

Bolun Xu

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RESEARCH POSITIONS	Massachusetts Institute of Technology MIT Energy Initiatives; and Lab for Info. & Decision Systems (LIDS) <i>Postdoctoral Associate</i> , Aug 2018 - now Doosan Gridtech Power System Analysis Group <i>Research Assistant / Intern</i> , Jun 2017 - Sep 2017 ISO New England, Inc. Business Architecture and Technology Group <i>Research Intern</i> , Jun 2016 - Aug 2016 China Electric Power Research Institute Distributed Generation Group, Renewable Energy Department <i>Research Intern</i> , Apr 2014 - Aug 2014 ABB Switzerland Corporate Research Center Utility Solution Group <i>Research Intern / Master Thesis</i> , Aug 2012 - Dec 2013	Cambridge, MA USA Seattle, WA USA Holyoke, MA USA Beijing, China Dättwil, CH
EDUCATION	University of Washington PhD, Electrical Engineering, Jun. 2018 Swiss Federal Institute of Technology Zurich (ETHZ) M.S., Electrical Engineering and Information Technology, Feb. 2014 Shanghai Jiaotong University B.S.E., Electrical and Computer Engineering (Dual B.S.E), Aug. 2011 University of Michigan B.S.E., Electrical Engineering (Dual B.S.E), Jan. 2011	Seattle, WA USA Zurich, CH Shanghai, China Ann Arbor, MI USA
AWARDS	Scientific Achievement Award, U Washington Clean Energy Institute, 2018 Clean Energy Institute Graduate Fellowship, 2015 Grainger Foundation Fellowship, 2014 Best Poster Award, IEEE 4th European ISGT Conference at Copenhagen, 2013 Dean's List, University of Michigan, 2010 Excellence Student Scholarship, Shanghai Jiaotong University, 2008	
JOURNAL PAPERS	<ol style="list-style-type: none">10. Shi Y., Xu, B., Tan Y., Kirschen D.S, Zhang B. "Optimal Battery Control under Cycle Aging Mechanisms," in <i>IEEE Transactions on Automatic Control</i>, 2019.9. Xu, B., Shi, Y., Kirschen, D.S., Zhang, B. "Optimal Battery Participation in Frequency Regulation Markets" in <i>IEEE Transactions on Power Systems</i>, 2018.8. Shi Y., Xu, B., Zhang B., Wang D., "Using Battery Storage for Peak Shaving and Frequency Regulation: Joint Optimization for Superlinear Gains" in <i>IEEE Transactions on Power Systems</i>, 2017.7. Xu, B., Zhao, J., Zheng, T., Litvinov, E., Kirschen, D.S. "Factoring the Cycle Aging Cost of Batteries Participating in Electricity Markets" in <i>IEEE Transactions on Power Systems</i>, 2017.	

6. Dvorkin, Y., Fernandez-Blanco, R., Wang, Y., **Xu, B.**, Kirschen, D.S., Pandzic, H., Silva-Monroy, C.A., Watson, J.P. “Co-planning of Investments in Transmission and Merchant Energy Storage” in *IEEE Transactions on Power Systems*, 2017.
5. **Xu, B.**, Wang, Y., Dvorkin, Y., Fernandez-Blanco, R., Silva-Monroy, C.A., Watson, J.P., Kirschen, D.S. “Scalable Planning for Energy Storage in Energy and Reserve Markets,” in *IEEE Transactions on Power Systems*, 2017.
4. Wang, Y., Dvorkin, Y., Fernandez-Blanco, R., **Xu, B.**, Kirschen, D.S. “Look-Ahead Bidding Strategy for Energy Storage,” in *IEEE Transactions on Sustainable Energy*, 2017.
3. Fernandez-Blanco, R., Dvorkin, Y., **Xu, B.**, Wang, Y., Kirschen, D. “Optimal Energy Storage Siting and Sizing: A WECC Case Study,” in *IEEE Transactions on Sustainable Energy*, 2016.
2. **Xu, B.**, Oudalov, A., Ulbig, A., Andersson, G., Kirschen, D. “Modeling of Lithium-ion Battery Degradation for Cell Life Assessment,” in *IEEE Transactions on Smart Grid*, 2016.
1. Qiu, T., **Xu, B.**, Wang, Y., Dvorkin Y., Kirschen, D. “A Stochastic Multi-stage Co-planning Model of Transmission Expansion and BESS,” in *IEEE Transactions on Power Systems*, 2016.

