

Yu Yang

Profile

Postdoc Scholar

Email: yu.yang@bears-berkeley.sg | yangyu199002@163.com

Tel: (0065) 83500297

Add: CREATE, 1 Create Way, University Town, NUS, Singapore 138602

Professional Experience

08/2018 - present Postdoc, Berkeley Education Alliance for Research in Singapore Limited (BEARS), UC Berkeley
Collaborate with *Prof. Costas J. Spanos* (Supervisor, UC Berkeley) and *Prof. Guoqiang Hu* (NTU)

Education

09/2013-07/2018 Ph. D., Department of Automation, Tsinghua University, Beijing, China
Collaborate with *Prof. Xiaohong Guan* (Supervisor) and *Prof. (Samuel) Qing-Shan Jia*

09/2009-07/2013 B. S., School of Artificial Intelligent and Automation, Huazhong University of Science and Technology (HUST), Wuhan, China
GPA: 91.83/100

Research & Programs

2018-present **Building Efficiency and Sustainability in the Tropics 2 (National Research Foundation of Singapore, headed by Prof. Costas J. Spanos)**
Theme B. Smart Technologies for Agile, Intelligent, Efficient and Resilient Buildings

- Design stochastic controller for ACMV systems to deal with the uncertain demand of occupants while minimizing energy usage
 - Develop scalable (decentralized) and energy-efficient controller for ACMV systems to manage thermal comfort and indoor environment quality (IEQ)
 - Motivated by the application, explore decentralized optimization for a class of nonconvex problems with general nonlinear constraints
 - Experimental resolution and evaluation of control methods for buildings' ACMV system on Test-bed
-

2015-2018 **Modeling and Simulation of Energy Internet (EI) (National Key R&D Project of China)**

- Data-based analysis of the stochastic characteristics of electric vehicle (EV) charging behaviors
 - Develop scalable (distributed and decentralized) scheduling and simulation models for coordination of EV charging with distributed renewable energy in microgrids
-

2015-2018 **Multi-scale policy optimization of networked discrete event dynamic system (National Natural Science Foundation of China)**

- Develop hierarchical stochastic methods for coordinating EV charging with the distributed renewable generation in microgrids of buildings.
-

2014-2015	Data-Driven Analysis of Energy Consumption of Occupant (Support in part by National Natural Science Foundation of China)
	<ul style="list-style-type: none"> • Build platforms to collect real-time information of individual occupants that relates to their energy consumption behaviors in buildings • Develop data-driven models to improve the prediction accuracy of occupant's energy consumption by incorporating multi-dimensional

Research Interests

Mainly focus on optimization-based control methods for large-scale dynamic systems with their applications to smart buildings, smart grids and cyber physical systems. My current research interests are mainly around but not limited to the theories including

- Decentralize or distributed optimization, decentralized decision-making, game
- Event-based optimization
- Stochastic optimization, Markov decision process, reinforcement learning
- Data-driven analysis and control of complex dynamic systems

Selected Honors & Awards

07/2013	Outstanding Graduate
05/2012	National Encouragement Scholarship No. 1 of the ADI Electronic Technology Design Contest
09/2011	National Scholarship, Scholarship of Academic Excellence
09/2010	Scholarship of Academic Excellence National Encouragement Scholarship
03/2010	Self-Improvement Scholarship

Publications

Journal Papers

- **Y. Yang**, S. Srinivasan, G. Hu, and C. J. Spanos, "HVAC Energy Cost Optimization for a Multi-zone Building via A Decentralized Approach", *IEEE Transactions on Automation Science and Engineering*, Conditionally accepted, 2019.
- **Y. Yang**, Q.-S. Jia, X. Guan, X. Zhang, Z. Qiu, and G. Deconinck, "Decentralized EV-based Charging Optimization With Building Integrated Wind Energy," *IEEE Transactions on Automation Science and Engineering*, 2018.
- **Y. Yang**, Q.-S. Jia, G. Deconinck, X. Guan, Z. Qiu, and Z. Hu, "Distributed Coordination of EV Charging with Renewable Energy in a Microgrid of Buildings," *IEEE Transactions on Smart Grid*, 2017.
- Q.-S. Jia, **Y. Yang**, L. Xia, and X. Guan, "A Tutorial on Event-Based Optimization With Application in Energy Internet," *Control Theory & Applications*, vo. 35, no. 1, pp. 32-40, 2018.

Conference Papers

- **Y. Yang**, Q.-S. Jia, and X. Guan, "Improving the Prediction Accuracy of Building Energy Consumption using Location of Occupant-A Case Study," *IEEE International Conference on Industrial Technology*, pp.1550-1555, 2016.
- **Y. Yang**, Q.-S. Jia, and X. Guan, "The joint scheduling of EV charging load with building mounted wind power using simulation-based policy improvement," *IEEE International Symposium on Flexible Automation*, pp. 165-170, 2016.
- **Y. Yang**, Q.-S. Jia, and X. Guan, "Stochastic Coordination of Aggregated Electric Vehicle Charging With On-site Wind Power at Multiple Buildings," *56th IEEE Conference on Decision and Control*, 2017.

Other Papers

- **Y. Yang**, S. Srinivasan, G. Hu, and C. J. Spanos, “Stochastic Optimal Control of HVAC system for Energy-efficient Buildings”, *IEEE Transactions on Control Systems Technology*, in revision, 2019.
- **Y. Yang**, S. Srinivasan, G. Hu, and C. J. Spanos, “Decentralized Control of Multi-zone HVAC Systems Considering Indoor Air Quality,” submitted to *IEEE Transactions on Control Systems Technology*, under review, 2019.
- **Y. Yang**, G. Hu, and C. J. Spanos, “A Proximal Linearization-based Decentralized Method for Nonconvex Problems with Nonlinear Constraints”, planned to submit to *IEEE Transactions on Automatic Control* (in draft).

Academic Activities

12/2017	Conference talk, 56th IEEE Conference on Decision and Control, Melbourne, Australia
06/2017	Invited talk, the medium term of National energy Internet key R&D program, Northeastern University, Shenyang, China
05/2017	Poster, Doctoral Forum of Department of Automation, Tsinghua University, Beijing, China
03/2016	Conference talk, Doctoral Forum of Department of Automation, Tsinghua University, Beijing, China
03/2016	IEEE International Energy Conference, Leuven, Belgium
	Reviewers of International journals and Conferences including: IEEE Transactions on Smart Grid IEEE Transactions on Automation Science and Engineering
2013-present	IEEE Transactions on Automatic Control IEEE Conference on Decision and Control American Control Conference IEEE International Conference on Automation Science and Engineering

Social Practice

07/2017-10/2017	JD's Company (E-commerce)
01/2016-01/2016	China Electronics Technology Group 28 (Research center)
07/2015-08/2015	Foshan Zhongming Electronic Industrial Company

Teaching Experience

2015	Teaching assistant, Tsinghua University, China 《Data Structure》 (Undergraduate)
2016	Teaching assistant, Tsinghua University, China 《C++ Program Design》 (Undergraduate)
2017	Teaching assistant, Tsinghua University, China 《Computer Network's Theory and Applications》 (Undergraduate)

Visiting Experience

03/2016-05/2016	Visiting Prof. Geert Deconinck, Department of Electrical Engineering, University of Leuven, Belgium
-----------------	---

Interests	Reading, music, and sports
-----------	----------------------------