JUNJIE QIN

Contact Information

Y2E2 Building, 473 Via Ortega, Rm. 268
Stanford University, CA, 94305, US

Phone: (650) 391-6549
E-mail: jqin@stanford.edu

Research Interests

Power Systems, Control, Stochastic Systems, Economics

Education

Ph.D., **Stanford University**, Computational and Mathematical Engineering 2011-present
- Advisor: Ram Rajagopal GPA: 4.1
- Ph.D. Minor: Management Science and Engineering

M.S., **Stanford University**, Statistics 2017

M.S., **Stanford University**, Civil and Environmental Engineering 2011

B.S., **Tsinghua University**, Hydropower Engineering 2010

B.S., **Tsinghua University**, Economics 2010

Distinctions and Grants

Best Student Paper Finalist, IEEE Conference on Decision and Control 2016
- One of 4 finalists

Poster Competition, Third Place, IEEE Power and Energy Society General Meeting 2015
- Among 200 participants

Satre Family Interdisciplinary Fellowship, Stanford University 2013-2016
- One of Stanford Interdisciplinary Graduate Fellowships awarded to 20 Ph.D. students

Student Travel Grant, IEEE Power and Energy Society 2013, 2015

Student Travel Grant, IEEE Control Systems Society 2013

National Creative Research Fellowship for College Students, China 2008-2010

Fellowship for Excellent Academic Performance, Tsinghua University 2007, 2008

Working Papers

J. Qin, R. Rajagopal, P. P. Varaiya, "Flexible Market for Smart Grid: Coordinated Trading of Contingent Contracts," Submitted to IEEE Transactions on Control of Network Systems. [Link]

J. Yu, **J. Qin**, R. Rajagopal, "On Certainty Equivalence of Demand Charge Reduction Using Storage," Conference version accepted to ACC 2016.

R. Jain, **J. Qin**, R. Rajagopal, "ReMatch: An Integrated and Data-Driven Distributed Energy Resource (DER) Planning Framework," Accepted, Nature Energy.

Publications

J. Qin, I. Yang, R. Rajagopal, "Submodularity of Energy Storage Placement in Power Networks," in Proc. 55th IEEE Conference on Decision and Control, Las Vegas, NV, 2016. [Link]

A. Kim, V. Liaghat, **J. Qin**, and A. Saberi, "Online Energy Storage Management: an Algorithmic Approach," APPROX-RANDOM 2016. [Link]

J. Qin, Y. Chow, J. Yang, and R. Rajagopal, "Distributed Online Modified Greedy Algorithm for Networked Storage Operation under Uncertainty," in IEEE Transactions on Smart Grid, vol. 7, no. 2, pp. 1106-1118, March 2016. [Link]

J. Qin, Y. Chow, J. Yang, and R. Rajagopal, "Online Modified Greedy Algorithm for Storage Control under Uncertainty," in IEEE Transactions on Power Systems, vol. 31, no. 3, pp. 1729-1743, May 2016. [Link]

W. Tang, **J. Qin**, R. Jain and R. Rajagopal, "Pricing Sequential Forward Power Contracts," 2015 IEEE International Conference on Smart Grid Communications, Miami, FL, 2015, pp. 563-568. [Link]

Y. Chow and **J. Qin**, "Weighted Difference Approximation of Value Functions for Slow-Discounting Markov Decision Processes," in Proc. 53rd IEEE Conference on Decision and Control, Los Angeles, CA, 2014, pp. 1085-1090. [Link]

J. Qin and R. Rajagopal, "Price of Uncertainty in Multistage Stochastic Power Dispatch," in Proc. 53rd IEEE Conference on Decision and Control, Los Angeles, CA, 2014, pp. 4065-4070. [Link]

J. Qin, Y. Chow, J. Yang, and R. Rajagopal, "Modeling and Online Control of Generalized Energy Storage Networks," in Proc. ACM e-Energy, 2014. [Link]

Z. Yue, **J. Qin**, R. Rajagopal, A. Goldsmith, H. V. Poor, "Wind Aggregation Via Risky Power Markets," in IEEE Trans. on Power Systems, vol. 30, no. 3, pp. 1571-1581, May 2015. [Link]