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PAPERS

9. Shi Y., **Xu, B.**, Tan Y., Zhang B. “A Convex Cycle-based Degradation Model for Battery Energy Storage Planning and Operations,” *American Control Conference 2018*.
8. **Xu, B.**, Shi, Y., Kirschen, D.S., Zhang, B. “Optimal Regulation Response of Batteries Under Cycle Aging Mechanisms” in *IEEE Conference on Decision and Control (CDC), December 2017*.
7. Wang, Y., Dvorkin, Y., Fernandez-Blanco, R., **Xu, B.**, Kirschen, D.S. “Impact of Local Transmission Congestion on Energy Storage Arbitrage Opportunities,” in *IEEE PES General Meeting, July, 2017*.
6. **Xu, B.**, Dvorkin Y., Kirschen, D.S., Silva-Monroy, C.A., Watson, J.P., “A Comparison of Policies on the Participation of Storage in U.S. Frequency Regulation Markets,” in *IEEE PES General Meeting, July 2016*.
5. Shi Y., **Xu, B.**, Zhang B., Wang D., “Leveraging energy storage to optimize data center electricity cost in emerging power markets,” in *ACM e-Energy, July 2016*.
4. Hao, M., He, G., **Xu, B.**, “Economic Assessments of Electric Energy Storage in Wave Power Integrations,” in *PCIM Asia 2015*.
3. **Xu, B.**, Oudalov, A., Poland, J., Ulbig, A., Andersson, G. “BESS Control Strategies for Participating in Grid Frequency Regulation,” in *19th IFAC World Congress, August 2014*.
2. **Xu, B.**, Ulbig, A., Andersson, G. “Impact of Dynamic Line Rating on Dispatch Decisions and Integration of Variable RES Energy,” in *IEEE PES Innovative Smart Grid Technologies (ISGT), October 2013*.
1. **Xu, B.**, Zima, M., Timbus, A., Naso, F., and Morozova, O. “Speeding-up an OPF Solution with Graph-based Heuristics in EU FP7 ADDRESS,” in *IEEE PES Powertech, June 2013*.

THESES	<ol style="list-style-type: none"> 2. <i>Batteries in Electricity Markets: Economic Planning and Operation</i>, PhD Dissertation, University of Washington, 2018 1. <i>Degradation-limiting Optimization of Battery Energy Storage System Operation</i>, Master Thesis, ETH Zürich, 2013
INVITED TALKS	<ol style="list-style-type: none"> 3. <i>Decarbonizing the Northeast US via Energy Storage: the Evolving Business Model</i>, MIT Energy Initiative Electric Power Systems Center Fall Workshop, Cambridge, Massachusetts, November 2018. Hosted by Dr. Francis O’Sullivan. 2. <i>Optimal Participation of Batteries in Frequency Regulation Markets</i>, Seminar for the Next Generation of Researchers in Power Systems, Banff International Research Station, Canada, May 2018. Hosted by Professor Claudio Canizares. 1. <i>Batteries in Electricity Markets: Economic Planning and Operation</i>, Future Information Technology International Forum for Young Scholars, Shanghai Jiaotong University, China, May 2018. Hosted by Professor Dong Liu.
PROFESSIONAL EXPERIENCE	Reviewer for IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Sustainable Energy, IEEE IAS, Applied Energy, IET Generation, Transmission & Distribution, PES General Meeting, CDC, IFAC
TEACHING EXPERIENCE	Teaching Assistant for Data Structure in Shanghai Jiaotong University; Power System Analysis, Power System Dynamics and Protection, Computer-Aided Design in Power Systems, Wind Energy, University of Washington.
REFERENCES	<p>Daniel S. Kirschen Professor, University of Washington E-mail: kirschen@uw.edu</p> <p>Baosen Zhang Assistant Professor, University of Washington E-mail: zhangbao@uw.edu</p> <p>Francis O’Sullivan Research Director, MIT Energy Initiative E-mail: frankie@mit.edu</p> <p>Audun Botterud Principle Research Scientist, MIT Lab for Info. and Decision Systems (LIDS) E-mail: audunb@mit.edu</p> <p>Eugene Litvinov Chief technologist, ISO New England E-mail: elitvinov@iso-ne.com</p>