Jinnian Zhang

Mobil: (608) 515-0894 Email: jinnian.zhang@wisc.edu

Education Background

University of Wisconsin-Madison

- **PhD of Electrical Engineering** (*Sept.2017- *) Overall GPA: 4.0/4.0

Beijing University of Posts and Telecommunications (BUPT)

- **Bachelor of Engineering** in Information Engineering (*Sept.2010 - Jun. 2014*) Ranking: 19/175
- **Master of Science** in Information and Communication Engineering (*Sept.2014 - Mar.2017*) Ranking: 1/775

Research Interests: **medical image processing, deep learning, high-dimensional statistics, signal processing in wireless communications**

Work Experience

- **Engineering Intern (iCDG, Intel, Beijing)** *Feb.2017 - July.2017*

- As a member of Multefire RAN1, I participated in the research on 3GPP standards and writing contributions of Mulefire and related patents about new designs of EPDCCH, PUCCH, RACH etc for eMTC-U system.
- Joined in the MFA-TSWG meeting #11 held by Huawei in Beijing.

Researches & Projects

Advisor: Assistant Prof. Varun Jog (ECE UW Madison) & Dr. Alan McMillan (Radiology UW Madison)

- **Project 1: DL Anatomy Boundary Detection for MRAC** *May. 2018 - Aug. 2018*

- This project is to use deep learning to automatically detect the boundaries among head, lungs, abdomen and pelvis, when given axial slices of MRI scan;
- Designed an efficient algorithm which combines VGG19 with dynamic programming; and implemented heatmap to visualize the region of a slice that leads to the final decision of deep learning models.

Advisor: Prof. Zhiqiang He (BUPT) & Prof. Yue Rong （Curtin University, Australia）

- **Project 1: High-speed underwater communication**

Funded by Australian Research Council's Discovery Projects *Jan.2015 - Jun.2016*

- Studied the key technologies in OFDM based high-speed underwater acoustic communication system;
- Evaluated the performance of the receiver which contained synchronization, frequency offset estimation, channel estimation, and iterative channel equalization module, by processing the data recorded during an underwater acoustic communication experiment conducted in India ocean, Western Australia;
- Designed an efficient algorithm for iterative channel and impulsive noise estimation according to the experimental data to enhance the capacity of the underwater acoustic communication system.

- **Project 2: Image & video transmission scheme for underwater MIMO relay system**

Funded by Graduate Student Innovation Fund of BUPT *Mar.2015 - Mar.2017*

- Studied the most general case for a half-duplex three-node two-hop AF MIMO relay system
- Designed two novel algorithms for the joint source, relay and receiver optimization problem in the case of multiple data streams and a single data stream respectively, and verified that our proposed system provided better bit-error-rate performance than existing systems for both cases by simulation;

Advisor: Prof. Kai Niu (BUPT)

- **Project 1: LTE Turbo-SIC**

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Cooperated with Datang Telecom Technology&Industry Group *Sept.2013 - Mar.2015*

- Designed and Built the C++ based platform for LTE/LTE-A link level simulations;
- Designed the iterative structure between the Turbo decoder and the MIMO detector (including LSD, MMSE, PIC), and evaluated the performance of these algorithms in different cases defined in 3GPP 36.101, and determined the optimal number of outer/inner iterative times;
- Evaluate and improve the performance of these algorithms in the case of co-channel interference.

➢ **Project 2: 5G non-orthogonal multi-carrier technology**

Cooperated with Nokia Corporation *Sept.2015 - Jun.2016*

- Studied the spectrum characteristics of FBMC/GFDM and fast modulation & demodulation algorithm;
- Proposed a compressive sensing based iterative self-interference cancellation algorithm for GFDM over fading channels and derived the corresponding Cramer-Rao Bound.

Publications

- J. Zhang, Z. He, P. Chen, Y. Rong, "A compressive sensing based iterative algorithm for channel and impulsive noise estimation in underwater acoustic OFDM systems.", *IEEE OCEANS 2017*, pp. 1-5, 2017.
- J. Zhang, K. Niu and Z. He, "Multi-layer distributed Bayesian compressive sensing based blind carrier-frequency offset estimation in uplink OFDMA systems," *2016 IEEE International Conference on Communications (ICC), Kuala Lumpur*, 2016, pp. 1-5.
- Z. He, J. Zhang, W. Liu and Y. Rong, "New Results on Transceiver Design for Two-Hop Amplify-and-Forward MIMO Relay Systems With Direct Link," in *IEEE Transactions on Signal Processing*, vol. 64, no. 20, pp. 5232-5241, Oct.15, 15 2016.
- J. Zhang, Z. He, W. Liu and Y. Rong, "Two-hop AF MIMO Relay Systems with Direct Link – Transceiver Design Based on New Protocol", *TENCON 2016 - 2016 IEEE Region 10 Conference*, pp. 1807-1810, 2016.
- J. Zhang, Y. Li, K. Niu, "Iterative Channel Estimation Algorithm Based on Compressive Sensing for GFDM", *IEEE International Conference on Network Infrastructure and Digital Content 2016*, pp. 244-248, 2016.

Patents

- Kai Niu, Jinnian Zhang. A CFO estimation method, device and system in OFDM systems: China, PCT/CN2016/098779.
- Xiangdong You, Xingguan Qi, Jinnian Zhang, Dan Zhang, Juhuan Fan, Luxing Yao. A real time meteorological information service system: China, CN201320428417.9, Publication Patent Date: CN203313409U [P]. 2013-11-27.

Skills

Programming abilities: Proficient in Matlab, C/C++, familiar with Verilog, VHDL, Python
Software abilities: Proficient in Visual Studio, Matlab, Latex, Word, Excel, PowerPoint and Visio.

Honors and Awards

- ECE 2017 Chancellors Opportunity Fellowship (COF) Sept. 2017
- National Scholarship (Top 5%) Oct. 2016
- The Qualcomm Innovation & Entrepreneurship Scholarship (1/775) Dec. 2015
- The First Prize Scholarship (trice) (Top 10%) Sep. 2016&2015&2013
- The Outstanding Graduate (Beijing) (Top 5%) Jun. 2014
- The Second Prize in the National Undergraduate Electronics Design Contest (Top 10%) Sept. 2013