

Education	Nanyang Technological University, Singapore	2011-2016
	Doctor of Philosophy (Ph.D.), Electrical and Electronic Engineering - Thesis: Augmented Distributed Optimization for Networked Systems - Advisor: Prof. Yeng Chai Soh and Prof. Lihua Xie (IEEE Fellow, IFAC Fellow)	
	Shandong University, Jinan, China	2005-2009
	Bachelor of Science (B.Sc.), Mechanical Engineering - Ranking: <i>top 5%</i> among 204 - Excellent Undergraduate Thesis Award (<i>top 5%</i>), 2009	
Research Interests	<ul style="list-style-type: none"> - Distributed Optimization and Control - Large-Scale/Distributed Machine Learning - Security and Privacy of Algorithms - Network Science 	
Academic Positions	Zhejiang University, Hangzhou, China	9/2019-Present
	Tenure-Track Professor, College of Control Science and Engineering	
	Purdue University, West Lafayette, USA	9/2018-8/2019
	Postdoctoral Scholar, School of Industrial Engineering; Host: Prof Gesualdo Scutari	
	Arizona State University, Phoenix, USA	10/2017-8/2018
	Postdoctoral Scholar, Department of Electrical and Computer Engineering; Host: Prof Angelia Nedich and Prof Anna Scaglione	
	Nanyang Technological University, Singapore	8/2016-9/2017
	Research Fellow, School of Electrical and Electronic Engineering	
Honors & Awards	<ul style="list-style-type: none"> - “Outstanding Overseas Talent Young Scholars”, Zhejiang Province, 2020 - “One-Hundred Talent Young Scholars”, Zhejiang University, 2019 - Excellent Undergraduate Thesis Award (<i>top 5%</i>), 2009 - Outstanding Student Scholarship (<i>top 5%</i>), 2006-2008 	
Research Experience	Distributed Optimization over Networks [J3 , 5 , 6-7 , 9-10 ; C2 , 5 , 7 , 8] 5/2013-Present	
	<ul style="list-style-type: none"> - Developed <i>several novel distributed algorithms</i> for multi-agent optimization and resource allocation problems over general and adversarial networks, - Provided a unified algorithmic framework for these proposed distributed algorithms and achieved <i>fast (even optimal) rates</i> under this framework, - Investigated the fundamental communication-computation trade-off, - Applied to sensor fusion problems and economic dispatch of power systems. 	
	Coordinated Control for Networked Dynamical Systems [J2 ; C1]	8/2011-8/2015
	<ul style="list-style-type: none"> - Designed a <i>new distributed derivative-free scheme</i> for networked dynamic optimization, - Proposed a <i>primal-dual</i> extremum seeking approach for <i>unknown constraints</i>, - Applied the proposed scheme to wind farms for energy maximization. 	
	Occupancy Modeling for Optimal HVAC Control [J1]	9/2012-5/2013
	<ul style="list-style-type: none"> - Proposed <i>new stochastic models</i> for occupancy modeling and prediction, 	

- Designed *distributed model predictive control schemes* for large-scale HVAC systems.
- Project Experience**
- **Jinming Xu (PI)**, “*Distributed Optimization Algorithms: Unified Framework and Fundamental Complexity Analysis*”, National Natural Science Foundation, China, 240,000RMB, 2021-2023,
 - **Jinming Xu (PI)**, “*Development of communication-efficient distributed machine learning algorithms*”, Huawei Technologies, China, 897,000RMB, 2020-2021
 - **Jinming Xu (PI)**, “*Fundamental Theory and Methods for Distributed Optimization over Networks*”, Zhejiang University, China, 2000,000RMB, 2020-2025
 - **Jinming Xu (Main Participant)**, “*Distributed Fog Computing for Non-Convex Big-Data Analytics*”, NSF-CIF, USA, 270,000USD, 2017-2021.
 - **Jinming Xu (Main Participant)**, “*Identification and Isolation of Malicious Behavior in Multi-Agent Optimization Algorithms*”, NSF-CCF, USA, 180,000USD, 2017-2020.

