

# Hui Ji

# Curriculum Vitae

## Academic address

Department of Mathematics  
National University of Singapore  
10, Lower Kent Ridge Road  
Singapore 119076

## Contact information

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Profile at Google Scholar

## Research Interest

Wavelets, Computational Harmonic Analysis, Inverse problems, Imaging Science, and Computer Vision

## Education

- *Ph.D.* in Computer Science, University of Maryland at College Park, USA 06/2006  
*Supervisor:* Dr. Cornelia Femuller and Professor Yannis Aloimonos
- *M.Sc.* in Applied Mathematics, National University of Singapore, Singapore 07/1998
- *B.Sc.* in Mathematics, Nanjing University, China 07/1993

## Professional Experience

- *Deputy director*, Centre for Data Science and Machine Learning, NUS 01/2021 – Present
- *Director* of Centre for Wavelets, Approximation and Information Processing NUS 01/2014 – 12/2020
- *Associate Professor*, Department of Mathematics, NUS 07/2012 – Present
- *Assistant Professor*, Department of Mathematics, NUS 07/2006 – 06/2012
- *Research Assistant*, Center for Automation Research, University of Maryland 09/2001 – 06/2006
- *Graduate Teaching Assistant*, Department of Mathematics, University of Maryland 08/1998 – 07/2001

## Award and Prize

- *Dean's Chair Associate Professorship*, National University of Singapore 07/2015 – 06/2018
- *Young Scientist Award*, Faculty of Science, National University of Singapore 10/2010

## Research Grant

- PI, *Unsupervised Deep Video Restoration in Band-limited Environments* 2022-2023  
Singapore DSO National Laboratories Research Fund
- PI, *Interpretable Deep Learning and its Applications in Image Reconstruction/Recovery* 2020-2023  
Singapore MOE Tier 1 Academic Research Fund
- Co-PI, *Data-driven approach to inverse problem of light transport in turbid media* 2020-2023  
Singapore MOE Tier 2 Academic Research Fund
- Co-PI, *Neural Network based Learning for Prediction of Dementia Subtypes* 2018-2021  
Joint NUS-PKU research programme on data science
- PI, *A data-driven approach to blind image restoration and applications in navigation* 2018-2021  
Singapore MOE Tier 2 Academic Research Fund
- PI, *Dictionary learning for big data* 2017-2020  
Singapore MOE Tier 1 Academic Research Fund

- PI, *Mathematical and statistical theory of imaging* 2017-2018  
Global Alliance Programme of Cambridge, UC Berkeley and NUS
- Co-PI, *Magnetoencephalography (MEG) inverse problem* 2017-2020  
Singapore MOE Tier 2 Academic Research Fund
- Co-PI, *Modeling Protein-Protein Interactions Using a Novel Knowledge-based Potential* 2014-2017  
Singapore MOE Tier 2 Academic Research Fund
- Co-PI, *An integrated framework to study the dynamics of biological structures* 2013-2018  
Singapore MOE Tier 3 Academic Research Fund
- PI, *Optimal dimensionality reduction for hyperspectral data* 2013-2015  
Singapore DSO National Laboratories Research Fund
- PI, *Compressed sensing and its applications in imaging and surveillance* 2012-2015  
Singapore MOE Tier 1 Academic Research Fund
- Co-PI, *Sparse approximation based restoration for cryo-EM images* 2012-2014  
Singapore MOE Tier 2 Academic Research Fund
- PI, *Theory and computation of blind motion deblurring* 2009-2012  
Singapore MOE Tier 1 Academic Research Fund
- PI, *Autonomous navigation by visual sensors* 2006-2009  
New Faculty Start-up Research Fund, National University of Singapore

## Publication List

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See also my publication list and research profile in [Google Scholar](#)

## Published/Accepted Journal publication

63. Qiaoqiao Ding, [Hui Ji](#), and Xiaoqun Zhang, Dataset-free Deep learning Method for Low-Dose CT Image Reconstruction, *Inverse problems (IP)*, In Press, 2022
62. Jinxiu Liang, Yuhui Quan, Yong Xu, Boxin Shi, and [Hui Ji](#), Self-Supervised low-Light image enhancement using discrepant untrained network priors, *IEEE Transactions on Circuits and Systems for Video Technology, TCSVT*, In Press, 2022
61. Yuhui Quan, Peikang Lin, Yong Xu, Yuesong Nan, and [Hui Ji](#), Non-Blind image deblurring via deep learning in complex field, *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, In Press. 2022
60. Weixi Wang, Ji Li and [Hui Ji](#),  $\ell_1$ -norm regularization for short-and-sparse blind deconvolution: Point source separability and region selection, *SIAM Journal on Imaging Sciences (SIIMS)*, 15(3), 1345-1372, August, 2022
59. Yong Xu, Baoling Liu, Yuhui Quan, and [Hui Ji](#), Unsupervised deep background matting using deep matte prior, *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 32(7), 4324-4337, 2022
58. Mingqin Chen, Peikang Lin, Yuhui Quan, Tongyao Pang, and [Hui Ji](#), Unsupervised phase retrieval using a deep approximate MMSE estimator, *IEEE Transactions on Signal Processing, (TSP)*, 70, 2239-2252, May, 2022.
57. Mingqin Chen, Yuhui Quan, Tongyao Pang, and [Hui Ji](#), Non-blind Image Deconvolution via Leveraging Model Uncertainty in An Untrained Deep Neural Network, *International Journal of Computer Vision (IJCV)*, 130, 1770-1789, July, 2022
56. Ji Li, Yuesong Nan and [Hui Ji](#), Un-supervised learning for blind image deconvolution via Monte-Carlo sampling, *Inverse Problems (IP)*, 38(3), 035012, Feb. 2022

