

# Tianqi Wang

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## OBJECTIVE

A research position in the field of Electrical and Computer Engineering, with an emphasis on Wireless networks optimization/ Estimation and Detection

## SUMMARY

- Authored over 18 peer-reviewed technical papers
- 7 years of experience in communication system test and evaluation in MATLAB/C++
- 6 years of research experience in wireless communications and statistical modeling
- 3 years of research experience in cooperative wireless sensor networks

## PROFESSIONAL SKILLS

1. Strong skill in MATLAB, C/C++, UNIX/LINUX programming
2. Expert in physical layer design in wireless communications
3. In-depth understanding of network protocol, including TCP/IP, UDP, DHCP, ICMP
4. Familiar with Python, VHSIC Hardware Description Language (VHDL), NS-2, Socket programming, CDMA2000/WCDMA/GSM technology

## EDUCATION

**Ph.D. Candidate in Electrical and Computer Engineering**    expected graduation date: May, 2011  
University of Rochester, USA    GPA 4.0/4.0  
Advisor: Prof. Wendi Heinzelman; co-advisor: Prof. Alireza Seyedi

**M. Sci. in Electrical and Computer Engineering**    May, 2010  
University of Rochester, USA    GPA 4.0/4.0  
Advisor: Prof. Wendi Heinzelman; co-advisor: Prof. Alireza Seyedi

**M. Eng. in Electrical and Computer Engineering (Research-Oriented)**    May, 2007  
Memorial University of Newfoundland (MUN), Canada    GPA 4.0/4.0

**B.Eng. in Communications Engineering**    July, 2004  
Beijing University of Posts and Telecommunications (BUPT), China    GPA 88.3/100

## EXPERIENCE

### Research Assistant

University of Rochester, September, 2007 -present

1. Developed an analytical optimization algorithm on improving the performance of a clustered wireless network
2. Developed an energy efficient distributed source coding scheme used in energy-constraint wireless networks
3. Developed a joint optimization scheme on PHY-layer parameters in IR-UWB based wireless networks
4. Developed a comprehensive power model of a typical IR-UWB based transceiver

### Lecturer

MUN, January, 2007 -May, 2007

1. Offered an undergraduate-level course: *Microprocessors*

### Research Assistant

MUN, September, 2004 -January, 2007

1. Developed an Expectation-Maximization (EM) based algorithm to estimate the channel impulse response and Doppler effects of a time-varying wireless channel
2. Designed a frequency-domain-equalization (FDE) based receiver structure that effectively exploits the Doppler diversity of a time-varying wireless channel
3. Implemented and evaluated various statistical wireless channel models in MATLAB, including Jakes and BEM model
4. Implemented a PHY-layer simulation platform for a typical CDMA and an OFDM system in MATLAB
5. Designed and implemented an integer-factor sample rate converter used in the intermediate frequency stage of a typical software defined radio receiver in VHDL

**Research Assistant** Wireless Signal Processing & Network Lab, BUPT, January, 2004 -June, 2004

1. Implemented and evaluated the S-V wireless channel model for IR-UWB radio environment in MATLAB

## PROFESSIONAL ACTIVITIES

### Technical Program Committee Member

*IEEE International Conference on Communications (ICC) 2011*

Wireless Networking Symposium

*The 25<sup>th</sup> Queen's Biennial Symposium on Communications (QBSC) 2010*

*IEEE Globecom 2010*

Ad-hoc and Sensor Networking Symposium

Wireless Networking Symposium

Wireless Communications Symposium

*IEEE Globecom 2009*

Wireless Networking Symposium

Wireless Communications Symposium

*IEEE International Wireless Communications and Mobile Computing Conference (IWCMC) 2010/2009/2008*

WLANs and WPANs Symposium

### Technical Reviewer

IEEE Transactions on Wireless Communications

IEEE Transactions on Vehicular Technology

Wiley Wireless Communications and Mobile Computing

International Journal of Communication Systems

IEEE International Conference on Communications  
IEEE Wireless Communications and Networking Conference

## THESES

"On the Design and Optimization of Short Range Energy Constrained Wireless Networks",  
*Tentative Ph.D. Thesis*, University of Rochester (Advisor: Prof. Wendi Heinzelman, Co-  
advisor: Alireza Seyedi)

"Adaptive Frequency Domain Channel Estimation and Equalization in Composite Radio  
environment via Software Defined Radio Technology", *Master Thesis*, MUN, 2007 (Advisor:  
Prof. Cheng Li)

"Ultra-Wideband (UWB) Indoor Wireless Channel Model Development and Simulation",  
*Outstanding B.Eng. Thesis of the Department of Communications*, BUPT, 2004 (Advisor: Prof.  
Wenbo Wang, Dean of the School of Telecommunications, BUPT)

## JOURNAL PAPERS

**Tianqi Wang**, Wendi Heinzelman, Alireza Seyedi, and Azadeh Vosoughi, "Maximization  
of Sample Gathering in Clusters with Slepian-Wolf Coding," *in submission to IEEE  
Transactions on Signal Processing*, 2010.