J. Qin, B. Zhang, R. Rajagopal, "Risk Limiting Dispatch with Ramping Constraints," In Proc. 2013 IEEE International Conference on Smart Grid Communications, Vancouver, BC, 2013, pp. 791-796. [Link]

Z. Yue, **J. Qin**, R. Rajagopal, A. Goldsmith, H. V. Poor, "Risky Power Forward Contracts for Wind Aggregation," In Proc. 51st Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, 2013, pp. 54-61. [Link]

J. Qin and R. Rajagopal, "Dynamic Programming Solution to Distributed Storage Operation and Design," 2013 IEEE Power & Energy Society General Meeting, Vancouver, BC, 2013, pp. 1-5. [Link]

J. Qin, H. I. Su and R. Rajagopal, "Storage in Risk Limiting Dispatch: Control and approximation," 2013 American Control Conference, Washington, DC, 2013, pp. 4202-4208. [Link]

J. Qin, R. Sevlian, D. Varodayan and R. Rajagopal, "Optimal Electric Energy Storage Operation," 2012 IEEE Power and Energy Society General Meeting, San Diego, CA, 2012, pp. 1-6. [Link]

Teaching Experience

Course Assistant for CS 229 Machine Learning (taught by Andrew Ng), Stanford University, 2016 Fall

Course Assistant for CME 304/MS&E 315 Numerical Optimization (taught by Walter Murray), Stanford University, 2015 Winter

Course Assistant for CS 107 Computer Organization and Systems (taught by Michael Chang and Nate Hardison), Stanford University, 2014 Summer

Course Assistant for CEE 272R Modern Power Systems Engineering (taught by Ram Rajagopal), Stanford University, 2014 Spring

Talks and Presentations

Submodularity of Energy Storage Placement in Power Networks, Talk, IEEE Conference on Decision and Control, Las Vegas, December 2016

Contingent Coordinated Trading for Electricity Markets, Invited Talk, Berkeley, August 2016.

Online Modified Greedy Algorithm for Storage Control under Uncertainty, Talk in Transaction Paper Session, IEEE PES General Meeting, Boston, July 2016.

Powernet for Distributed Energy Resource Networks, Poster, IEEE PES General Meeting, Boston, July 2016.

Distributed Online Modified Greedy Algorithm for Networked Storage Operation under Uncertainty, Poster, INFORMS Annual Meeting, Philadelphia, November 2015.

Minimal System Operator in Smart Grid, Invited Talk, Bits and Watts Seminars, Stanford, November 2015.

Distributed Online Modified Greedy Algorithm for Networked Storage Operation under Uncertainty, Poster, IEEE PES General Metting, Denver, July 2015.

Price of Uncertainty in Multistage Stochastic Power Dispatch, Talk, IEEE Conference on Decision and Control, Los Angles, December 2014.

Modeling and Online Control of Generalized Energy Storage Networks, Talk, ACM e-Energy, Cambridge UK, June 2014.

Dynamic Programming Solution to Distributed Storage Operation and Design, Talk and Poster, IEEE PES General Meeting, Vancouver, July 2013.

Storage in Risk Limiting Dispatch: Control and Approximation, Talk, IEEE American Control Conference, Washington, D.C., June 2013.

Optimal Electric Energy Storage Operation, Talk and Poster, IEEE PES General Meeting, San Diego, July 2012.

Service

Member of Organizing Group, Stanford Bits and Watts Seminars, 2016.

Student Committee Member, Stanford Department of Management Science and Engineering Faculty Search (on Energy), 2016

TPC Member, IEEE International Conference on Smart Grid Communications (SmartGridComm), 2015, 2016.

Reviewer

- Journals: IEEE Transactions on Control of Network Systems (TCNS), IEEE Transactions on Power Systems (TPS), IEEE Transactions on Smart Grid (TSG), International Journal of Electrical Power and Energy Systems (IJEPES).
- Conferences: IEEE Conference on Decision and Control (CDC), European Control Conference (ECC), IEEE Power and Energy Society General Meeting (PESGM), IEEE SmartGridComm.

Membership

IEEE, INFORMS, SIAM

Computer Skills

LaTeX, MATLAB, C, R, Julia, Python, CUDA, MPI, C++, Java, Assembly.