

Xiaoqi Tan

Email: ecexiaoqi.tan@connect.ust.hk,

Office: Room 3117, Academic Building, HKUST, Clear Water Bay, Kowloon, Hong Kong

RESEARCH

- **Power Systems** (e.g., energy storage and renewable energy integration.).
- **Coupled Transportation and Energy Systems** (e.g., operation of electric vehicle network, etc.).
- **Optimization and Computation** (e.g., stochastic optimization, mixed-integer optimization, etc.).
- **Performance Evaluation** (e.g., applied queueing theory and stochastic analysis, etc.).

EDUCATION

Harvard University, Cambridge, MA, United States Research Fellow, School of Applied Engineering and Science, Hosting Professor: Prof. Na Li	10/2015 - 05/2016
University of Washington, Seattle, WA, United States Visiting Scholar, Department of Electrical Engineering, Hosting Professor: Prof. Baosen Zhang	03/2015 - 04/2016
Hong Kong University of Science and Technology, Hong Kong Ph.D. Candidate in Electronic and Computer Engineering, Thesis Advisor: Prof. Danny H.K. Tsang	09/2012 - 06/2017
Xi'an Jiaotong University, Xi'an, China B.E. in Electronic and Information Engineering, Overall GPA: 91.43/100 (first class honor, rank 1st/180 students),	08/2008 - 06/2012

WORKING EXPERIENCE

Microsoft Research Asia, Beijing, P.R.China	June 2011 - September 2011
· Title: Research Intern.	
· Mentor: Dr. Yongguang Zhang and Dr. Chuanxiong Guo.	
· Topic: Throughput Analysis of A Server-Centric Network Architecture for Modular Data Centers.	

SELECTED HONORS

Overseas Research Awards, 2015/2016	School of Engineering, HKUST
“Energy Technology Concentration”, 2013/14	School of Engineering, HKUST
Postgraduate Studentship, 2012-2017	School of Engineering, HKUST
Outstanding Research Intern, 2011	Microsoft Research Asia
National Scholarship, 2011	Ministry of Education of P.R.China
National Scholarship, 2010	Ministry of Education of P.R.China
National Scholarship, 2009	Ministry of Education of P.R.China

TEACHING

ELEC4120 - Computer Communication Networks
· Teaching Assistant, Spring 2012/13, Fall 2013/14.
· Instructor: Prof. Danny H.K. Tsang and Prof. Chin-Tau Lea.

- Dept. of Electronic and Computer Engineering, Hong Kong University of Science and Technology.

ELEC1200 - A System View of Communications : from Signals to Packets

- Teaching Assistant, Spring 2013/14.
- Instructor: Prof. Ross D. Murch, Prof. Bertram E. Shi and Prof. Danny H.K. Tsang.
- Dept. of Electronic and Computer Engineering, Hong Kong University of Science and Technology.

SKILLS AND QUALIFICATIONS

Favorite Programming Languages: Matlab, Python, C
Favorite Working Tools: Mac OS & Latex

PROFESSIONAL SERVICES

Technical Program Committee: IEEE SmartGridComm 2015, 2016

PRESENTATIONS

Invited Presentations

1. Understanding the Planning and Operation of Electric Vehicle Battery Swapping Station via Queueing Analysis, Zhejiang University of Technology, Hangzhou, China, July 2015.
2. Value-Lifetime Tradeoff Analysis for Battery Energy Storage in Dynamic Electricity Market, Zhejiang University of Technology, Hangzhou, China, Dec. 2014.

Conference Presentations

1. Model Predictive Control of Integrated Room Automation Considering Occupants Preference, IEEE SmartGridComm 2015, Miami, USA, Nov. 2015.
2. Optimal Energy Trading with Battery Energy Storage under Dynamic Pricing, IEEE SmartGridComm, Venice, Italy, 2014.
3. Queueing Network Models for Electric Vehicle Charging Station with Battery Swapping, IEEE Smart-GridComm, Venice, Italy, 2014.
4. Economic Analysis of Lifetime-Constrained Battery Energy Storage under Dynamic Pricing, IEEE Smart-GridComm, Vancouver, Canada, 2013.

PUBLICATIONS

Journal Papers

1. **X. Tan**, Y. Wu and D.H.K. Tsang, "Pareto Optimal Operation of Distributed Battery Energy Storage Systems for Energy Arbitrage under Dynamic Pricing", *IEEE Transactions on Parallel and Distributed Systems*, vol. 27, no. 7, pp. 2103-2115, July 2016.
2. **X. Tan**, Y. Wu and D.H.K. Tsang, "A Stochastic Shortest Path Framework for Quantifying the Value and Lifetime of Battery Energy Storage under Dynamic Pricing", accepted by *IEEE Transactions on Smart Grid*, 2015.
3. **X. Tan**, B. Sun, Y. Wu and D.H.K. Tsang, "Asymptotic Queueing Analysis for Battery Swapping and Charging Stations Serving Electric Vehicles", conditionally accepted by *Performance Evaluation*, 2017.
4. **X. Tan**, G. Qu, B. Sun, N. Li, and D.H.K. Tsang, "Optimal Charging Scheduling of Battery Charging Stations for Electric Vehicles", under revision by *IEEE Transactions on Smart Grid*, 2017.

