SHOUCHANG GUO

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EDUCATION

University of Michigan, Ann Arbor, MI – GPA 3.9/4.0 *Sept. 2016 - Present*
Ph.D. Candidate Electrical and Computer Engineering
M.S. Electrical and Computer Engineering *(Signal & Image Processing and Machine Learning)*

Beijing Institute of Technology & Chinese Academy of Sciences *Sept. 2012 - July 2016*
B.S. Information Engineering – GPA 89.2/100 *(Outstanding Graduate Student Award)*

JOURNALS

Guo S, Noll DC, "Oscillating Steady-State Imaging (OSSI): A Novel Method for Functional MRI". Magnetic Resonance in Medicine, vol. 84, no. 2, p. 698-712, 2020. doi:10.1002/mrm.28156

Guo S, Fessler JA, and Noll DC, "High-Resolution Oscillating Steady-State fMRI using Patch-Tensor Low-Rank Reconstruction". *Under revision* IEEE Transactions on Medical Imaging.

CONFERENCES

Guo S, Fessler JA, and Noll DC, "Oscillating Steady State Imaging (OSSI) for fMRI using 3D Sparse Acquisition and Model-Based Image Reconstruction". 6th Annual BRAIN Initiative Investigators Meeting, Virtual 2020.

Guo S, Noll DC, and Fessler JA, "OSSI Manifold Model for High-Resolution fMRI Joint Reconstruction and Quantification". *Oral pitch,* ISMRM 28th Annual Meeting & Exhibition, Paris 2020.

Guo S, Fessler JA, and Noll DC, "High SNR and High-Resolution fMRI using 3D OSSI and Tensor Model Reconstruction". ISMRM 28th Annual Meeting & Exhibition, Paris 2020.

Guo S, Fessler JA, and Noll DC, "High Resolution OSS fMRI using Tensor Patch Low Rank plus Sparse Reconstruction". *Travel Trainee Award,* 5th Annual BRAIN Initiative Investigators Meeting, Washington DC 2019.

Noll DC, **Guo S**, Cao AA., "Comparison of Oscillating Steady State to GRE BOLD for fMRI". 5th Annual BRAIN Initiative Investigators Meeting, Washington DC 2019.

Guo S, Noll DC, and Fessler JA, "Dictionary-Based Oscillating Steady State fMRI Reconstruction". *Oral, Summa Cum Laude Award,* In Proceedings of the 27th Annual Meeting of ISMRM, Montreal 2019. p. 1253.

Guo S and Noll DC, "Comparison of Oscillating Steady State to GRE BOLD for fMRI". *Oral,* In Proceedings of the 27th Annual Meeting of ISMRM, Montreal 2019. p. 1170.

Guo S and Noll DC, "Patch-Tensor Low-n-Rank Reconstruction for Oscillating Steady State fMRI Acceleration". In Proceedings of the 26th Annual Meeting of ISMRM, Paris 2018. p. 3531.

Guo S and Noll DC, "High SNR Functional MRI Using Oscillating Steady State Imaging". In Proceedings of the 26th Annual Meeting of ISMRM, Paris 2018. p. 5441.

Guo S and Dong X,"Modified Omega-K algorithm for ground-based FMCW SAR imaging". *2016 IEEE 13th International Conference on Signal Processing (ICSP)*, Chengdu, China, 2016, pp. 1647-1650.

RESEARCH EXPERIENCE

Course projects, advised by Prof. Mert Pilanci, and Prof. Jia Deng, and Prof. Jeffrey A. Fessler respectively

- *EECS 545 Machine Learning (A+):* Parallelized neural network training using alternating direction methods of multipliers
- *EECS 542 Computer Vision (A):* Deep convolutional neural network reconstruction for MRI acceleration
- *EECS 556 Image Processing (A):* MRI reconstruction using sparse subspace clustering
- *EECS 598 Artificial Intelligence (A):* Deformable medical image co-registration using unsupervised deep learning

Graduate research, advised by Prof. Douglas C. Noll and Prof. Jeffrey A. Fessler *Nov. 2016 - Present*

- U-Net, deep image prior, and RNN based MRI reconstruction
- Developed a manifold model for fMRI quantification and acceleration
- Accelerated OSSI fMRI acquisition by 12 times using a tensor model and prospective undersampling
- Improved fMRI temporal SNR by a factor of 2 using OSSI and model-based reconstruction

Research Institute of Radar Technology & National Key Laboratory of Microwave Imaging Technology
Undergraduate research, advised by Prof. Cheng Hu *June 2015 - Aug. 2016*

- Modified the conventional Omega-K algorithm for process ground-based FMCW SAR data
- Extracted and tracked moving targets from videos and derived a fast image registration algorithm

Station of Optoelectronics Innovative Experiment, Beijing Institute of Technology
Project leader, advised by Prof. Zhonglian Zhang *May 2014 - June 2015*

- A Novel Sensing and Control System Based on Cooperative Communication of *National College Students' Innovation Training Program*, accomplished cooperative wireless monitor and control
- Designed and made a LCD touch screen based motion control system with DC and stepper motors

AFFILIATIONS

ISMRM Trainee Member *Oct. 2017 - Present*
IEEE Student Member *Nov. 2019 - Present*

JOURNAL REVIEWS

IEEE Transactions on Computational Imaging *2020*
IEEE Transactions on Medical Imaging *2020*

SKILLS

Medical imaging, signal processing, image reconstruction, optimization, deep learning, machine learning
MATLAB, Python, Pytorch, Julia, C, Assembly, VHDL, LaTeX

SELECTED HONORS & AWARDS

ISMRM Summa Cum Laude Award (top 5% of submitted abstracts)	*May 2019*
Travel Trainee Award, 5th Annual BRAIN Initiative Investigators Meeting	*Apr. 2019*
Graduate Student Fellowship, University of Michigan	*Sept. 2018*
ECE Program Nominee for the Dow Sustainability Fellows Program, UMich	*Oct. 2016*
Outstanding Graduate Student Award, Beijing Institute of Technology	*June 2016*
1st Prize of Summer Social Practice (Team leader and the best of 164 teams)	*Oct. 2015*
Tang Nanjun Scholarship (Rank: 1/109)	*2013 - 2014*
2nd Prize for Outstanding Student (Rank: 13/199)	*Aug. 2013, Feb. 2014 & 2016*
Outstanding Student of Beijing Institute of Technology (Rank: 7/296)	*2012 - 2013*
National Endeavor Fellowship (Rank: 7/296)	*2012 - 2013*
1st Prize for Outstanding Student (Rank: 4/287)	*Feb. 2013*