

DONGXIN LIU

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Shanghai Jiao Tong University

EDUCATION

Shanghai Jiao Tong University

- M.S. in Computer Science: advisor Prof. Fan Wu. Sep. 2014 - Present
Overall GAP: 3.64/4.0 Rank: 2/102 Major GPA: 3.70/4.0 Rank: 2/102
- B.S. in Computer Science Sep. 2010 - Jun. 2014
Overall GPA: 87.96/100 Rank: 12/130 Major GPA: 91.03/100 Rank: 6/130

PUBLICATIONS

- **Dongxin Liu**, Zhihao Wu, Fan Wu, Yuan Zhang, and Guihai Chen, “FIWEX: Compressive Sensing Based Cost-Efficient Indoor White Space Exploration”, Proceedings of the *16th ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc)*, Hangzhou, China, June, 2015. [Acceptance rate: **14.8%**] [PDF]
- **Dongxin Liu**, Fan Wu, Linghe Kong, Shaojie Tang, Yuan Luo, and Guihai Chen, “Training-Free Indoor White Space Exploration”, *IEEE Journal on Selected Areas in Communications (JSAC)*, vol. 34, no. 10, 2016. [Acceptance rate: **11.5%**] [PDF]
- **Dongxin Liu**, Zhihao Wu, Fan Wu, Yuan Zhang, and Guihai Chen, “Cost-Efficient Indoor White Space Exploration Through Compressive Sensing”, *IEEE/ACM Transactions on Networking (ToN)* (Under Review, Miner Revision). [PDF]
- **Dongxin Liu**, Tianshu Liu, Xiaofeng Gao, Fan Wu, and Shaojie Tang, “Towards Fine-Grained Indoor White Space Estimation”, Proceedings of the *ACM Special Interest Group for the computer systems performance evaluation community (SIGMETRICS)*, Urbana-Champaign, IL, June, 2017 (To be submitted).

RESEARCH EXPERIENCES

Indoor White Space Measurement at Different Cities

Apr. 2014 - Nov. 2015

- Implemented an energy detector based on GNU Radio platform and USRP N210 devices.
- Deployed more than 22 USRPs to measure the RSSIs of TV spectrum in different buildings of Shanghai and Nanjing for more than one month.
- Characterized the spatio-temporal-spectral correlations among indoor TV spectrum based on roughly 3400000 samples collected during the measurement.

Compressive Sensing Based Indoor White Space Exploration System

Apr. 2014 - Dec. 2014

- Reconstructed the indoor white space availability map by solving a compressive sensing based non-convex optimization problem and designed a *k-medoids* clustering based sensor deployment methodology.
- Identified 47.8% more indoor white spaces with 38.4% less false alarms compared with the state-of-the-art system.
- Published in *MobiHoc* 2015, corresponding journal version is under review in *ToN*.

Training-free Indoor White Space Exploration System

Jan. 2015 - Jul. 2015

- Designed a training-free indoor white space exploration system based on Relevance Vector Machine (RVM) and Bayesian compressive sensing, and implemented training-free spectrum detector deployment by maximizing the differential entropy.
- Achieved competitive performance with the state-of-the-art training-based systems.
- Published in *JSAC*, vol. 34, no. 10, 2016.

Gaussian Process Based Fine-grained Indoor White Space Estimation

Aug. 2015 - Apr. 2016

- Characterized the spatio-temporal-spectral correlations of indoor white space by multiplying a Gaussian kernel, a period kernel, and a semi-positive matrix together, and utilized multitask Gaussian process model to accurately

estimate the white space availabilities at arbitrary indoor locations.

- Designed a sensor candidate locations selection mechanism by maximizing the mutual information.
- To be submitted to *Sigmetrics* 2017.

Mobile Sensor Based Indoor White Space Exploration System

May 2016 - Present

- Designed and implemented a mobile spectrum sensing platform which contains an USRP, an omni antenna, an Arduino-WiFi based mobile device and an Intel NUC.
- Devised an efficient compressive sensing based methodology to explore indoor white space with only one mobile sensor and a multitask Gaussian process based mobile device schedule mechanism.
- In preparation for *MobiCom* 2017.

SCHOLARSHIPS & AWARDS

National Scholarship, China (Top 2%)	2016
National Scholarship, China (Top 2%)	2015
Outstanding Graduates Awards, SJTU	2014
Academic Excellence Scholarship of SJTU (Top 5%)	2013
Academic Excellence Scholarship of SJTU (Top 10%)	2012
Academic Excellence Scholarship of SJTU (Top 5%)	2011

SKILLS

Computer Languages	C, C++, MATLAB, Python, Java.
Math Tools	Compressive sensing, Multitask Gaussian process, Convex optimization.
Platforms	USRP, GNU Radio, Gnuplot, iRobot.

EXTRACURRICULAR ACTIVITIES

- Quality Development Association, *Vice President* *2011 - 2012*
- Volunteer at Shanghai International Marathon *2012, 2013, 2014, 2015*