Yue XU

📞 +86 156-5237-6824   @ xuy@bupt.edu.cn

🎓 Ph.D. Candidate   🎂 August 10th, 1993   🏠 https://gitxuy.github.io/

I am a fourth-year graduate student in the School of Information and Communication Engineering (SICE) in **Beijing University of Post and Telecommunication (BUPT)**, major in **Information Communication Engineering (ICE)**. My research interests include reinforcement learning, large-scale data analytics and system control, data-driven wireless network management.

Education

Present **Sep. 2015**	**Ph.D Candidate • ICE @ SICE • BUPT** > Visiting Researcher with the Department of Electrical and Computer Engineering in **University of California, Davis** (from Sep. 2016 to Sep. 2018, Funded by the China Scholarship Council). Mentor: Shuguang Cui. > Visiting Researcher with the **Chinese University of Hong Kong, Shenzhen (CUHKSZ)** (from Mar. 2016 to Aug. 2016). Mentor: Yin Feng, Shuguang Cui.
Jul. 2015 **Sep. 2011**	**Bachelor's Degree • Communication Engineering @ SICE • BUPT** > BUPT SICE Pilot Class (Selected) > Outstanding Graduate Thesis Award (Top 1%)

Internships

Sep. 2019 **Jul. 2019**	**Algorithm Engineer @ Alibaba Group • Search Technology Business Unit** > Deep reinforcement learning for sequential recommendation in E-commerce systems
Jun. 2019 **Oct. 2018**	**Research Assistant @ Shenzhen Research Institute of Big Data (SRIBD)** > Wireless traffic prediction with scalable Gaussian process (GP) > Load balancing for ultra-dense networks with deep reinforcement learning (DRL)

Publications

Preprint

1. **Y. Xu**, Z. Deng, M. Wang, W. Xu, A. So and S. Cui, "Voting-Based Multi-Agent Reinforcement Learning," arXiv preprint:1907.01385, May 2019. [Online]. Available: https://arxiv.org/abs/1907.01385

Journal

2. **Y. Xu**, F. Yin, W. Xu, J. Lin and S. Cui, "Wireless Traffic Prediction with Scalable Gaussian Process: Framework, Algorithms, and Verification," in *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 37, no. 6, pp. 1291-1306, June 2019.

3. W. Xu, **Y. Xu**, Y. Xu, C. Lee, Z. Feng, P. Zhang and J. Lin, "Data-Cognition-Empowered Intelligent Wireless Networks: Data, Utilities, Cognition Brain, and Architecture," in ***IEEE Wireless Communications***, vol. 25, no. 1, pp. 56– 63, February 2018.

4. **Y. Xu**, Z. Wang, W. Xu, J. Lin and S. Cui, "Load Balancing for Ultra-Dense Networks with Deep Reinforcement Learning under Multiple Behavior Policies," in ***IEEE Internet of Things Journal*** to appear.

5. Z. Wang, L. Li, **Y. Xu**, H. Tian and S. Cui, " Handover Control in Wireless Systems via Asynchronous Multiuser Deep Reinforcement Learning," in ***IEEE Internet of Things Journal***, vol. 5, no. 6, pp. 4296–4307, June 2018.

6. A. Xie, F. Yin, **Y. Xu**, B. Ai, T. Chen and S. Cui, "Distributed Gaussian Processes Hyperparameter Optimization for Big Data Using Proximal ADMM," in textitIEEE Signal Processing Letters, vol. 26, no. 8, pp. 1197-1201, August 2019.

7. W. Xu, S. Li, **Y. Xu**, X. Lin, " Underlaid-D2D-assisted cooperative multicast based on social networks," in *Peer-to-Peer Networking and Applications*, vol. 9, no. 5, pp. 923–935, September 2016.

8. W. Xu, S. Li, **Y. Xu**, Z. Feng, J. Lin, " Energy-efficient layered video multicast over OFDM-based cognitive radio systems," in *International Journal of Distributed Sensor Networks*, vol. 11, no. 10, pp. 1-12, October 2015.

