DONGXIN LIU

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Shanghai Jiao Tong University

EDUCATION

Shanghai Jiao Tong University

M.S. in Computer Science: advised by Fan Wu. *Sep. 2014 - Present*
- Major GPA: 2.84/3.3 Rank: 2/124

B.S. in Computer Science *Sep. 2010 - June 2014*
- Major GPA: 89.1/100 Rank: 6/121

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**).   [**PDF**]

- **Dongxin Liu**, Tianshu Liu, Xiaofeng Gao, Fan wu, and Shaojie Tang, "Towards Fine-Grained Indoor White Space Estimation", Proceedings of the *36th IEEE International Conference on Computer Communications (INFOCOM)*, Atlanta, GA, May, 2017 (**Submitted**).

RESEARCH EXPERIENCE

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 3423384 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 devised a k-medoids clustering based sensor deployment methodology.
- Identify 47.8% more indoor white spaces with 38.4% less false alarms compared with the state-of-the-art systems.
- Published in *MobiHoc* 2015, corresponding journal version is under review in *ToN*.

Training-free Indoor White Space Exploration System *Jan. 2015 - July. 2015*
- Devised a training-free indoor white space exploration system based on Relevance Vector Machine (RVM) and Bayesian compressive sensing, and implemented training-free spectrum sensor 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*
- Modeled the indoor white space estimation problem with multitask Gaussian process methodology and characterized the spatio-temporal-spectral correlations of indoor white space by multiplying a Gaussian kernel, a period kernel, and a semi-positive matrix together.

- Devised a fine-grained indoor white space exploration system which could accurately estimate the white space availabilities at arbitrary indoor locations.
- Submitted to *INFOCOM* 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 *MobiSys* 2017.

SCHOLARSHIPS & AWARDS

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

SKILLS

- **Programming:** C, C++, MATLAB, Python, Java, Linux networking programming.
- **Math Tools:** Compressive sensing, Multitask Gaussian process, mutual information, and convex optimization.
- **Platform:** USRP, GunRadio, iRobot.

EXTRACURRICULAR ACTIVITIES

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