# **Pengcheng You**

## **EDUCATION**

Ph.D., Control Science and Engineering

Zhejiang University, Hangzhou, China

Sep. 2013 - Jun. 2018

B.S. with honors, Electrical Engineering

Zhejiang University, Hangzhou, China

Sep. 2009 - Jun. 2013

## PRIMARY APPOINTMENTS

Assistant Professor, National Engineering Laboratory for Big Data Analysis and Applications

Peking University, Beijing, China

Dec. 2022 - Present

Assistant Professor, Dept. of Industrial Engineering and Management

Peking University, Beijing, China

Feb. 2022 - Present

Lecturer, Engineering for Professionals Program

Johns Hopkins University, Baltimore, MD, US

Aug. 2021 - Dec. 2021

Postdoctoral Fellow, Depts. of Mechanical Engineering/Electrical and Computer Engineering

Johns Hopkins University, Baltimore, MD, US

Oct. 2018 - Dec. 2021

Research Intern, Data Sciences and Analytics Group

Pacific Northwest National Laboratory, Richland, WA, US

Oct. 2017 - Jan. 2018

Visiting Graduate Student, Dept. of Computing and Mathematical Sciences

California Institute of Technology, Pasadena, CA, US

Oct. 2016 - Oct. 2017

## **AWARDS**

• 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 ( $\sim$ 5% of graduates)

2013

• Excellent Student Scholarship, Chu Kochen Honors College, Zhejiang University

2012, 2010

## **TEACHING**

#### Instructor

• Advanced Operations Research

Peking University, Spring 2023

• Foundations of Reinforcement Learning

Peking University, Fall 2022

• Foundations of Reinforcement Learning

Johns Hopkins University, Fall 2021

## Teaching assistant.....

Energy System Analysis

Johns Hopkins University, Spring 2021

• Analytical Methods for Network Congestion Control

Zhejiang University, Summer 2016

• Power Systems Analysis

Zhejiang University, Summer 2015

• Linear Systems Analysis

Zhejiang University, Fall 2013

## **PROJECTS**

## Grants awarded

- 1. **Qiyuan Lab Research Project**: *Machine Learning Enabled Algorithms for Complex Strategic Resource Scheduling*, 2022-2024
- 2. **Huawei Cloud Research Project**: Modeling, Simulation, Evaluation, and Causal Analysis of Resource Management Platform for Huawei Public Cloud IaaS Service, 2022-2023
- 3. **NSFC** (72201007): Digital Twin Driven Management for Electric Vehicle Charging: Evaluation and Realization of Its Economic Values, 2023-2025
- 4. **PKU Emerging Engineering Interdisciplinary Project**: *Incentive Analysis for Coupled Participation in Electricity and Carbon Markets*, 2022
- 5. **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 (2136324): 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**

(Underlined include students or postdocs advised.)

#### Preprints.....

- 1. <u>P. You</u>, M. A. Fernandez, D. F. Gayme, and E. Mallda. **The Role of Strategic Participants in Two-Stage Settlement Electricity Markets**.
- 2. <u>P. You</u>, 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. <u>P. You</u>. **Scheduling of EV Battery Swapping in Microgrid**. Book chapter in *Distributed Control Methods and Cyber Security Issues in Microgrids* (Editors: X. Wang, W. Meng, S. Liu; ISBN: 978-0-12-816946-9), pp. 203-241, Elsevier Academic Press, 2020

## Journals.....

- 1. R. K. Bansal, P. You, D. F. Gayme, and E. Mallada. A Market Mechanism for Truthful Bidding with Energy Storage. *Electric Power Systems Research*, vol. 211, 108284, Oct. 2022
- 2. R. Pates, A. Ferragut, E. Pivo, <u>P. You</u>, F. Paganini, and E. Mallada. **Respect the Unstable: Delays and Saturation in Contact Tracing for Disease Control**. *SIAM Journal on Control and Optimization*, vol. 60, no. 2, pp. S196-S220, Mar. 2022
- 3. J. Sun, S. Chen, <u>P. You</u>, 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
- 4. M. Almassalkhi, *et al.* **Hierarchical, Grid-Aware, and Economically Optimal Coordination of Distributed Energy Resources in Realistic Distribution Systems**. *Energies*, vol. 13, no. 23, 6399, Dec. 2020
- 5. H. Yang, P. You, and C. Shang. Distributed Planning of Electricity and Natural Gas Networks

- and Energy Hubs. Applied Energy, vol. 282, Part A, 116090, Jan. 2021
- 6. P. You, J. Z.F. Pang, and S. H. Low. **Online Station Assignment for Electric Vehicle Battery Swapping**. *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, no. 4, pp. 3256-3267, Apr. 2022
- 7. L. Mo, <u>P. You</u>, 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
- 8. Z. Yang, T. Guo, <u>P. You</u>, 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
- 9. Y. Zhang, <u>P. You</u>, 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
- 10. 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
- 11. 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
- 12. Y. Zhou, D. K.Y. Yau, <u>P. You</u>, 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
- 13. H. Ma, Z. Yang, <u>P. You</u>, 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
- 14. 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
- 15. 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
- Z. Yang, R. Wu, J. Yang, K. Long, and <u>P. You</u>. Economical Operation of Microgrid with Various Devices via Distributed Optimization. *IEEE Transactions on Smart Grid*, vol. 7, no. 2, pp. 857-867, Mar. 2016
- 17. Z. Yang, K. Long, <u>P. You</u>, 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. T. Zheng, <u>P. You</u>, and E. Mallada. **Constrained Reinforcement Learning via Dissipative Saddle Flow Dynamics**. *Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, US, 2022
- 2. <u>R. K. Bansal</u>, Y. Chen, <u>P. You</u>, and E. Mallada. **Intercept Bidding in Two-stage Settlement Electricity Markets**. *ACM e-Energy*, Virtual Event, 2022
- 3. 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
- 4. <u>K. Lin</u>, B. Wang, and <u>P. You</u>. **Mechanism Design for Efficient Nash Equilibrium in Oligopolistic Markets**. *Hawaii International Conference on System Sciences (HICSS)*, Maui Island, US, 2022
- 5. P. You, and E. Mallada. Saddle Flow Dynamics: Observable Certificates and Separable Regularization. *American Control Conference (ACC)*, New Orleans, US, 2021
- 6. R. K. Bansal, P. You, D. F. Gayme, and E. Mallada. Storage Degradation Aware Economic Dispatch.