9. H. Cui, S. Tang, F. Sun, **Y. Xu**, X. Yang, " Topological embedding feature based resource allocation in network virtualization," in *Mathematical Problems in Engineering*, vol. 2014, pp. 1-10, August 2014.

Conference

10. **Y. Xu**, F. Yin, W. Xu, J. Lin and S. Cui, "Scalable Gaussian Process Using Inexact ADMM for Big Data," in *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brighton, UK, May 2019, to appear.

11. **Y. Xu**, F. Yin, W. Xu, J. Lin and S. Cui, "Distributed Gaussian Process: New Paradigm and Application to Wireless Traffic Prediction," in *IEEE International Conference on Communications (ICC)*, Shanghai, China, May 2019, to appear. in *IEEE International Conference on Communications (ICC)*, 2019.

12. **Y. Xu**, Z. Wang, W. Xu, J. Lin and S. Cui, " Deep Reinforcement Learning Based Mobility Load Balancing Under Multiple Behavior Policies," in *IEEE International Conference on Communications (ICC)*, Shanghai, China, May 2019, to appear.

13. **Y. Xu**, F. Yin, W. Xu, J. Lin and S. Cui, " High-Accuracy Wireless Traffic Prediction: A GP-Based Machine Learning Approach," in *IEEE Global Communications Conference (GLOBECOM)*, Singapore, December 2017, pp. 1–6.

14. Z. Wang, L. Li, **Y. Xu**, H. Tian and S. Cui, " Handover Optimization via Asynchronous Multi-User Deep Reinforcement Learning," in *IEEE International Conference on Communications (ICC)*, Kansas City, MO, May 2018, pp. 1-6.

15. W. Xu, B. Li, **Y. Xu** and J. Lin, " Lower-Complexity Power Allocation for LTE-U Systems: A Successive Cap-Limited Waterfilling Method," in *IEEE Vehicular Technology Conference (VTC Spring)*, Glasgow, Scotland, May 2015, pp. 1-6.

Research Experiences

Project on   **Deep Reinforcement Learning Based Large-scale Wireless Network Management**
Work with   UC Davis & BUPT
Introduction   We proposed an off-policy DRL-based mobility load balancing (MLB) algorithm to solve the large-scale load balancing problem for ultra-dense networks (UDNs). The algorithm employs multiple behavior policies for joint exploration under an asynchronous parallel learning framework, where the traditional methods could be exploited to guided the learning process so as to improve the learning efficiency [12]. We further proposed a two-layer MLB architecture to handle the large-scale load balancing problem for UDNs in a self-organized manner [4]

Project on   **Voting Based Multi-Agent Reinforcement Learning**
Work with   Chinese University of Hong Kong & CUHKSZ & BUPT
Introduction   We consider a voting based multi-agent reinforcement learning (MARL) problem, where the agents vote to make group decisions and aim at maximizing the globally averaged returns [1].

Project on   **Distributed and Parallel Gaussian Process (Regression Analysis)**
Work with   CUHKSZ & BUPT
Introduction   We proposed a GP based wireless traffic prediction model with a specified kernel function, which can attain up to 97% accuracy when predicting real 4G traffic to outperform the state-of-the-art algorithms considerably [13] We further proposed a distributed version [11] and a parallel version [10] based on the alternating direction method of multipliers (ADMM) and cross-validation to largely reduce the computational complexity with acceptable performance loss [2]. We also proposed a C-RAN based scalable GP prediction architecture to well-support the data-driven network scheduling and resource configuration [3].

Awards & Activities

> BUPT Outstanding Graduate Thesis Award (2015), Silver Award in Beijing "Challenge Cup" College Student Business Plan Competition (2014), Silver Award in National College Student Business Plan Competition (2014), Meritorious (First) Prize in Mathematical Contest in Modeling (2014), Second Prize in BUPT College Student Business Plan Competition (2014), BUPT National College Student Innovation Project (2013)

> The Union Minister of Liaison Department in BUPT, Leader of the Pilot Class, Host of the Graduation Party, Host of the Campus Singer Competition, Member of the Glee Club

Skills

> **Programming Languages and Framework:** Python, Matlab, Tensorflow

> **Languages**: English (TOEFL: 106 = 28+27+24+27), Chinese (native speaker)