55. Qiaoqiao Ding, Yuesong Nan, Hao Gao, and Hui Ji, Deep Learning with Adaptive Hyper-parameters for Low-Dose CT Image Reconstruction, *IEEE Transactions on Computational Imaging*, (**TCI**), 7, 648-660, Jun., 2021
54. Yuhui Quan, Huan Teng, Yixin Chen, and Hui Ji, Watermarking deep neural networks in image processing, *IEEE Transactions on Neural Networks and Learning Systems* (**TNNLS**), 32(5), 1852-1865, May, 2021
53. Yong Xu, Ye Zhu, Yuhui Quan, and Hui Ji, Attentive deep network for blind motion deblurring on dynamic scenes, *Computer Vision and Image Understanding* (**CVIU**), 205, 103169, April, 2021
52. Jiulong Liu, Angelica I Aviles-Rivero, Hui Ji, and Carola-Bibiane Schonlieb, Rethinking Medical Image Reconstruction via Shape Prior, Going Deeper and Faster: Deep Joint Indirect Registration and Reconstruction, *Medical Image Analysis* (**MedIA**), 68, 101930, 2021
51. Yuhui Quan, Yixin Chen, Yizhen Shao, Huan Teng, Yong Xu, and Hui Ji, Image denoising using complex-valued deep CNN, *Pattern recognition* (**PR**), 111, Mar. 2021
50. Chaoqiang Liu, Hui Ji, and Anqi Qiu, Fast vertex-based graph convolutional neural network and its application to brain images *Neurocomputing*, 434(28), 1–10, 2021
49. Gaoyu Chen, Xiang Hong, Qiaoqiao Ding, Yi Zhang, Hu Chen, Shujun Fu Yunsong Zhao, Xiaoqun Zhang, Hui Ji, Ge Wang, Qiu Huang, and Hao Gao, *AirNet: Fused analytical and iterative reconstruction with deep neural network regularization for sparse-data CT*, Medical Physics, 2020.
48. Jiulong Liu, Nanguang Chen, and Hui Ji, Learnable Douglas-Rachford iteration and its applications in DOT imaging, *Inverse Problem and Imaging* (**IPI**), 14(4), Aug., 2020
47. Hui Ji, Zuowei Shen, and Yufei Zhao, Multi-scale discrete framelet transform for graph-structured signals, *SIAM Journal on Multiscale Modeling and Simulation* (**MMS**), 18(3), 1210–1241, Jul., 2020
46. Ruotao Xu, Yong Xu, Yuhui Quan, and Hui Ji, Cartoon-texture image decomposition using orientation characteristics in patch recurrence, *SIAM Journal on Imaging Sciences*, (**SIIMS**) 13(3), 1179–1210, 2020
45. Qiaoqiao Ding, Gaoyu Chen, Xiaoqun Zhang, Qiu Huang, Hui Ji and Hao Gao, Low-dose CT with deep learning regularization via proximal forward backward splitting, *Physics in Medicine and Biology*, 65(12), Jun., 2020.
44. Yuhui Quan, Jieting Yang, Yixin Chen, Yong Xu, and Hui Ji, Collaborative deep learning for super-resolving blurry text images, *IEEE Transactions on Computational Imaging*, (**TCI**) 65(12), 125009, Jun., 2020
43. Xuhui Yang, Yong Xu, Yuhui Quan, and Hui Ji, Image denoising via sequential ensemble learning, *IEEE Transactions on Image Processing*, (**TIP**) 29, 5038-5049, Mar., 2020
42. Yan Huang, Yuhui Quan, Yong Xu, R. Xu, and Hui Ji, Removing reflection from a single image With ghosting effect *IEEE Transactions on Computational Imaging* (**TCI**), 6, 43-45, Feb. 2020
41. Jinxiu Liang, Yong Xu, Chenlong Bao, Yuhui Quan and Hui Ji, Barzilai-Borwein-based adaptive learning rate for deep learning, *Pattern Recognition Letter*, 128(1), 197-203, Dec. 2019
40. Ruotao Xu, Yuhui Quan, Yixin Chen, and Hui Ji, Attention with structure regularization for action recognition, *Computer Vision and Image Understanding* (**CVIU**), 187, 102704, Oct. 2019
39. Chong-Yaw Wee, Chaoqiang Liu, Annie Lee, Joann S.Poh, Hui Ji, and Anqi Qiu, Cortical Graph Neural Network for AD and MCI Diagnosis and Transfer Learning Across Populations, *NeuroImage: Clinical*, 23, 101929. 2019
38. Hui Ji, Zuowei Shen and Yufei Zhao, Digital Gabor filters do generate MRA-based wavelet tight frames *Applied and Computational Harmonic Analysis* (**ACHA**), 47(1), 87-108, Jul. 2019
37. Guanhua Zhu, Wei Liu, Chenglong Bao, Dudu Tong, Hui Ji, Zuowei Shen, Daiwen Yang, and Lanyuan Lu, Investigating energy-based pool structure selection in the structure ensemble modeling with experimental distance constraints: The example from a multidomain protein Pub1, *Proteins: Structure, Function, and Bioinformatics*, 86(5), 501-514, 2018