- American Control Conference (ACC), New Orleans, US, 2021
- 7. 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
- 8. H. Fan, <u>P. You</u>, 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
- 9. H. Fan, S. Chen, Z. Guo, <u>P. You</u>, and Z. Yang. Coordinated Scheduling Strategy of Charging Station Considering Cost and Efficiency. *IEEE International Conference on Control & Automation (ICCA)*, Edinburgh, Scotland, 2019
- 10. 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
- 11. P. You, J. Z.F. Pang, and E. Yeung. **Stabilization of Power Networks via Market Dynamics**. *ACM e-Energy*, Karlsruhe, Germany, 2018
- 12. 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
- 13. X. Liu, <u>P. You</u>, and Z. Yang. **Bilaterally Open Electricity Markets with High Penetration of Renewables**. *IEEE International Conference on Control & Automation (ICCA)*, Anchorage, US, 2018
- 14. 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
- 15. J. Z.F. Pang, <u>P. You</u>, 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
- 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
- 17. H. Ma, <u>P. You</u>, 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
- 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
- 19. T. Guo, <u>P. You</u>, and Z. Yang. Recommendation of Geo-Distributed Charging Stations for EVs: A Game Theoretical Approach. *IEEE PES General Meeting*, Chicago, US, 2017
- 20. H. Ma, Z. Yang, <u>P. You</u>, and M. Fei. Complex System Optimization for Economic Emission Load Dispatch. *International Conference on Control*, Belfast, Northern Ireland, UK, 2016
- 21. E. Liu, <u>P. You</u>, and P. Cheng. **Optimal Privacy-Preserving Load Scheduling in Smart Grid**. *IEEE PES General Meeting*, Boston, US, 2016
- 22. 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
- 23. L. Mo, <u>P. You</u>, 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
- 24. 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
- 25. P. You, and Z. Yang. Efficient Optimal Scheduling of Charging Station with Multiple Electric Vehicles via V2V. *IEEE SmartGridComm*, Venice, Italy, 2014

## **MENTORSHIP**

Advisor.... Zijian Zhao **Peking University** Ph.D. student since 2022 Huilan Xu **Peking University** Master student since 2022 Co-mentor..... Rajni Kant Bansal Johns Hopkins University Ph.D. student since 2018 Research interest: Electricity Market Design for Storage Xianglu Liu **Zhejiang University** Next hop: State Grid M.Sc. 2019 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* Thesis: Joint Temporal-Spatial Coordination of Charging Decision of Plug-in Electric Taxi Fleet Host **Endong Liu Heze College** Visiting scholar since 2022 Xiwen Huang **Peking University** Research assistant since 2022 Hengxing Zhao **Peking University** Undergraduate since 2022 Fuyi Li **Peking University** *Undergraduate since* 2022 Yi Yan **Peking University** Undergraduate since 2022 **Ruishuang Chen** Southern University of Science and Technology Visiting student, Aug. 2022 - Nov. 2022 **ACADEMIC ACTIVITIES** Editorial board • Guest editor 1. Frontiers in Energy Research 2022 Special Issue on Transactive Energy Conference organization Session chair 1. POMS International Conference in China *Jun.* 2022 Data-Driven Operations Management 2. SIAM Conference on Control and Its Applications Jul. 2021 Analysis and Control of Nonlinear Systems

3. Conference on Information Sciences and Systems	Mar. 2021
Power System Control, Optimization and Economics I & II	
Systems and Control	
4. Conference on Information Sciences and Systems	Mar. 2019
Security and Privacy	
TPC member	
1. IEEE Global Communications Conference	Dec. 2022
2. IEEE International Conference on Smart Grid Communications	Oct. 2022
3. IEEE Global Communications Conference	Dec. 2021
4. Conference on Information Sciences and Systems	Mar. 2021
5. 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, PSCC, CISS, PESGM, SmartGridComm, Globecom, ICCA, IECON, ICC, etc.

Short 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**

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

- "Saddle Flow Dynamics: Convergence, Algorithms, and Applications", MSRA StarTrack Program Workshop, Microsoft Research Asia, Beijing, China, Nov. 2022
- "Saddle Flow Dynamics: Convergence, Algorithms, and Applications", PKU Workshop on Operations Research and Machine Learning, Peking University, Beijing, China, Nov. 2022
- "Bidding Mechanisms and Incentive Analysis for Temporally-Coupled Electricity Markets", IN-FORMS 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.....

- "Saddle Flow Dynamics: Convergence, Algorithms, and Application to Constrained Reinforcement Learning", Department of Mechanical and Energy Engineering, Southern University of Science and Technology, Shenzhen, China, Jan. 2023
- "Saddle Flow Dynamics: Convergence, Algorithms, and Application to Constrained Reinforcement Learning", School of Computer Engineering, Jiangsu Ocean University, Lianyungang, China, Dec. 2022
- "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", Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China, Jul. 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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