**Tianqi Wang**, Wendi Heinzelman, and Alireza Seyedi, "Energy Minimization For IR-UWB-  
based Wireless Networks," *under revision, IEEE Transactions on Wireless Communications*,  
2009.

Matthew Holland, **Tianqi Wang**, Bulent Tavli, Alireza Seyedi and Wendi Heinzelman,  
"Optimizing Physical Layer Parameters for Wireless Sensor Networks," *under revision, IEEE  
Transactions on Sensor Networks*, 2009.

**Tianqi Wang**, Wendi Heinzelman, and Alireza Seyedi, "Link Energy Minimization For  
Wireless Sensor Networks," *in submission to IEEE Transactions on Mobile Computing*, 2010.

**Tianqi Wang**, Cheng Li, and Hsiao-Hwa Chen, "On EM-Based Adaptive Frequency  
Domain Estimation of Doppler Shifts with CRLB Analysis for CDMA Systems," *under  
revision, IEEE Transactions on Communications*, 2009.

**Tianqi Wang**, Cheng Li, and Hsiao-Hwa Chen, "An Iterative Expectation-Maximization  
Algorithm Based Joint Estimation Approach for CDMA/OFDM Composite Radios," *IEEE  
Transactions on Wireless Communications*, Vol. 7, Issue 8, August 2008.

## CONFERENCE PAPERS

**Tianqi Wang**, Wendi Heinzelman, and Alireza Seyedi, "Maximization of Data Gathering in  
Clustered Wireless Sensor Networks," *submitted to IEEE GLOBECOM*, 2010.

Di Wang, **Tianqi Wang**, and Alireza Seyedi, "Dual-Windowed OFDM for Cognitive  
Radios," *The Eleventh IEEE International Workshop on Signal Processing Advances in Wireless  
Communications (SPAWC)*, 2010.

**Tianqi Wang**, Wendi Heinzelman, Alireza Seyedi and Azadeh Vosoughi, "Maximizing The Lifetime of Clusters With Slepian-Wolf Coding," *Proc. IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2010.

**Tianqi Wang**, Wendi Heinzelman, and Alireza Seyedi, "Minimizing Energy Consumption in IR-UWB Based Wireless Sensor Networks," *Proc. IEEE International Conference on Communications (ICC)*, 2009.

**Tianqi Wang**, Wendi Heinzelman, and Alireza Seyedi, "Minimization of Transceiver Energy Consumption in Wireless Sensor Networks with AWGN Channels," *Proc. Forty-Sixth Annual Allerton Conference on Communication, Control, and Computing*, 2008.

**Tianqi Wang**, Cheng Li, and Hsiao-Hwa Chen, "On Iterative EM-Based Frequency Domain Joint Estimation of Synchronization Parameter and Channel Impulse Response," *Proc. IEEE GLOBECOM*, 2007.

**Tianqi Wang**, Cheng Li, Hsiao-Hwa Chen and Mohsen Guizani, "On Frequency Domain Doppler Diversity Using Basis Expansion Model and EM-Based Algorithms in CDMA Systems," *Proc. IEEE GLOBECOM*, 2007.

**Tianqi Wang**, Cheng Li, and Hsiao-Hwa Chen, "Frequency Domain Joint Estimation of Synchronization Parameter and Channel Impulse Response in Composite Radio Receiver," *Proc. IEEE International Conference on Communications (ICC)*, **(Student Travel Grant Award)**, 2007.

**Tianqi Wang**, Cheng Li, and Hsiao-Hwa Chen, "Basis Expansion Model and Doppler Diversity Techniques for Frequency Domain Channel Estimation and Equalization in DS-CDMA Systems," *Proc. IEEE International Conference on Communications (ICC)*, **(Student Travel Grant Award)**, 2007.

**Tianqi Wang**, and Cheng Li, "Sample Rate Conversion Technology in Software Defined Radio", *Proc. IEEE 19th Canadian Conference on Electrical and Computer Engineering*, 2006.

**Tianqi Wang**, L. Zhang, and Cheng Li, "Sample Rate Conversion in Software Radio Receivers", *Proc. IEEE Newfoundland Electrical and Computer Engineering Conference*, 2005.

**Tianqi Wang**, Mohamed H. A., and Cheng Li, "Evaluation and Comparison of Hardware Platforms in Software Radio Receiver", *IEEE, Newfoundland Electrical and Computer Engineering Conference*, 2005.

## HONORS AND AWARDS

1. Teaching Opportunities for Graduate Students (TOGA) level II Teaching Assistantship, MUN, 2006
2. Second Grade Prize in *National Academic Contest in Mathematical Modeling (Beijing Section)*, 2003
3. Honorable Prize in *The Interdisciplinary Contest in Modeling*, 2003
4. Second Grade Prize in *National Academic Contest in Physics (Beijing Section, for undergraduate students not major in Physics)*, 2001
5. Ericsson Enterprise Scholarship, 2000