

Zhongyuan Zhao | Ph.D. Candidate

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Education

- **University of Nebraska-Lincoln** **Lincoln, Nebraska**
Ph.D. in Computer Engineering, minor in Finance; GPA: 3.76 *Aug 2013–May 2019 (Expected)*
Dissertation: Cognitive Radio Networks, Advisor: Dr. Mehmet Can Vuran
 - **Cognitive Radio Networks:** Researched wireless networks that learn and adapt to their radio environments by modeling the stochastic behaviors of users and radio environments and developing a campus-wide wireless testbed. Performed business and technical analysis of enhanced TV spectrum access for spectrum regulatory reform.
 - **Computational Economics:** Researched dynamic pricing for stochastic demands and supplies based on Markov Decision Process framework and numerical experiments on high-performance computing clusters.
 - **Machine-Learning & Deep Learning:** Researched neural network-based wireless physical layer, and machine/deep learning-assisted decision making in dynamic spectrum sharing.
 - **Teaching:** Assisted in *Multi-Agent System, Data Structure and Algorithms*, ACM Regional Contest.
- **University of Electronic Science and Technology of China** **Chengdu, China**
M.Sc., Electronic Engineering (Signal and Information Processing) *Jun. 2009*
- **University of Electronic Science and Technology of China** **Chengdu, China**
B.Sc., Electronic Engineering (Info. Countermeasures Tech.), GPA: 85.6% (Top 2/62) *Jun. 2006*

Professional Designation

- **Institute of Electrical and Electronics Engineers (IEEE):**
 - Member since 2018
 - Student Member, 2013-2018
- **Chartered Financial Analyst (CFA):**
 - Level III Candidate (Exam Date: Jun. 2019);
 - Passed Level I Exam (Dec. 2017) and Level II Exam (Jun. 2018)

Employment

- **Ericsson** **Chengdu, China**
Integration and Verification Engineer *Jun. 2011–Jul. 2013*
 - **Remote Radio Head in 4th Generation Cellular Base-station:** Conducted performance test, white-box (trouble-shooting) test, environmental and certification tests in new product development.
 - **Automated Radio Testing:** Led a team of 3-5 persons to develop an in-house automated radio testing system; trained and supported co-workers in using it for R&D; 10× increase of testing efficiency.
- **ArrayComm** **Chengdu, China**
Digital Signal Processing (DSP) Software Engineer *Jul. 2009–Jun. 2011*
 - **Base-band Signal Processing in 4th Generation Cellular Base-station:** Implemented smart antenna system, channel estimation, and physical layer protocols for LTE and WiMAX base-stations.
 - **Parallel Computing:** Exploited parallelism on flagship Digital Signal Processors via Single Instruction Multiple Data, Very Long Instruction Word, and Superscalar architecture with C & Assembly mixture.
 - **Real-Time Embedded Software:** architecture design on multi-core DSP + ARM System-On-Chip.

Teaching Experience

- Graduate Teaching Assistant, **Multi-Agent System**, UNL, Fall 2017
 - Helped setting up website and reporting for the interactive learning sessions (Game Days) in which 20+ students work in 6 teams to learn strategies of interacting with other teams in various settings.
- Graduate Teaching Assistant, **Data Structure and Algorithms**, UNL, Fall 2017
 - Worked with over 10 undergraduate teaching assistants in grading and tutoring over 40 students,
 - Assisted in 4 hack-a-thon events for ACM 2017 North Central North American Regional Contest.
- Student Teaching Assistant, **Electronic Design Training Program**, UESTC, 2005-2007
 - A 2-year extra-curricular program offered by Undergraduate Innovation Center to 100+ selected sophomore and junior students guided and instructed by 10+ professors and 8 student teaching assistants.
 - Tutored the trainees in hardware and software design, laboratory skills and teamwork for 4 hours / week.
 - Students' Achievement: 6 and 10 teams (3 students per team) of those trainees won the national 1st (1.7%) and 2nd (5.5%) prizes, respectively, in 2007 National Undergraduate Electronic Design Contest.

Technical and Personal skills

- **Quantitative Skills:** Mathematical and Statistical Modeling, Machine Learning, Deep Learning.
- **Programming Languages:** Python, Matlab, C/C++, Assembly, Verilog, Scripts in Excel, Linux, OSX.
- **Computing and Network Infrastructure:** Experienced in programming on Graphics Processing Unit (GPU), Digital Signal Processor (DSP), Field-Programmable Gate Array (FPGA), System-On-Chip (SoC), and High Performance Computing Cluster (HPCC); Familiar with Wired and Wireless Networks; Skilled in system design and integration.
- **Financial Analysis:** Top-Down and Bottom-Up forecasting approaches; Valuation models of equity, future & options; Technical Analysis; Knowledge of capital market and financial institutions, economics, and foreign exchange.
- **Language:** Native in Chinese, Proficient in English; Sophisticated in technical writing and presentation;
- **Others:** Enjoy Teamwork and Collaboration; Familiar with software development process.

Awards and Accomplishments

- Deep Learning, a 5-course specialization by deeplearning.ai on Coursera. Specialization Certificate earned.
- Foundations of Management, a 5-course specialization by IESE Business School on Coursera. 3/5 Certificates earned.
- Certificate of the completion of Institute for International Teaching Assistants, UNL, 2017.
- **National Scholarship**, 2006-2009 (China)
- **Outstanding Graduate**, University of Electronic Science and Technology of China, 2006.
- **Outstanding Undergraduate Thesis**, University of Electronic Science and Technology of China, 2006.
- **Outstanding Student**, University of Electronic Science and Technology of China, 2005.
- **National 1st Prize**, (Top 3.7%) National Undergraduate Electronic Design Contests (China), 2005.
- **People's Scholarship**, 2002-2005 (China)

Publications

Patents.....

