITS, TIE, TII, TPDS, TECS, Automatica, IEEE L-CSS, IEEE Systems Journal, IEEE Network, etc.
- Conference: ACC'21, IWCSS'20, SmartGridComm'20, PSCC'20, ACC'20, Globecom'19, CISS'19, ACC'19, EWSN'19, PESGM'17, PEMC'16, VTC'16-Fall, ICCA'16, IECON'15, ICC'15, CCC'15

### Exchange visits.....

- Southern University of Science and Technology, Dept. of Mechanical and Energy Engineering, Shenzhen, China, Jul. 2018-Sep. 2018
- Chinese University of Hong Kong, Dept. of Information Engineering, Hong Kong, China, May 2018
- Chinese University of Hong Kong-Shenzhen, School of Science and Engineering, Shenzhen, China, Sep. 2016
- Singapore University of Technology and Design, Engineering Product Development Pillar, Singapore, Nov. 2015-Feb. 2016

## TALKS

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### Conference and workshop presentations.....

- "Bidding Mechanisms and Incentive Analysis for Temporally-Coupled Electricity Markets", INFORMS Annual Meeting, Anaheim, California, US, Oct. 2021
- "Saddle Flow Dynamics: Observable Certificates and Separable Regularization", SIAM Conference on Control and Its Applications (CT), Spokane, Washington, US, July 2021
- "Saddle Flow Dynamics: Observable Certificates and Separable Regularization", IEEE American Control Conference (ACC), New Orleans, Louisiana, US, May 2021
- "The Role of Strategic Participants in Two-stage Settlement Electricity Markets", INFORMS Annual Meeting, Washington D.C., US, Nov. 2020
- "On Stability and Economic Efficiency of Electricity Market Dynamics", INFORMS Annual Meeting,

Washington D.C., US, Nov. 2020

- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", IEEE Conference on Decision and Control (CDC), Nice, France, Dec. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Trans-Atlantic Infraday Conference, Washington, D.C., US, Oct. 2019
- "Deep Koopman Controller Synthesis for Cyber-Resilient Market-Based Frequency Regulation" (E. Yeung presented), IFAC Symposium on Control of Power and Energy Systems (CPES), Tokyo, Japan, Sep. 2018
- "Stabilization of Power Networks via Market Dynamics", ACM e-Energy, Karlsruhe, Germany, Jun. 2018
- "Online Station Assignment for EV Battery Swapping" (J. Z.F. Pang presented), IEEE Conference on Decision and Control (CDC), Melbourne, Australia, Dec. 2017
- "Online Station Assignment for EV Battery Swapping", Greenmetrics, Urbana-Champaign, Illinois, US, Jun. 2017
- "Optimal Charging Schedule for a Battery Switching Station Serving Electric Buses", IEEE PES General Meeting, Boston, Massachusetts, US, Jul. 2016
- "Joint Scheduling of Large-Scale Appliances and Batteries via Distributed Mixed Optimization", IEEE PES General Meeting, Denver, Colorado, US, Jul. 2015
- "Efficient Battery Charging Schedule of Battery-Swapping Station for Electric Buses", European Control Conference (ECC), Linz, Austria, Jul. 2015
- "Efficient Optimal Scheduling of Charging Station with Multiple Electric Vehicles via V2V", IEEE SmartGridComm, Venice, Italy, Nov. 2014

#### **Seminar presentations.....**

- "Incentive Analysis and Coordination Design for Multi-Timescale Markets", Energy Seminar, Department of Environmental Health and Engineering, Johns Hopkins University, Baltimore, Maryland, US, Sep. 2021
- "Incentive Analysis and Coordination Design for Multi-Timescale Markets", Department of Automation, Shanghai Jiao Tong University, Shanghai, China, May 2021
- "Incentive Analysis and Coordination Design for Multi-Timescale Markets", Department of Industrial Engineering and Management, Peking University, Beijing, China, May 2021
- "Incentive Analysis and Coordination Design for Multi-Timescale Markets", College of Smart Energy, Shanghai Jiao Tong University, Shanghai, China, Apr. 2021
- "Incentive Analysis and Coordination Design for Multi-Timescale Markets", Center for Future Networks, BNU-HKBU United International College, Zhuhai, China, Apr. 2021
- "On Stability and Economic Efficiency of Electricity Market Dynamics", International Forum of Excellent Young Talents in Engineering Sciences, Peking University, Beijing, China, Feb. 2021
- "On Stability and Economic Efficiency of Electricity Market Dynamics", Global Scientist Interdisciplinary Online Forum, Southern University of Science and Technology, Shenzhen, China, Jan. 2021
- "On Stability and Economic Efficiency of Electricity Market Dynamics", Vision Forum for International Young Scholars, Beijing University of Aeronautics and Astronautics, Beijing, China, Jan. 2021
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", School of Automation, Nanjing University of Science and Technology, Nanjing, China, Sep. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", School of Electrical Engineering, Southeast University, Nanjing, China, Sep. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Department of Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China, Aug. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Department

of Mechanical and Energy Engineering, Southern University of Science and Technology, Shenzhen, China, Aug. 2019

- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Department of Control Science and Engineering, Zhejiang University, Hangzhou, China, Jul. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Shanghai Astronomical Observatory, Chinese Academy of Science, Shanghai, China, Jul. 2019
- "The Role of Strategic Load Participants in Two-Stage Settlement Electricity Markets", Department of Computer Science, Central South University, Changsha, China, Jul. 2019
- "Scheduling of EV Battery Swapping", Department of Electrical Engineering, Tsinghua University, Beijing, China, Jul. 2018
- "Stabilization of Power Networks via Market Dynamics", Department of Information Engineering, Chinese University of Hong Kong, Hong Kong, China, May 2018
- "Scheduling of EV Battery Swapping", School of Science and Engineering, Chinese University of Hong Kong-Shenzhen, Shenzhen, China, Sep. 2016
- "Scheduling of EV Battery Swapping", SYSU-CMU Joint Institute of Engineering, Sun Yat-sen University, Guangzhou, China, Sep. 2016

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