

# Xin Liu

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<b>Contact Information</b>	Arizona State University, 431 Goldwater Center, Tempe, AZ 85281 <b>Website:</b> <a href="https://liuxincell.github.io/">https://liuxincell.github.io/</a> <b>Email:</b> liuxincell@gmail.com <b>Phone:</b> (+1)4802770515
<b>Research Interests</b>	Load balancing in data centers, scheduling in ride-sharing, routing in communication networks, stochastic analysis and optimization
<b>Education</b>	<b>Arizona State University</b> Ph.D. Student in Electrical Engineering, Aug. 2014 – Now Advisor: Prof. Lei Ying  <b>University of Chinese Academy of Sciences</b> M.S. in Signal and Information Processing, Sept. 2011 – Jul. 2014 Advisor: Prof. Haibing Wang  <b>Hunan University</b> B.E. in Electrical Engineering (Honors), Aug. 2007 – Jul. 2011
<b>Projects</b>	<b>“Zero-delay” Load Balancing in Large-Scale Server System</b> <ul style="list-style-type: none"><li>Analyzed load balancing policies under the heavy traffic regime and exponential service time, and proved a sufficient condition for “zero-delay” load balancing.</li><li>Working on the generalization of the exponential service time assumption (e.g. Coxian-2) for a class of load balancing.</li></ul> <b>Empty-car Routing in Ridesharing</b> <ul style="list-style-type: none"><li>Approximated stochastic empty-car routing as a fluid optimization problem, relaxed it into a linear programming (LP), and proved LP relaxation is tight.</li><li>Evaluated empty-car routing policies with real traffic and network topology from dataset released by DiDi Chuxing, the results improve the demand-supply gap.</li></ul> <b>Real-Time Routing for Multi-hop Networks</b> <ul style="list-style-type: none"><li>Proposed spatial-temporal routing for end-to-end deadline constrained traffic in communication networks and proved its optimality under periodic traffic pattern.</li><li>Incorporated a resource-pooling heuristic into spatial-temporal routing and validated its efficiency for stochastic real-time video transmission in Abilene network.</li></ul>
<b>Presentations</b>	“Fluid-Model-Based Car Routing for Modern Ridesharing Systems” <ul style="list-style-type: none"><li>- Poster at SIGMETRICS, Urbana-Champaign, Illinois, June, 2017</li></ul> “On Achieving Zero Delay with Power-of- $d$ -Choices Load Balancing” <ul style="list-style-type: none"><li>- INFORMS Annual Meeting, Houston, Texas, Oct. 2017</li><li>- INFOCOM, Honolulu, Hawaii, Apr. 2018</li></ul> “Steady-State Analysis of Load Balancing Algorithms in the Sub-Halfin-Whitt Regime” <ul style="list-style-type: none"><li>- INFORMS Annual Meeting, Phoenix, Arizona, Nov. 2018</li><li>- Poster at NSF Cyber-Physical System Meeting, Alexandria, Virginia, Nov. 2018</li></ul>
<b>Honors and Awards</b>	INFOCOM paper invited for a fast review to IEEE Transactions on Network Science and Engineering (7 out of 312 accepted papers) 2018 Best Student Paper at CHINACOM 2013 Excellent Bachelor Thesis, Hunan University 2011

## Publications

**X. Liu** and L. Ying. *Steady-State Analysis of Load Balancing Algorithms in the Sub-Halfin-Whitt Regime*. Sigmetrics MAMA Workshop, Irvine, CA, 2018 (Submitted to Journal of Applied Probability and in Round2 review).

**X. Liu** and L. Ying. *On achieving zero delay with power-of-d-choices load balancing*. In Proc. IEEE International Conference on Computer Communications (INFOCOM), Honolulu, Hawaii, 2018. Fast-Track Review for IEEE Transactions on Network Science and Engineering (7 out of 312 accepted papers were invited).

Y. Liu, **X. Liu**, L. Ying, and R. Srikant. *Wireless scheduling with deadline and power constraints*. 2018 Annual Conference on Information Science and Systems (CISS), Princeton, NJ, 2018. (Submitted to IEEE/ACM Transactions on Networking and in revision).

A. Braverman, J. G. Dai, **X. Liu**, and L. Ying. *Empty-car routing in ridesharing*. Operations Research (Upcoming).

**X. Liu** and L. Ying. *Spatial-temporal routing for supporting end-to-end hard deadlines in multi-hop networks*. 2016 Annual Conference on Information Science and Systems (CISS), Princeton, NJ, 2016. (Submitted to Performance Evaluation and in Round2 review).

**X. Liu**, F. Gao, G. Wang, and X. Wang. *Joint beamforming and user selection in multicast downlink channel under secrecy-outage constraint*. IEEE Communications Letters 18 (1), 82-85, 2014.

**X. Liu**, H. Li, and H. Wang. *Probability constrained robust multicast beamforming in cognitive radio network*. 8th International Conference on Communications and Networking in China (CHINACOM), Guilin, 2013. (Best Student Paper)

## Industry Experience

Internship in Cardinal Operation, Inc., Shanghai, China, Summer, 2018

## Professional Service

Reviewer for IEEE/ACM Transactions on Networking, Performance Evaluation, IEEE Journal on Selected Areas in Communications, IEEE Communications Letters, Mobi-Hoc, INFOCOM, WiOpt.