BOLUN XU

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POSITIONS

Columbia University *January 2020 - Present*
Assistant Professor
Earth and Environmental Engineering

Massachusetts Institute of Technology *July 2018 - December 2019*
Postdoctoral Associate
MIT Energy Initiative and Lab for Info. & Decision Systems

EDUCATION

University of Washington *September 2014 - June 2018*
PhD in Electrical Engineering

Swiss Federal Institute of Technology Zurich *September 2011 - January 2014*
MS in Electrical Engineering

Shanghai Jiaotong University *September 2007 - August 2011*
BS in Electrical and Computer Engineering (Dual degree with University of Michigan, Ann Arbor)

JOURNAL PUBLICATIONS

1. Shi Y., **Xu, B.**, Tan Y., Kirschen D.S, Zhang B. "Optimal Battery Control under Cycle Aging Mechanisms," in *IEEE Transactions on Automatic Control*, 2019.
2. **Xu, B.**, Shi, Y., Kirschen, D.S., Zhang, B. "Optimal Battery Participation in Frequency Regulation Markets" in *IEEE Transactions on Power Systems*, 2018.
3. Shi Y., **Xu, B.**, Zhang B., Wang D., "Using Battery Storage for Peak Shaving and Frequency Regulation: Joint Optimization for Superlinear Gains" in *IEEE Transactions on Power Systems*, 2017.
4. **Xu, B.**, Zhao, J., Zheng, T., Litvinov, E., Kirschen, D.S. "Factoring the Cycle Aging Cost of Batteries Participating in Electricity Markets" in *IEEE Transactions on Power Systems*, 2017.
5. 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.
6. **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.
7. 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.
8. 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.
9. **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.

10. 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.

CONFERENCE PAPERS

1. 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*.
2. **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*.
3. 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*.
4. **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*.
6. Hao, M., He, G., **Xu, B.**, "Economic Assessments of Electric Energy Storage in Wave Power Integrations," in *PCIM Asia 2015*.
7. **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*.
8. **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*.
9. **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*.

INVITED TALKS

1. *Decarbonizing the Northeast US via Energy Storage: the Evolving Business Model*, MIT Energy Initiative Electric Power Systems Center Fall Workshop, Cambridge, Massachusetts, November 2018. Hosted by Dr. Francis O'Sullivan.
2. *Optimal Participation of Batteries in Frequency Regulation Markets*, Seminar for the Next Generation of Researchers in Power Systems, Banff International Research Station, Canada, May 2018. Hosted by Professor Claudio Canizares.
3. *Batteries in Electricity Markets: Economic Planning and Operation*, Future Information Technology International Forum for Young Scholars, Shanghai Jiaotong University, China, May 2018. Hosted by Professor Dong Liu.

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

INDUSTRY EXPERIENCE

Doosan Gridtech, WA USA — *June 2017 - September 2017*
Power System Research Engineer Intern

ISO New England, MA USA — *June 2016 - August 2016*
Research Intern Business Architecture & Technology Group

China Electric Power Research Institute, Beijing China — *February 2014 - August 2014*
Research Intern in Distributed Energy Resource Group

ABB Corporate Research Center, Baden Switzerland — *February 2012 - August 2012*
Research Intern in Utility Solutions Group

PROFESSIONAL ENGAGEMENTS

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