36. Chenlong Bao, George. Barbastathis, [Hui Ji](#), Zuowei Shen, and Zhengyun Zhang, Coherence retrieval using trace regularization, *SIAM Journal on Imaging Sciences (SIIMS)*, 11(1), 679–706, Mar. 2018
35. [Hui Ji](#), Zuowei Shen and Yufei Zhao, Digital Gabor filters with MRA structure, *SIAM Journal on Multiscale Modeling and Simulation (MMS)*, 16(1), 52–476. Mar. 2018
34. Zhengyun Zhang, Chenlong Bao, [Hui Ji](#), Zuowei Shen and G. Barbastathis, Apparent coherence loss in phase space tomography, *Journal of the Optical Society of America A*, 34(11), 2025-2033, 2017
33. [Hui Ji](#), Zuowei Shen and Yufei Zhao, Directional frames for image Recovery: Multi-scale discrete Gabor frames, *Journal of Fourier Analysis and Applications (JFAA)*, 23(4), 729-757, Aug. 2017
32. [Hui Ji](#), Yu Luo and Zuowei Shen, Image recovery via geometrically structured approximation, *Applied and Computational Harmonic Analysis (ACHA)*, 41(1), 75-93, Jul. 2016
31. Weiqiang Chen, [Hui Ji](#) and Yanfei You, An augmented Lagrangian method for L1-regularized optimization problems with orthogonality constraints, *SIAM Journal on Scientific Computing (SISC)*, 38(4), B570-B592, 2016
30. Chenlong Bao, [Hui Ji](#), Yuhui Quan and Zuowei Shen, Dictionary learning for sparse coding: Algorithms and analysis, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 38(7), 1356-1369, Jul. 2015
29. Changqing Wang, Judy Kipping, Chenlong Bao, [Hui Ji](#) and Anqi Qiu, Cerebellar functional parcellation using sparse dictionary learning clustering, *Frontiers in Neuroscience*, 10(188), May. 2016
28. Zhitao Fan, [Hui Ji](#) and Zuowei Shen, Dual Gramian analysis: duality principle and unitary extension principle, *AMS Mathematics of Computation (AMS MCOM)*, 85, 239-270, 2016
27. Yong Xu, Yuhui Quan, Z. Zhang, Haibin Ling and [Hui Ji](#), Classifying dynamic textures via spatiotemporal fractal analysis, *Pattern Recognition (PR)*, 48(10), 3239-3248, Oct. 2015
26. Yuhui Quan, [Hui Ji](#) and Zuowei Shen, Data-driven multi-scale non-local wavelet frame construction and image recovery, *Journal of Scientific Computing (JSC)*, 63(2), 307-329, May 2015
25. Chenlong Bao, [Hui Ji](#) and Zuowei Shen, Convergence analysis for iterative data-driven tight frame construction scheme, *Applied and Computational Harmonic Analysis (ACHA)*, 38(5), 510-523, May 2015
24. Jianfeng Cai, [Hui Ji](#), Zuowei Shen and G. Ye, Data-driven tight frame construction and image denoising, *Applied and Computational Harmonic Analysis (ACHA)*, 37(1), 89-105, Jul. 2014
23. Ming Li, Zhitao Fan, [Hui Ji](#) and Zuowei Shen, Wavelet frame based algorithm for 3D reconstruction in electron microscopy, *SIAM Journal on Scientific Computing (SISC)*, 36(1), B24-B46, Jan. 2014
22. Likun Hou, [Hui Ji](#) and Zuowei Shen, Recovering over/under-exposed regions of a colour photograph, *SIAM Journal on Imaging Science (SIIMS)*, 6(4), 2213-2235, Nov. 2013
21. Likun Hou and [Hui Ji](#), Band-limited wavelets and framelets in low dimensions, *Journal of Fourier Analysis and Applications (JFAA)*, 19(4), 731-761, Aug. 2013
20. [Hui Ji](#), Xiong Yang, Haibin Ling and Yong Xu, Static and dynamic texture classification using multifractal analysis in wavelet domain, *IEEE Transactions on Image processing (TIP)*, 22 (1), 286-299, Jan. 2013
19. Yong Xu, Sibin Huang, [Hui Ji](#) and Cornelia Fermuller, Scale-space texture description on SIFT-like textons, *Computer Vision and Image Understanding (CVIU)*, 116 (9), 999-1013, September 2012
18. [Hui Ji](#) and Kang Wang, Robust image deconvolution with an inaccurate blur kernel, *IEEE Transactions on Image processing (TIP)*, 21 (4), 1624-1634, April 2012
17. [Hui Ji](#), Jia Li, Zuowei Shen and Kang Wang, Image deconvolution by a characterization of sharp images in wavelet domain, *Applied and Computational Harmonic Analysis (ACHA)*, 32 (2), 295–303, March 2012.
16. Jianfeng Cai, [Hui Ji](#), Chaoqiang Liu and Zuowei Shen, Framelet based blind image deblurring from a single image, *IEEE Transactions on Image Processing (TIP)*, 21(2), 562–572, March 2012

