SHUNQIAO SUN

Email: shunq.sun@rutgers.edu
94 Brett Rd, Piscataway, NJ, 08854
Phone: +1 732-763-2129
Website: http://www.rci.rutgers.edu/~shunsun/

QUALIFICATIONS

Solid background in statistical and sparse signal processing, mathematical optimizations, MIMO wireless communications; in depth knowledge of beamforming, adaptive filtering, localization, inference, radar imaging

EDUCATION

Rutgers, The State University of New Jersey — Piscataway, NJ
Ph.D. in Electrical and Computer Engineering — Aug. 2011 - Oct. 2015
Advisor: Athina P. Petropulu
Thesis topic: Sparse sensing in MIMO radars with compressive sensing and matrix completion

Fudan University — Shanghai, China
M.S. in Electrical Engineering — Aug. 2008 - June 2011
Thesis topic: Robust distributed power control in cognitive radio networks

Southern Yangtze University — Wuxi, China
B.E. in Electrical Engineering — Aug. 2000 - June 2004

RESEARCH & WORKING EXPERIENCE

Rutgers, The State University of New Jersey — Aug. 2011 - present
Ph.D. Candidate and Research Assistant — Piscataway, NJ

- Designed the algorithms of power allocation and waveform design for compressive sensing (CS) based MIMO radars.
- Designed the algorithm of clutter suppression for CS based MIMO radars.
- Investigated the applicability of matrix completion (MC) techniques in MIMO radars and proposed the colocated MIMO radar approach with MC, termed as MIMO-MC radar.
- Conducted the coherence analysis of the data matrix arising in MIMO-MC radars and designed optimal waveforms.
- Proposed the transmit and receive beamforming schemes in MIMO-MC radars.

Mitsubishi Electric Research Labs (MERL) — Summer 2015
Summer Intern, Multimedia Group — Cambridge, MA

- Working on MIMO radar imaging algorithms using compressive sensing with application to infrastructure monitoring.

Fudan University — Aug. 2008 - June 2011
Research Assistant — Shanghai, China

- Designed the robust and distributed power control algorithms in cognitive radio networks, by considering the uncertainty of channel state information (CSI) as well as imperfect knowledge of CSI.
- Proposed the dynamic spectrum access (DSA) scheme based on the statistical learning of primary links usage.

Cisco Systems — May 2010 - May 2011
Intern, Cisco R&D Center (CRDC) — Shanghai, China

- Worked on the 802.11 b/g/n Wi-Fi access point solution and coexistence with Bluetooth for the smart home project based on the Intel Atom platform. Systems design and bring up, debugging and troubleshooting.

Kinpo Electronics — July 2004 - Aug. 2008
Hardware Engineer II — Shanghai, China

- System design of mobile and embedded electrical products, including schematic circuits design, DC power design, firmware development, prototyping, systems bring up, debugging and troubleshooting, new product introduction.

HONORS & AWARDS

ECE Research Excellence Award, Rutgers University	2013
Student Travel Grant to ICC, IEEE Communications Society	2011
The Third Prize Huawei Best Poster Award, IEEE INFOCOM	2011
Academic Scholarship, Fudan University	2010
Academic Scholarship (Five times), Southern Yangtze University	2001-2004
National Scholarship, Ministry of Education, P.R. China	2003

SKILLS

Computer Programming: C, C++, MATLAB, ARM Asembly Language
Hardware Design Tools: OrCAD Capture CIS, Cadence Concept, PowerPCB

SELECTED TEACHING EXPERIENCE

- **ECE 521: Digital Signal and Filters** Fall 2014
  Teaching Assistant, Rutgers University
- **ECE 346: Digital Signal Processing** Spring 2014
  Teaching Assistant, Rutgers University. Lead the DSP labs using Texas Instruments TMS320C6713 starter kits.

SELECTED COURSEWORK

Detection and Estimation, Digital Communications, Wireless Communications, Advanced Computer Networks, Digital Signals and Filters, Semidefinite and Second Order Cone Programming, Stochastic Programming, Nonlinear Optimization

SELECTED PUBLICATIONS

- S. Sun and A. P. Petropulu, "Waveform design for MIMO radar with matrix completion," *IEEE Journal of Selected Topics in Signal Processing*, under review, 2015.
- S. Sun, W. U. Bajwa, and A. P. Petropulu, "MIMO-MC radar: A MIMO radar approach based on matrix completion," *IEEE Trans. Aerosp. Electron. Syst.*, to appear, 2015. (http://arxiv.org/abs/1409.3954)
- Y. Yu, S. Sun, R. N. Madan, and A. P. Petropulu, "Power allocation and waveform design for the compressive sensing based MIMO radar," *IEEE Trans. Aerosp. Electron. Syst.*, vol. 50, no. 2, pp. 898-909, 2014.
- S. Sun and A. P. Petropulu, "On waveform conditions and range compression in MIMO radars using matrix completion," in Proc. of *49th Annual Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 8-11, 2015. (**Invited**)
- S. Sun and A. P. Petropulu, "On transmit beamforming in MIMO radar with matrix completion," in Proc. of *IEEE 40th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Brisbane, Australia, April 2015.
- S. Sun and A. P. Petropulu, "On waveform design for MIMO radar with matrix completion," in Proc. of *IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Atlanta, GA, Dec. 3-5, 2014.
- S. Sun and A. P. Petropulu, "On the applicability of matrix completion on MIMO radars," in Proc. of *48th Annual Asilomar Conference on Signals, Systems, and Computers (Asilomar)*, Pacific Grove, CA, Nov. 2-5, 2014. (**Invited**)
- S. Sun, A. P. Petropulu, and W. U. Bajwa, "Target estimation in colocated MIMO radar via matrix completion," in Proc. of *IEEE 38th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Vancouver, Canada, May 2013.
- S. Sun and A. P. Petropulu, "Robust beamforming via matrix completion," in Proc. of *47th Annual Conference on Information Sciences and Systems (CISS)*, Baltimore, MD, March 20-22, 2013.
- S. Sun, W. Ni and Y. Zhu, "Robust power control in cognitive radio networks: A distributed way," in Proc. of *IEEE International Conference on Communications (ICC)*, Kyoto, Japan, June 5-9, 2011. (**Student Travel Grant**)
- S. Sun, W. Ni and Y. Zhu, "Robust distributed power control in cognitive radio networks," in Proc. of *30th IEEE International Conference on Computer Communications (INFOCOM)*, Shanghai, China, April 10-15, 2011. (**The Third Prize Huawei Best Poster Award**)

Complete list of publications is available at http://www.rci.rutgers.edu/~shunsun/publication.html