- **Zhongyuan Zhao**, Weixu Wang, Luping Pan, "PLL and Adaptive Compensation Method in PLL," International Patent, US9496881 B2, EP3047573 A4, CN105580278A, Issued Date: May. 2016
- Zishu He, **Zhongyuan Zhao**, Jianzhong Zhang, Ting Chen, Kexin Jia, "Method and Apparatus for An

Implementation of Polyphase Filter Structure," China, CN101958697B, Issued Date: Jul. 2012

Journal.....

- **Zhongyuan Zhao**, Mehmet C. Vuran, Fujuan Guo, and Stephen Scott, "Deep-Waveform: A Learned OFDM Receiver Based on Deep Complex Convolutional Networks," Arxiv, Oct. 2018, [Online] <https://arxiv.org/abs/1810.07181>
- **Zhongyuan Zhao**, Mehmet C. Vuran, Demet Batur, and Eylem Ekici, "Shades of White: Impacts of Population Dynamics and TV Viewership on Available TV Spectrum," IEEE Transactions on Vehicular Technology, Accepted for Publication.
- Demet Batur, Jennifer Ryan, **Zhongyuan Zhao**, and Mehmet C. Vuran, "Dynamic Pricing of Wireless Internet Based on Usage and Stochastically Changing Capacity," Manufacturing and Service Operations Management, In Press.
- S. Tamel, M. C. Vuran, M.M.R. Lunar, **Z. Zhao**, A. Salam, R. K. Faller, C. and Stolle, "Vehicle-to-Barrier Communication During Real-World Vehicle Crash Tests," Computer Communications, Vol 127, Sep. 2018, pp. 172-186.
- Haihong Tang, **Zhongyuan Zhao**, "DSP and CPLD-based Digital AC Soft Starter," Automation Information, 2007 (5), pp.53-55, May 2007.

Conference.....

- **Zhongyuan Zhao**, Mehmet C. Vuran, "Modeling Aggregate Interference with Heterogeneous Secondary Users and Passive Primary Users for Dynamic Admission and Power Control in TV Spectrum," in Proc. IEEE Int. Balkan Conference on Communications and Networking (BalkanCom'18), Podgorica, Montenegro, Jun. 2018.
- D. Rempe, M. Snyder, A. Pracht, A. Schwarz, T. Nguyen, M. Vostrez, **Z. Zhao**, and M. C. Vuran, "A Cognitive Radio TV Prototype For Effective TV Spectrum Sharing," in Proc. 2017 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), pp. 117-118, Baltimore, MD, Mar. 2017.
- **Zhongyuan Zhao**, Mehmet C. Vuran, Demet Batur, Eylem Ekici, "Ratings for Spectrum: Impacts of TV Viewership on TV Whitespace," in Proc. IEEE Global Communications Conference (GlobeCom'14), pp.941-947, Austin, TX, Dec. 2014.
- Hongping Hu, **Zhongyuan Zhao**, "A Real-Time High Resolution Image Compression System Based on ADV212," in Proc. 2nd International Congress on Image and Signal Processing (CISP'09), pp.1-4, Tianjin, China, Oct. 2009

Thesis.....

- Zhongyuan Zhao, (2009). "Design and Implementation of Channelized Digital Receiver based on PCI-Express," M.S. Thesis. University of Electronic Science and Technology of China, P.R.China
- Zhongyuan Zhao, (2006). "Design of Motor Soft Starter based on DSP and CPLD," B.S. Thesis. University of Electronic Science and Technology of China, P.R.China

Conference Presentation

- Poster and Demonstration: D. Rempe, M. Snyder, A. Pracht, A. Schwarz, T. Nguyen, M. Vostrez, **Z. Zhao**, and M. C. Vuran, "A Cognitive Radio TV Prototype For Effective TV Spectrum Sharing," in Proc. 2017 IEEE International Symposium on Dynamic Spectrum Access Networks (DySPAN), pp. 117-118, Baltimore, MD, Mar. 2017.
- Presentation: **Zhongyuan Zhao**, Mehmet C. Vuran, Demet Batur, Eylem Ekici, "Ratings for Spectrum: Impacts of TV Viewership on TV Whitespace," in Proc. in Proc. IEEE Global Communications Conference (GlobeCom'14), pp.941-947, Austin, TX, Dec. 2014.

Services

Reviewer for IEEE Transactions on Wireless Communication, IEEE Transactions on Mobile Computing, IEEE Communications Surveys and Tutorials, The International Journal of Computer and Telecommunications Networking, Wireless Communications and Mobile Computing, IEEE Infocom, IEEE ICC, IEEE GlobeCom, IEEE DySPAN, International Conference on Distributed Computing Systems.

Extra-curricular Activity and Interests

- **Graduate Students Association in Department of Computer Science and Engineering:** Served as Secretary (2017 - 2018), helped to build a closer community of graduate students by initiating weekly coffee breaks and summer picnic.
- **Toastmasters:** Participated in weekly meetings to improve organization, time management and public speaking skills following the manuals and procedures established by Toastmasters (Non Profit Organization); served as the president of local club NU Toasters in 2015.
- **Swimming:** Accumulated over 700,000 yard of pool swimming since 2013 (mostly in freestyle).
- **Basketball:** Played in amateur tournaments in high school, college, graduate school, and workplaces.

References

References available upon requests.