15. Bin Dong, [Hui Ji](#), Jia Li, Zuowei Shen and Yuhong Xu, Wavelet frame based blind image inpainting, *Applied and Computational Harmonic Analysis (ACHA)*, 32 (2), 268–279, February 2012
14. [Hui Ji](#), Sabin Huang, Zuowei Shen and Y.-H. Xu, Robust video restoration by joint sparse and low rank matrix approximation, *SIAM journal on imaging science (SIIMS)*, 4, 1122–1142, November, 2011
13. [Hui Ji](#), Zuowei Shen and Y.-H. Xu, Wavelet frame based image restoration with missing/damaged pixels, *East Asia Journal on Applied Mathematics*, 1 (2), 108–131, 2011
12. Jianfeng Cai, [Hui Ji](#), F. Shang and Zuowei Shen, Inpainting for compressed image, *Applied and Computational Harmonic Analysis (ACHA)*, 29 (3), 368-381, November 2010
11. [Hui Ji](#), Zuowei Shen and Y.-H. Xu, Wavelet frame based scene reconstruction from range data, *Journal of Computational Physics (JCP)*, 229 (6), , 2093–2018, March 2010.
10. Cornelia Fermuller, [Hui Ji](#) and A. Kitaoka, Illusory motion due to causal time filtering, *Vision Research*, 50 (3), 315–329, February 2010.
9. Jianfeng Cai, [Hui Ji](#), Chaoqiang Liu and Zuowei Shen, Blind motion deblurring using multiple images, *Journal of Computational Physics (JCP)*, 228 (14), 5057-5071, August 2009
8. Yong Xu, [Hui Ji](#) and Cornelia Fermuller, Viewpoint invariant texture description using fractal analysis, *International Journal of Computer Vision (IJCV)*, 83 (1), 85-100, June 2009
7. B. Han and [Hui Ji](#), Compactly supported orthonormal complex wavelets with dilation four and symmetry, *Applied and Computational Harmonic Analysis (ACHA)*, 26, 422-431, May 2009
6. [Hui Ji](#) and Cornelia Fermuller, Robust wavelet-based super-resolution reconstruction: Theory and Algorithm, *IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI)*, 31 (4), 649-660, April 2009
5. [Hui Ji](#) and Cornelia Fermuller, Better flow estimation from color images, *EUROSIP Journal on Advance in Signal Processing*, (1), January 2007
4. [Hui Ji](#) and Cornelia Fermuller, A 3D shape constraint on video, *IEEE Transactions on Pattern Recognition and Machine Intelligence (PAMI)*, 28 (6), 1018-1023, June 2006
3. [Hui Ji](#) and Cornelia Fermuller, Noise causes slant underestimation in motion and stereo, *Vision Research*, 46 (19), 3105–3120, August 2006
2. [Hui Ji](#) and Zuowei Shen, Compactly supported (bi)orthogonal wavelets generated by interpolatory refinable functions, *Advances in Computational Mathematics*, 11, 81–104, July 1999
1. [Hui Ji](#), S. D. Riemenschneider and Zuowei Shen, Multivariate compactly supported fundamental refinable functions, duals and biorthogonal wavelets, *Studies in Applied Mathematics*, 102 (2), 173–204, February 1999

