

Curriculum vitae

Subhonmesh Bose

Assistant Professor
Electrical and Computer Engineering
University of Illinois at Urbana-Champaign

bozes@illinois.edu
bozes.ece.illinois.edu
+1-217-244-2101

Professional preparation

1. Postdoctoral Fellow (2014 – 2015)
With E. Bitar at the School of Electrical and Computer Engineering, Cornell University.
2. PhD (2014)
Co-advised by S. Low, A. Wierman, K. M. Chandy and B. Hassibi at Dept. of Electrical Engineering, California Institute of Technology.
3. Master of Science (2012)
Dept. of Electrical Engineering, California Institute of Technology.
4. Bachelor of Technology (2009)
Dept. of Electrical Engineering, Indian Institute of Technology, Kanpur.

Selected achievements and awards

1. Received the *Atkinson Center Postdoctoral Fellowship in Sustainability* at Cornell University (2014).
2. Received the *Best Paper award in System Operations and Market Economics* at IEEE Power and Energy Systems General Meeting (2013).
3. Finalist at Resnick graduate studies fellowship in Sustainability Science, Caltech (2013).
4. Received the *Directors' Gold Medal* for all-round best performance in graduating batch at IIT Kanpur (2009).
5. Received *Academic Excellence Award* for 3 consecutive years at IIT Kanpur (2006-08).
6. Received the *Goldman Sachs Global Leadership Award* (2007).
7. Received the OP Jindal Engineering and Management Scholarship (2007).
8. Selected among top 50 students in India in the *Indian National Physics Olympiad* (2005).
9. Selected among top 25 students in India in the *Indian National Chemistry Olympiad* (2005).
10. Selected among top 30 students in India in the *Indian National Mathematical Olympiad* (2005).
11. Selected among 40 students in India for the *Kishore Vaigyanik Protsahan Yojna (KVPY)* fellowship (2003), funded by the Government of India for research-minded students in science.
12. Ranked 5th in India in the *Fourth National Science Olympiad* (2002).

Publications

- D. Cai, S. Bose, A. Wierman, "On the Role of a Market Maker in Networked Cournot Competition", Preprint, 2016.
- S. Bose, E. Bitar, "The Marginal Value of Networked Energy Storage", Preprint, 2016.
- R. Louca, S. Bose, E. Bitar, "A Bound on the Minimum Rank of Solutions to Sparse Linear Matrix Equations", Accepted at American Control Conference, 2016.
- S. Bose, S. Low, T. Teeraratkul, B. Hassibi, "Equivalent Relaxations of Optimal Power Flow", IEEE Trans. on Automatic Control 2015, vol. 60, no. 3, pp. 729 – 742.
- C. Thrampoulidis, S. Bose, B. Hassibi, "Optimal Placement of Distributed Energy Storage in Power Networks", IEEE Trans. on Automatic Control 2015, vol. 61, no. 2, pp. 416 – 429.
- S. Bose, D. Gayme, K. M. Chandy, S. Low, "Quadratically constrained quadratic programs on acyclic graphs with application to power flow", IEEE Trans. on Control of Network Systems 2014, vol. 2, no. 3, pp. 278 – 287.
- S. Bose, C. Wu, Y. Xu, A. Wierman, H. Mohesenian-Rad, "Unifying Market Power analysis in Electricity Markets", IEEE Trans. on Power Systems 2014, vol. 30, no. 5, pp. 2338 – 2348.
- S. Bose, E. Bitar, "Variability and the Locational Marginal Value of Energy Storage", Proceedings of IEEE Conference on Decision and Control, 2014.
- S. Bose, D. Cai, S. Low, A. Wierman, "The Role of a Market Maker in Networked Cournot Competition", Proceedings of IEEE Conference on Decision and Control, 2014.
- C. Wu, S. Bose, A. Wierman, H. Mohesenian-Rad, "A Unifying Approach to Assessing Market Power in Deregulated Electricity Markets", Proceedings of IEEE Power and Energy Society General Meeting, 2013. **Received the Best Paper award in System Operations and Market Economics.**
- C. Thrampoulidis, S. Bose, B. Hassibi, "On the Distribution of Energy Storage in Electricity Grids", Proceedings of IEEE Conference on Decision and Control, 2013.
- C. Thrampoulidis, S. Bose, B. Hassibi, "Optimal Large-scale Storage Placement in Single Generator Single Load Networks", Proceedings of IEEE Power and Energy Society General Meeting, 2013.
- S. Bose, S. Low, K. M. Chandy, "Equivalence of Branch Flow and Bus Injection Models", Proceedings of Allerton Conference, 2012.
- S. Bose, D. Gayme, U. Topku, K. M. Chandy, "Optimal Placement of Energy Storage in the Grid", Proceedings of IEEE Conference on Decision and Control, 2012.
- S. Bose, E. Bodine-Baron, B. Hassibi, A. Wierman, "The Cost of an Epidemic over a Complex Network: A Random Matrix Approach", Preprint.
- S. Bose, D. Gayme, S. Low, K. M. Chandy, "Optimal Power Flow on Tree Networks", Proceedings of Allerton Conference, 2011.

