Xiaojian Xu

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Education

Washington University in St. Louis (WUSTL), St. Louis, MO, USA   *9/2017–Present*
- Ph.D student in Computer Science, advised by Dr. Ulugbek Kamilov

University of Electronic Science and Technology of China (UESTC), Chengdu, China *9/2014–6/2017*
- M.Eng in Communication & Information Engineering

University of Electronic Science and Technology of China (UESTC), Chengdu, China *9/2010–6/2014*
- B.Eng in Communication Engineering

Research Experience

Plug-and-Play approach   *8/2018 – Present*
- Conduct mass of empirical experiments and theoretical analysis on the Plug-and-Play research.
- Investigated and worked on various image denoisers.

Learning-based magnetic resonance imaging (MRI) / quantitative-MRI   *7/2018 – Present*
- Developed various machine learning methods for different MRI reconstruction tasks.
- Implemented and trained various neural networks.

Compressed proximal algorithm for nonconvex stochastic optimization   *9/2018 – 1/2019*
- Developed two compressed proximal based algorithms for stochastic optimization problems.
- Implemented models and experiments and were the first to prove the convergence of the algorithm.

Convolutional dictionary learning for medical image reconstruction   *3/2018 – 6/2018*
- Implemented a novel convolutional dictionary learning method for image reconstruction problems.
- Compared the performance with traditional patch-wise dictionary learning method.

Some earlier research experience   *3/2014 – 6/2017*
- Development of Intelligent Home System.
- Design and simulation of constrained routing algorithms.
- Routing and resource scheduling algorithms for large-scale network SDN.

Work Experience

Mitsubishi Electric Research Laboratories (MERL)   *5/2019–8/2019*
Intern   *Boston*
- Reseacher, conduct 3D Tomographic Imaging with GPS data and write paper.

Head TA for ESE415 Optimization   *1/2019–5/2019*
Assistant Instructor   *St. Louis*
- Assistant instructor, teach tutorial sessions, hold office hours, answer questions online, develop tests and solutions, help grading exams and homeworks.

TA for CSE534A/ESE513 Large-Scale Optimization for Data Science   *9/2019–Present*
Assistant Instructor   *St. Louis*
- Assistant instructor, answer questions online and help with the arrangement of courses.

Student supervision   *7/2018–Present*
Research Supervisor   *St. Louis*
- Weijie Gan, "Fast learning for MRI" (Fall 2018), Ph.D, CSE, WUSTL
- Jiarui Xing, "Learning-based MRI" (Fall 2018), Ph.D, ECE, UV
- Ryogo Suzuki, "unfold Image Restoration" (Fall 2019), Now at Rakuten, Japan

- Hao Tang, "Adversarially robust classifiers for image reconstruction" (Fall 2019), "Sinogram2Sinogram for CT"(Spring 2019), BS, CSE, WUSTL
- Yukun Li, "Nonlocal Learning for Image Restoration" (Spring, 2020), MS, CSE, WUSTL
- Yongcheng Song, "Fast Automatic Focal Plane Selection for Brightfield Microscopy" (Spring, 2020), MS, CSE, WUSTL

LIST OF PUBLICATIONS

Preprints
- **X. Xu**, J. Liu, Y. Sun, B. Wohlberg, and U. S. Kamilov, "Boosting the Performance of Plug-and-Play Priors via Denoiser Scaling", arXiv:2002.11546

Conference
- **X. Xu**, O.Dhifallah, H.Mansour, P.Boufounos, P.Orlik, "Robust 3D Tomographic Imaging of the Ionospheric Electron Density," IGARSS, 2020
- **X. Xu** and U. S. Kamilov, "signProx: One-Bit Proximal Algorithm for Nonconvex Stochastic Optimization," IEEE ICASSP 2019
- J. Liu, Y. Sun, **X. Xu**, and U. S. Kamilov, "Image Restoration using Total Variation Regularized Deep Image Prior," IEEE ICASSP 2019.

Journal
- **X. Xu**, Y. Sun, J. Liu, B. Wohlberg, U.S.Kamilov, "Provable Convergence of Plug-and-Play Priors with MMSE denoisers," IEEE Signal Processing Letters 27, 1280 - 1284

INVITED TALKS
- SIAM Conference on Imaging Science 2020, 07/2020
- UCLouvain, Image and Signal Processing Group Seminar, 09/2020

REVIEWER EXPERIENCE
- **Conferences**: International Symposium on Biomedical Imaging (ISBI)
- **Journals**: IEEE Transactions on Image Processing (TIP)

SKILLS
- **Languages**: Python, Matlab, C, Java
- **Skills**: Tensorflow, Pytorch, Deep learning
- **Certifications**: National 3-tier computer certificate (China), National 4-tier computer certificate (Network Engineer, China)

AWARDS

Scholarship

- Graduate Student First-Rank Academic Scholarship	2016
- Graduate Student Second-Rank Academic Scholarship	2015
- Graduate Student First-Rank Academic Scholarship	2014
- National Inspirational Scholarship	2013
- People's First-Rank Scholarship	2012
- National Inspirational Scholarship	2011

Others

- Third-prize of 'Internet+' Entrepreneurship Competition in Sichuan Province	2016
- Great Award of Intelligent City Technology Competition	2016
- Award of Hackathon Programming Competition	2015
- Outstanding Graduate Student	2015
- Second Prize of Electronic Design Competition in UESTC	2011