### Refereed Conference Proceedings in Computer Science

39. Yuhui Quan, Zhuojie Chen, Huan Zheng, [Hui Ji](#), Learning deep non-Blind deconvolution without ground truth images, *European Conference on Computer Vision (ECCV)*, Tel-Aviv, Oct., 2022
38. Yuhui Quan, Xinran Qin Tongyao Pang, [Hui Ji](#), Dual-domain self-supervised learning and model adaption for compressed sensing of images, *European Conference on Computer Vision (ECCV)*, Tel-Aviv, Oct., 2022
37. Weixi Wang, Ji Li, and [Hui Ji](#), Self-supervised deep learning for image recovery/reconstruction via adaptive Stochastic gradient Langevin dynamics, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, New Orleans, Jun., 2022
36. Jiachun Li, Kunkun Qin, Ruotao Xu and [Hui Ji](#), Deep scale-ware image smoothing, *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, May., 2022
35. Yuhui Quan, Zicong Wu, [Hui Ji](#), Gaussian kernel mixture network for single image defocus deblurring, *35th Annual Conference on Neural Information Processing Systems (NeurIPS)*, Dec., 2021

34. Qiaoqiao Ding, Hui Ji, Hao Gao and Xiaoqun Zhang, Learnable Multi-scale Fourier Interpolation for Sparse View CT Image Reconstruction, *24th International Conference on Medical Image Computing & Computer Assisted Intervention (MICCAI)*, Strasbourg, Oct., 2021
33. Tongyao Pang, Huan Zheng, Yuhui Quan, Hui Ji, Recorruped-to-Recorruped: Unsupervised Deep Learning for Image Denoising, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Nashville, Jun., 2021
32. Yuhui Quan, Zhile Chen, Feng Li, Yong Xu, Hui Ji, Texture Recognition via Exploiting Cross-Layer Statistical Self-Similarity, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Nashville, Jun., 2021
31. Tongyao Pang, Yuhui Quan and Hui Ji, Self-supervised Bayesian deep learning for image recovery with applications to compressed sensing, *European Conference on Computer Vision (ECCV)*, Aug., 2020
30. Yuhui Quan, Mingqin Chen, Tongyao Pang, and Hui Ji, Self2Self with dropout: Learning self-supervised denoising from single image, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, Jun., 2020
29. Yuesong Nan, Yuhui Quan, and Hui Ji, Variational-EM-based deep learning for noise-blind image deblurring, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, Jun., 2020
28. Yuesong Nan, and Hui Ji, Deep Learning for image deconvolution in the presence of kernel/model uncertainty, *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Seattle, Jun., 2020
27. Yuhui Quan, Shijie Deng, Yixin Chen, and Hui Ji, Deep learning for seeing through window with raindrops, *International Conference on Computer Vision (ICCV)*, Seoul, ICCV, 2019
26. Liuge Yang and Hui Ji, A variational EM framework of edge selection for blind deblurring, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Los Angeles, Jun., 2019
25. Guodong Xu, Yuhui Quan and Hui Ji, Estimating defocus amount through rank of local patches, *16th International Conference on Computer Vision , (ICCV)*, Venice, Dec., 2017
24. Yuhui Quan, Chenlong Bao, and Hui Ji, Equiangular kernel dictionary learning and applications to dynamic texture analysis *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, 2016
23. Yuhui Quan, Yong Xu, Yuping Sun, Yan Huang and Hui Ji, Sparse coding for classification via discrimination ensemble *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Las Vegas, 2016
22. Yu Luo, Yong Xu and Hui Ji, Removing rain from a single image via discriminative sparse coding, *15th International Conference on Computer Vision (ICCV)*, **Oral**, Chile, Dec. 2015
21. Yuhui Quan, Yan Huang and Hui Ji, Dynamic texture recognition via orthogonal tensor dictionary learning, *15th International Conference on Computer Vision (ICCV)*, Chile, Dec. 2015
20. Chenlong Bao, Yuhui Quan and Hui Ji, A convergent incoherent dictionary learning algorithm for sparse coding, *European Conference Computer Vision (ECCV)*, Zurich, 2014
19. Chenlong Bao, Hui Ji, Yuhui Quan and Zuwei Shen,  $\ell_0$  norm based dictionary learning by proximal methods with global convergence, *IEEE Conference Computer Vision and Pattern Recognition (CVPR)*, **Oral**, Columbus, 2014.
18. Chenlong Bao, Jianfeng Cai and Hui Ji, Fast sparsity-based orthogonal dictionary learning for image restoration, *14th IEEE International Conference Computer Vision, (ICCV)*, Sydney, Australia, 2013.
17. Hui Ji and Kang Wang, A two-stage approach to blind spatially-varying motion deblurring, *IEEE Conference Computer Vision and Pattern Recognition (CVPR)*, Rhode Island, 2012
16. Chenlong Bao, Y. Wu, Haibin Ling and Hui Ji, Real time robust L1 tracker using accelerated proximal gradient approach, *IEEE Conference Computer Vision and Pattern Recognition (CVPR)*, Rhode Island, 2012