5. **X. Tan**, B. Zhang, and D.H.K. Tsang, "Quantifying and Pricing the Value of Multidimensional Flexibility of EV Charging", under revision by *IEEE Transactions on Smart Grid*, 2017.
6. **X. Tan**, B. Sun, and D.H.K. Tsang, "Battery Swapping and Charging Station Network for EV Energy Refueling: Models and Optimization", under revision by *IEEE Transactions on Smart Grid*, 2017.
7. T. Liu, **X. Tan**, B. Sun, Y. Wu, X. Guan, and D.H.K. Tsang, "Energy Management of Cooperative Microgrids: A Distributed Optimization Approach", under review by *International Journal of Electric Power and Energy Systems*, 2017.
8. B. Sun, **X. Tan**, and D.H.K. Tsang, "Optimal Charging Operation of Battery Swapping and Charging Stations with QoS Guarantee", accepted by *IEEE Transactions on Smart Grid*, Feb. 2017.
9. B. Sun, Zhe Huang, **X. Tan**, and D.H.K. Tsang, "Optimal Scheduling for Electric Vehicle Charging with Discrete Charging Levels in Distribution Grid", accepted by *IEEE Transactions on Smart Grid*, 2016.
10. Y. Wu, **X. Tan**, L. Qian, D.H.K. Tsang, W. Song, and L. Yu, "Optimal Pricing and Energy Scheduling for Hybrid Energy Trading Market in Future Smart Grid", *IEEE Transactions on Industrial Informatics*, vol. 11, no. 6, pp. 1585-1596, December 2015.
11. S. Niafar, **X. Tan**, and D.H.K. Tsang et al, "Optimal Downlink Scheduling for Heterogeneous Traffic in LET-A Based on MDP and Chance-Constrained Approaches", accepted to *ACM Springer Mobile Networks and Applications (MONET) Journal*, 2015.

Conference Papers

1. S. Agheb, **X. Tan**, and D.H.K. Tsang, "Model Predictive Control of Integrated Room Automation Considering Occupants Preference", IEEE 6th International Conference on Smart Grid Communications (IEEE SmartGridComm 2015), Nov. 2015.
2. W. Li, **X. Tan**, and D.H.K. Tsang, "Smart Home Energy Management Systems Based on Non-Intrusive Load Monitoring", IEEE 6th International Conference on Smart Grid Communications (IEEE SmartGridComm 2015), Nov. 2015.
3. T. Liu, **X. Tan**, B. Sun, Y. Wu, X. Guan, and D.H.K. Tsang, "Energy Management of Cooperative Microgrids with P2P Energy Sharing in Distribution Networks", IEEE 6th International Conference on Smart Grid Communications (IEEE SmartGridComm 2015), Nov. 2015.
4. **X. Tan**, Y. Wu, and D.H.K. Tsang, "A Monotonic Optimization based Optimal Discrete Charging Protocol for Electric Vehicles with Multilevel Charging Rates", [invited paper], The 27th Chinese Control and Decision Conference (CCDC), Qingdao, China, May. 2015.
5. Y. Wu, **X. Tan**, L. Qian and D.H.K. Tsang, "Optimal Management of Local Energy Trading in Future Smart Microgrid via Pricing", IEEE INFOCOM Workshop, Smart Data Pricing, 2015.
6. **X. Tan**, B. Sun and D.H.K. Tsang, "Queueing Network Models for EV Charging Station with Battery Swapping", IEEE 5th International Conference on Smart Grid Communications (IEEE SmartGridComm 2014), Nov. 2014.
7. **X. Tan**, Y. Wu and D.H.K. Tsang, "Optimal Energy Trading with Battery Energy Storage under Dynamic Pricing", IEEE 5th International Conference on Smart Grid Communications (IEEE SmartGridComm 2014), Nov. 2014.
8. B. Sun, **X. Tan** and D.H.K. Tsang, "Optimal Charging Operation of Battery Swapping Stations with QoS Guarantee", IEEE 5th International Conference on Smart Grid Communications (IEEE SmartGridComm 2014), Nov. 2014.

9. S. Niafar, **X. Tan** and D.H.K. Tsang, “The Optimal User Scheduling for LTE-A Downlink with Heterogeneous Traffic Types”, [invited paper], 10th International Conference on Heterogeneous Networking for Quality, Reliability, Security and Robustness (Qshine 2014), Rhodes, Greece, 2014.
10. Y. Wu, X. Sun, **X. Tan**, L. Meng, L. Yu, W. Song and D.H.K. Tsang, “Cooperative Distributed Energy Generation and Energy Trading for Future Smart Grid”, The 33rd Chinese Control Conference (CCC), Nanjing, China, Jul. 2014.
11. **X. Tan**, Y. Wu and D.H.K. Tsang, “Economic Analysis of Lifetime-Constrained Battery Storage under Dynamic Pricing”, IEEE 4th International Conference on Smart Grid Communications (IEEE Smart-GridComm 2013), Oct. 2013.