Publications Journal Articles

- J10 **Jinming Xu**, Ye Tian, Ying Sun and Gesualdo Scutari, “*Distributed Algorithms for Composite Optimization: Unified Framework and Convergence Analysis*,” **IEEE Transactions on Signal Processing**, Early Access, 2021:10.1109/TSP.2021.3086579. [[pdf](#)]
- J9 Tie Ding, Shanying Zhu, Cailian Chen, **Jinming Xu** and Xinping Guan, *Differentially Private Distributed Resource Allocation via Deviation Tracking*, **IEEE Transactions on Signal and Information Processing over Networks**, vol. 7: 222-235, 2021.
- J8 Yongyang Xiong, **Jinming Xu**, Keyou You, Jianxing Liu, and Ligang Wu, *Privacy Preserving Distributed Online Optimization over Unbalanced Digraphs via Subgradient Rescaling*, **IEEE Transactions on Control of Network Systems**, vol. 7, no. 3, pp. 1366-1378, 2020. [[pdf](#)]
- J7 Shi Pu, Wei Shi, **Jinming Xu**, Angelia Nedich, *Push-Pull Gradient Methods for Distributed Optimization in Networks*, **IEEE Transactions on Automatic Control (Regular)**, vol. 66, no. 1, pp. 1-16, 2020; online available. [[pdf](#)]
- J6 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, *A Dual Splitting Approach for Distributed Resource Allocation with Regularization*, **IEEE Transactions on Control of Network Systems**, vol. 6, no. 1: 403-414, 2019. [[pdf](#)]
- J5 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, *A Bregman Splitting Scheme for Distributed Optimization over Networks*, **IEEE Transactions on Automatic Control (Regular)**, vol. 63, no. 11, pp. 3809-3824, 2018. [[pdf](#)]
- J4 Shanying Zhu, Cailian Chen, **Jinming Xu**, Lihua Xie and Johansson Karl Henrik, *Mitigating Quantization Effects on Distributed Sensor Fusion: A Least Squares Approach*, **IEEE Transactions on Signal Processing**, vol. 66, no. 13, pp. 3459-3474, 2018. [[pdf](#)]
- J3 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, *Convergence of Asynchronous Distributed Gradient Methods over Stochastic Networks*, **IEEE Transactions on Automatic Control (Regular)**, vol. 63, no. 2, pp. 434-448, 2018. [[pdf](#)]
- J2 **Jinming Xu** and Yeng Chai Soh, *A Distributed Simultaneous Perturbation Approach for Large-scale Dynamic Optimization Problems*, **Automatica (Regular)** 72 (2016):194-204.
- J1 Zhenghua Chen, **Jinming Xu**, Yeng Chai Soh, *Modeling Regular Occupancy in Commercial Buildings Using Stochastic Models*, **Energy and Buildings** 103 (2015): 216-223.

Conference Proceedings

- J12 **Jinming Xu**, Ye Tian, Gesualdo Scutari and Ying Sun, *Optimal Primal-Dual Algorithms for Distributed Optimization over Networks*, In Proceedings of the **23rd International Conference on Artificial Intelligence and Statistics (AISTATS)**, Italy, pp. 2381-2391, 2020. [[pdf](#)]

- C11 **Jinming Xu**, Ye Tian, Ying Sun and Gesualdo Scutari, “A unified algorithmic framework for distributed composite optimization,” In Proceedings of 59th IEEE Conference on Decision and Control (CDC), Jeju, Korea, pp. 2309-2316, 2020.
- C10 Zhibin Wang, **Jinming Xu**, Shanying Zhu, and Cailian Chen, “A dual splitting method for distributed economic dispatch in multi-energy systems,” In Proceedings of 21st IFAC World Congress, Berlin (Virtual), Germany, pp. 12566-12571, 2020.
- C9 **Jinming Xu**, Ying Sun and Gesualdo Scutari, “A Unified Contraction Analysis of a Class of Distributed Algorithms for Composite Optimization,” *CAMSAP 2019*, To appear.
- C8 Shi Pu, Wei Shi, **Jinming Xu**, Angelia Nedich, “A Push-Pull Gradient Method for Distributed Optimization in Networks,” In *Proceedings of 57th IEEE Conference on Decision and Control (CDC)*, 2018.
- C7 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, “A Dual Splitting Algorithm for Distributed Resource Allocation Problems,” In *Proceedings of 56th IEEE Conference on Decision and Control (CDC)*, 2017.
- C6 Shanying Zhu, **Jinming Xu**, Cailian Chen, Xinping Guan and Binqiang Xue, “DINS: A Scheme for Distributed Sensor Fusion over Fading Channels,” *IFAC-PapersOnLine* 50(1), 2017: 14284-14289.
- C5 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, “A Forward-Backward Bregman Splitting Scheme for Regularized Distributed Optimization Problems,” In *Proceedings of 55th IEEE Conference on Decision and Control (CDC)*, 2016.
- C4 Shanying Zhu, **Jinming Xu**, Cailian Chen and Xinping Guan, “A Least Square Approach for Distributed Sensor Fusion in Bandwidth-constrained Sensor Networks,” In *Proceedings of 41st IEEE Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2016.
- C3 Shanying Zhu, Shuai Liu, **Jinming Xu**, Yeng Chai Soh, and Lihua Xie, “Averaging based distributed estimation algorithm for rate-constrained sensor networks with additive quantization model,” In *Proceedings of 54th IEEE Conference on Decision and Control (CDC)*, 2015.
- C2 **Jinming Xu**, Shanying Zhu, Yeng Chai Soh and Lihua Xie, “Augmented Distributed Gradient Methods for Multi-agent Optimization under Uncoordinated Constant Stepsizes,” In *Proceedings of 54th IEEE Conference on Decision and Control (CDC)*, 2015.
- C1 **Jinming Xu** and Yeng Chai Soh, “Distributed Extremum Seeking Control of Networked Large-scale Systems under Constraints,” In *Proceedings of 52nd IEEE Conference on Decision and Control (CDC)*, 2013.