15. Yong Xu, Yuhui Quan, Zhuming Zhang, Hui Ji, Morimichi Nishigaki, Cornelia Fermuller and Daniel De-menthon, Contour-based Recognition, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Rhode Island, 2012
14. Yong Xu, Yuhui Quan, H. Lin and Hui Ji, Dynamic texture classification using dynamic fractal analysis, *13th IEEE International Conference on Computer Vision (ICCV)*, Barcelona, 2011
13. Yi Li, Cornelia Fermuller, Yiannis Aloimonos and Hui Ji, Learning shift-invariant sparse representation of actions, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, San Francisco, 2010
12. Yong Xu, Xiong Yang, Haibin Ling and Hui Ji, A New Texture Descriptor Using Multifractal Analysis in Multi-orientation Wavelet Pyramid, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, **Oral**, San Francisco, 2010.
11. Hui Ji, Chaoqiang Liu, Zuowei Shen and Yuhong Xu, Robust video denoising using low rank matrix completion, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, San Francisco, 2010
10. Yong Xu, Sibin Huang and Hui Ji, Integrating local and global statistics for texture classification, *IEEE International Conference on Image Processing (ICIP)*, Cairo, 2009
9. Herwig Wendt, Patrice Abry, Stephane Jaffard, Hui Ji and Zuowei Shen, Wavelet Leader Multifractal Analysis for Texture Classification, *IEEE International Conference on Image Processing (ICIP)*, **Oral**, Cairo, 2009
8. Yong Xu, Sibin Huang, Hui Ji and Cornelia Fermuller, Combining powerful local and global statistics for texture description, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, 2009
7. Jianfeng Cai, Hui Ji, Chaoqiang Liu and Zuowei Shen, Blind motion deblurring from a single image using sparse approximation, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, 2009
6. Jianfeng Cai, Hui Ji, Chaoqiang Liu and Zuowei Shen, High-quality curvelet-based motion deblurring using an image pair, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Miami, 2009
5. Hui Ji and Chaoqiang Liu, Motion blur identification from image gradients, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, Anchorage, 2008
4. Hui Ji and Cornelia Fermuller, Super-resolution reconstruction from extended video sequences, *European Conference on Computer Vision (ECCV)*, Graz, 2006
3. Yong Xu, Hui Ji and Cornelia Fermuller, A projective invariant for textures, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, New York, 2006
2. Hui Ji and Cornelia Fermuller, Integration of motion fields through shape, *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, San Diego, 2005
1. Hui Ji and Cornelia Fermuller, Bias in shape estimation, *European Conference on Computer Vision (ECCV)*, Czech, 2004

## Service to NUS

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- Member of the Committee for the Master's Program in Data Science and Machine Learning (DSML), 2020 – present
- Member of the Committee for the Undergraduate Program in Data Science and Analytics (DSA), 2018 – 2020
- Member of Search Committee, 2016 – present
- Member of Research Committee, 2014 – 2019
- Deputy director of Graduate Program Committee, 2013 – 2016

- Member of FYP and UROPS Committee, 2012 – 2014

### Service to International Academic Organizations

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- *Executive committee member*, Society for Industrial and Applied Mathematics (SIAM)–East Asia Section, 2014 – present

### Service to Academic Community

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- *Editorial Service*
  - *Editorial Board Member*, Inverse Problem and Imaging, American Institute of Mathematical Sciences (AIMS), 2016 – Present
  - *Area Chair*, 2014 IEEE Conference on Computer Vision and Pattern Recognition (CVPR), Columbus, USA, 23/06/2014 – 28/06/2014.
- *Co-Chair of Program/Workshop Organization Committee*
  - The Program on Machine Learning and Its Application, IMS, Singapore, 10/10/22 – 28/10/22
  - The Workshop on Machine Learning for CryoEM, IMS, Singapore, 16/09/22 – 23/09/22
  - The Workshop on Data Science, IMS, Singapore, 17/05/21 – 19-05-21
  - The Program on Data Sciences: Bridging Mathematics, Physics and Biology, IMS, Singapore, 29/05/17 – 16/06/17
  - The Workshop on Mathematics of Shapes and Applications, IMS, Singapore, 18/07/16 – 22/07/16
- *Reviewer for Journal:*
  - Mathematics: SIAM: Multiscale Modeling and Simulation; SIAM Journal on Mathematical Analysis; SIAM Journal on Imaging Sciences; SIAM Journal on Mathematical Analysis; AMS Mathematics of Computation; Applied and Computational Harmonic Analysis; Journal of Fourier Analysis and Applications; Advances in Computational Mathematics; Inverse Problem and Imaging; Journal of Mathematical Imaging and Vision
  - Science and Engineering: IEEE Transactions on Pattern Analysis and Machine Intelligence; International Journal of Computer Vision; IEEE Transactions on Image Processing; IEEE Transactions on Computational Imaging, IEEE Transactions on Remote Sensing and Geophysics; IEEE Transactions on Circuits and Systems for Video Technology; IEEE Transactions on Signal Processing; IEEE Signal Processing Letter; IEEE Journal of Selected Topics in Signal Processing; Computer Vision and Imaging Understanding; Elsevier: Signal Processing; Elsevier: Computers & Graphics; Image and Vision Computing; Optical Engineering; The Visual Computer; Pattern Recognition; Journal of Visual Communication and Image Representation; Nature Machine Intelligence
- *Reviewer for Selected Refereed Computer Science Conference*
  - European Conference on Computer Vision (ECCV), 2010 – 2022; IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2011 – 2022; International Conference on Computer Vision (ICCV), 2013 – 2021; Conference on Neural Information Processing Systems (NeuIPS), 2016 – 2022; International Conference on Learning Representations (ICLR), 2021 – 2022