- E. Bodine-Baron, S. Bose, B. Hassibi, A. Wierman, “Minimizing the social cost of an epidemic”, Proceedings of International GameNets Conference, 2011.
- S. Bose, V. Khaitan and A. Chaturvedi, “A Low-Cost Algorithm to Find the Minimum Sampling Frequency for Multiple Bandpass Signals”, IEEE Signal Processing Letters, vol. 15, pp. 877 – 880.

Editorial/ Review duties

1. Technical Program Committee member for ACM e-Energy 2016, EAI SmartGIFT 2016, IEEE SmartGridComm 2014, 2015.
2. Reviewer for journals: INFORMS Journal of Operations Research, IEEE Transactions on Network Science and Engineering, IEEE Transactions on Automatic Control, IEEE Transactions on Power Systems, IEEE Power and Energy Society Letters, MDPI Energies Journal.
3. Reviewer for conferences: IEEE Conference on Decision and Control, American Control Conference, European Control Conference, ACM International Symposium on Mobile Ad Hoc Networking and Computing, International Global Communications Conference.

Industry interaction

Southern California Edison (2010 – 12): Served as a research intern at the Advanced Technology division and designed an Automated Volt-VAR Control (AVVC) strategy on a distribution circuit using inverters and capacitor banks with high PV penetration.

Teaching activities

1. ECE 330 (Power circuits and electromechanics) in Spring 2016.
2. ECE 530 (Large-scale system analysis) to be taught in Fall 2016.
3. Teaching assistants at Caltech for (1) CS 144: Principles of Web and (2) EE 164: Linear Estimation and Adaptive Control.

Technical Presentations

1. Invited talks:
 - Information Theory and Applications Workshop, San Diego, CA (2016): “Market design in electricity markets: a Cournot competition approach.”
 - Allerton Conference, Urbana-Champaign (2015): “On wholesale electricity market design under uncertainty: A single-settlement approach.”
 - INFORMS Applied Probability Society Conference, Istanbul, Turkey (2015): “The Marginal Value of Energy Storage.”
 - INFORMS Annual Meeting, San Francisco, CA (2014): “The Role of a Market-maker in a Networked Cournot Competition.”

- Special ECE Seminar, University of Illinois at Urbana Champaign (2015): “Integrated design approach to power systems.”
 - Special EECS Seminar, Massachusetts Institute of Technology (2015): As above.
 - Special ECE Seminar, University of Texas at Austin (2015): As above.
 - Special EECS Seminar, University of California Berkeley (2014): As above.
 - Electrical and Computer Engineering, University of British Columbia (2014): As above.
 - ISN Seminar, Cornell University (2014): As above.
 - ESE Seminar, Washington University St. Louis (2014): As above.
 - MPE 2013+ Workshop on Data-aware Energy Use, San Diego (2014): “Placement and control of energy storage in the grid: A system operator’s viewpoint.”
 - CISS conference, Princeton University (2014): “Solving quadratically constrained quadratic programs over acyclic graphs with application to power flow.”
 - SIAM Optimization conference, San Diego (2014): “Optimal power flow using conic programs.”
 - ISN Seminar, Cornell University (2012): “Optimal power flow: Radial networks and beyond.”
 - SISL Seminar, Caltech (2013): “Epidemics, graphs and eigenvalues.”
 - SISL/Yahoo! (SISHOO) Workshop, Huntington Beach (2010): “Social cost of an epidemic.”
2. Regular conference presentations at: (a) Allerton conference, 2011, (b) IEEE Conference on Decision and Control, 2012, ’14, (c) GameNets, 2011.
 3. Other presentations:
 - Posters presented at (a) IEEE Power and Energy Society (PES) General Meeting, 2013. (b) Southern California Network Economics and Game Theory (NEGT) Symposium, 2011, ’12, ’13.
 - Southern California Edison Technology Advisory Board meeting (2010): “Advanced Volt/Var Control: An Essential Feature of Smart Grid.”

Student advising

1. Summer Undergraduate Research Fellowship (SURF) and Bachelor’s thesis co-mentor for T. Teeraratkul at Caltech (2012-13): currently a *graduate student at Stanford University*.
2. Summer Undergraduate Research Fellowship (SURF) co-mentor for M. Cao at Caltech (2013): currently an undergraduate student at Chinese University of Hong Kong .

Administrative duties

1. Graduate student representative for Caltech Safety Net (2013-14).
2. Part of organizing committee of Graduate Orientation Program at Caltech (2013).

3. Summer Undergraduate Research Fellowship (SURF) judge for student presentations in Electrical Engineering at Caltech (2013).
4. Social chair for Rigorous Systems Research Group, Caltech (2009-2013).
5. Graduate representative of Organization for the Associated Students of the Indian Subcontinent (OASIS), Caltech (2010-11).
6. Coordinator of the Electronics Club, IIT Kanpur (2007-08).
7. Coordinator of the Music Club, IIT Kanpur (2008-09).