Presentations Invited Talks

- School of Automation, Tsinghua University, “Distributed Optimization over Networks: Efficient Algorithms and Fundamental Limits”, Beijing, China, 06/2020
- Institute of High Performance Computing, A*Star, “When do distributed optimization algorithms meet centralized counterparts and beyond”, Singapore 05/2020
- School of Mathematical Sciences, Shanghai Jiaotong University, “Distributed Optimization over Networks: From Algorithms to Complexity Bounds”, Shanghai, China 11/2019
- School of Control Science and Engineering, Zhejiang University, “Distributed Optimization over Networks: From Algorithms to Applications”, Hangzhou, China 4/2019
- CSL lab, University of Illinois at Urbana-Champaign, “Augmented Distributed Optimization: From Algorithms to Applications”, Champaign, IL USA 10/2018
- INFORMS Optimization, “Robust Distributed Optimization for Networks with Unreliable Nodes”, Denver, USA 3/2018
- School of Electrical Engineering, Shanghai Jiaotong University (SJTU), “Augmented Distributed Optimization: A General Primal-Dual Perspective”, Shanghai, China 1/2017

Conference Talks

- 59th IEEE CDC, “*A unified algorithmic framework for distributed composite optimization*”, Jeju (virtual), Korea, USA, 12/2020.
- 8th IEEE CAMSAP, “*A Unified Contraction Analysis of a Class of Distributed Algorithms for Composite Optimization*”, Guadeloupe, France, 12/2019.
- 33rd AISTATS, “*Accelerated Primal-Dual Algorithms for Distributed Optimization over Networks*”, Italy (virtual), 06/2020
- 56th IEEE CDC, “*A dual splitting algorithm for distributed resource allocation problems*”, Melbourne, Australia, 12/2017.
- 54th IEEE CDC, “*A Forward-Backward Bregman Splitting Scheme for Regularized Distributed Optimization Problems*”, Las Vegas, USA 12/2016
- 52nd IEEE CDC, “*Distributed Extremum Seeking Control of Networked Large-scale Systems under Constraints*”, Florence, Italy 12/2013

Professional Services

- Guest Editor for Journal of Control Theory and Applications
- Associated Editor for ICCA 2019, 2020
- Session (co)-Chair for CCC 2021, SIAM OPT 2021, ICCA 2020 and CDC 2020
- Program Chair for Global Automation ECR Workshop 2019; TPC members for ICPADS 2020, CACRE 2020

Reviews

- Automatica
- IEEE Transactions on Automatic Control
- IEEE Transactions on Control of Network Systems
- SIAM Journal on Optimization
- IEEE Transactions on Cybernetics
- IEEE Transactions on Systems, Man and Cybernetics: Systems
- IEEE Transactions on Signal and Information Processing over Networks
- IEEE Transactions on Signal Processing
- IEEE Transactions on Network Science and Engineering
- IEEE Conference on Decision and Control
- International Conference on Networked Systems
- International Federation of Automatic Control

Memberships

- IEEE Member (since 2011) • IEEE Control Systems Society (since 2013).

References

Dr. Lihua Xie

Professor, Director, Delta-NTU Corporate Laboratory for Cyber-Physical Systems
School of Electrical and Electronic Engineering
Nanyang Technological University
50 Nanyang Avenue, Singapore 639798
Tel: (+65)-67904524; Fax: (+65)-67920415
Email: elhxie@ntu.edu.sg

Dr. Alexander Olshevsky

Assistant Professor
Department of Electrical and Computer Engineering
Boston University
8 St. Mary's St Boston, MA 02215 USA
Tel: (+1)-617-353-0173
Email: alexols@bu.edu

Dr. Gesualdo Scutari

Associated Professor, Scientific Director for Big Data Analytics
School of Industrial Engineering
Purdue University
West Lafayette, IN, 47907-5400, USA
Tel: (+1)-765-494-7342
Email: gscutari@purdue.edu

Dr. Angelia Nedich

Professor
School of Electrical, Computer and Energy Engineering
Arizona State University
650 E Tyler Mall Tempe, AZ 85287 USA
Tel: (+1)-480-965-9019
Email: Angelia.Nedich@asu.edu

Dr. Qing Ling

Professor
School of Data and Computer Science
Sun Yat-Sen University (SYSU)
Guangzhou, China, 510006
Email: lingqing556@mail.sysu.edu.cn