## Invited Conference/Workshop Talk

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- Invited Talk, *The Workshop on Recent Advances in Image Processing*, Shenzhen Research Institute of Big Data, Virtual, China, 04/2022
- Keynote Talk, *2021 SEG 4th International Workshop on Mathematical Geophysics: Traditional and Learning*, Virtual, Society of Exploration Geophysicists (SEG), 12/2021
- Invited Talk, *The Sixth Hangzhou International Workshop on Harmonic Analysis and Applications* online, China, 12/2021
- Invited Talk, *The Workshop on Machine Learning & Scientific Computing*, Virtual, Wuhan University, China, 08/2021
- Invited Talk, *Joint workshop on Mathematical Finance, Machine Learning and Statistics*, NUS and Shanghai Jiaotong University, 06/2021
- Invited Talk, *One World Seminar Series in Imaging and Inverse Problem (IMAGINE)*, Virtual, Society for Industrial and Applied Mathematics (SIAM), 02/2021
- Invited Talk, *The Workshop on Mathematical Machine Learning and Application*, Virtual, Penn State University at University Park, USA, 12/2020
- Invited Talk, *International Conference of Union of Mathematical Imaging*, Virtual, Nankai University, China, 11/2020
- Invited Talk, *International Workshop on Recent Advances on Mathematical Imaging and Data Science*, Shanghai Jiaotong University, China, 07/2019
- Invited Talk, *International Conference on Computational Harmonic Analysis and Statistical Learning*, Nanjing, China, 05/2019
- Invited Talk, *International Workshop on Approximation Theory and Methods*, Sun Yat-sen University, China, 12/2018
- Invited Talk, *International Symposium on Computational Harmonic Analysis*, Behang University, China, 06/2018
- Invited Talk, *From Approximation Theory to Real World Applications Workshop*, Tsinghua Sanya International Mathematics Forum, China, 12/2017
- Invited Talk, *International Workshop on Computational Harmonic Analysis*, Nankai University, China, 06/2017
- Invited Talk, *The workshop on Optimization in Scientific Computing*, The Chinese University of Hong Kong, Hong Kong, 06/2017
- Invited Talk, *International Conference on Mathematical Approximation Approaches in Data Science*, Zhejiang University, China 12/2016
- Invited Talk, *The Workshop On Mathematics in Imaging Science and Data Analysis*, Peking University, China, 08/2016
- Plenary Talk, *The International Conference on Inverse Problems and Related Topics*, Seoul, South Korea, 06/2016
- Invited Talk, *Mini-Symposium at SIAM Conference on Imaging Science (SIAM-IS16)*, New Mexico, USA, 05/2016
- Invited Talk, *International Conference on Image Processing: Theory, Method and Applications*, Shanghai Jiaotong University, China, 05/2016
- Invited Talk, *International Workshop on Signal Processing, Optimization, and Compressed sensing*, Sun Yat-sen University, China, 12/2015
- Invited Talk, *Mini-symposium at the International Congress on Industrial and Applied Mathematics*, Beijing, 08/2015

- Invited Talk, *Mini-symposium at the 9th international Conference on Computational Physics*, Institute for Mathematical Sciences, Singapore, 01/2015
- Invited Talk, *Mini-Symposium at SIAM Conference on Imaging Science (SIAM-IS14)*, Hong Kong Baptist University, Hong Kong, 05/2014
- Invited Talk, *The second Guangzhou International Workshop on Mathematical Imaging*, Sun Yat-sen University, China, 12/2013
- Plenary Talk, *The Sixth Pacific Rim Conference on Mathematics*, Hokkaido, Japan, 07/2013
- Invited Talk, *The first ChongQing Workshop on Computational and Applied Math*, Chongqing University, China, 06/2013
- Invited Talk, *The Imaging Science, a conference dedicated to Professor Stanley Osher*, Tsinghua University, China, 12/2012
- Invited Talk, *The Int. workshop on Recent Advances in Scientific and Engineering Computing*, Shanghai Jiaotong University, China, 10/2012
- Invited Talk, *The IMS-IMI Joint Workshop on Mathematics for Industry* Institute for Mathematical Sciences, Singapore, 09/2012
- Invited Talk, *The Workshop on Mathematics for Defence*, National University of Singapore, Singapore, 04/2012
- Invited Talk, *The 2011 International Workshop on Recent Advances in Biomedical imaging*, Shanghai Jiaotong University, China, 08/2011
- Invited talk, *The 7th East Asia SIAM Conference*, Waseda University, Japan, 06/2011
- Invited talk, *The International Conference on mathematical methods for images*, Sun Yat-sen University, China, 08/2010
- Invited Talk, *The Fifth Pacific Rim Conference of Mathematics*, Stanford University, USA, 07/2010
- Invited Talk, *The Workshop on Mathematical Aspect of Data Science*, Fudan University, China, 05/2010
- Invited Talk, *The Workshop on Advanced Mathematics*, National University of Singapore, Singapore, 02/2010
- Invited Talk, *The Workshop on Mathematical Imaging and Digital media*, Institute for Mathematical Sciences, Singapore, 06/2008
- Invited Talk, *The Symposium on Wavelet Methods in Mathematics Analysis and Engineering*, Sun Yat-sen University, China, 08/2007

### Lecture for Summer School

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- *Ten-hours Short Courses on Representation and Processing of Big Visual Data*, Institute of Natural Science, Shanghai Jiaotong University, China, 03/07/2017–07/07/2017
- *Ten-hour lecture in Summer School on Models and Algorithms of Big Data Analysis*, “Mathematical Representation of Visual Data: A data-driven perspective”, Beijing Institute of Big Data Research, China, 01/08/2016–05/08/2016
- *Ten-hour lecture in Summer School on Scientific Computing*, “MRA based wavelet frames and applications”, State Key Laboratory on Scientific Computing and Engineering Computing (LSEC), China, 21/07/2014–25/07/2014
- *Ten-hour lecture in Summer School on data Sciences*, “MRA based wavelet frames and applications”, Fudan University, China, 18/07/2011 – 22/07/2011

## Former and Current Postdoc Research Fellow

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- Dr. LI Ji (2019 – Present)
- Dr. DING Qiaoqiao (2018 – 2021). Now Researcher Scientist at Shanghai Jiaotong University, China
- Dr. LIU Jiulong (2018 – 2021). Now Associate Professor at Academy of Mathematics and Systems Science, Chinese Academy of Sciences, China
- Dr. QUAN Yuhui (2013 – 2015). Now Associate Professor at School of Computer Science & Engineering, South China University of Technology, China

## Ph.D. Student Supervision

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### Current Ph.D. Student

- ZHAO Yutian, Ph.D. student 2021 – Present
- LI Xingyao, Ph.D. student 2021 – Present
- ZHENG Huan, Ph.D. student 2020 – Present
- YANG Xi (Co-advisor), Ph.D. student 2020 – Present
- WANG Weixi, Ph.D. student 2018 – Present

### Graduated Ph.D. Student

- YANG Ziyi, Ph.D. (2021). Now Algorithm Engineer at Advanced.AI Inc., Beijing, China
- NAN Yuesong, Ph.D. (2020). Now Algorithm Engineer at Zoom Video Communications Inc., Singapore
- YANG Liuge, Ph.D. (2020). Now Quantitative Modeller at DBS bank, Singapore
- PANG Tongyao (Co-supervisor), Ph.D. (2019). Now Research Fellow at NUS, Singapore
- XU Guodong, Ph.D. (2018). Now Senior Research Scientist at NetVirta Inc., Singapore
- ZHAO Yufei, Ph.D. (2016). Now Lecturer at School of Mathematical Sciences, Nankai University, China
- BAO Chenglong, Ph.D. (2014). Now Tenure-track Assistant Professor at Yau Mathematical Sciences Center, Tsinghua University, China
- WANG Kang, Ph.D. (2013). Now Quantitative Analyst at UBS Investment Bank, Hong Kong

## Modules taught at NUS

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- QF5208 *AI and Fintech*
- QF5206A *Machine Learning in Finance*
- DSA5203 *Visual Data Processing and Interpretation*
- MA6241 *Topics in Applied Mathematics I*
- MA5232 *Mathematical Modeling and Numerical Simulations*
- MA5242 *Wavelets*
- MA5241 *Computational Harmonic Analysis*
- GS6000 *Vision and Perception*
- MA4229 *Approximation Theory*
- MA4268 *Mathematics in Visual Data Processing*
- MA4272 *Mathematical Tools for Data Science*
- MA3227 *Numerical Analysis II*
- CZ1102 *Problem Solving and Computation*