

# Jong Chul Ye, Ph.D.

Professor

Kim Jaechul Graduate School of AI

Korea Adv. Inst. Of Science & Technology (KAIST)

291 Daehak-ro, Yuseong-gu, Daejeon 34141, Republic of Korea

E-mail: [jong.ye@kaist.ac.kr](mailto:jong.ye@kaist.ac.kr)

Tel: +82-42-350-4320 Fax : +82-42-350-4310

<https://bispl.weebly.com>

## Education

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- Postdoctoral Researcher, Coordinate Science Lab., Univ. of Illinois at Urbana-Champaign, 1999-2001  
Advisors: Yoram Bresler, and Pierre Moulin
- Ph.D. Electrical and Computer Engineering, Purdue University, May 1999  
Dissertation: *Estimation and reconstruction for the optical diffusion nonlinear inverse problem*  
Advisor: Kevin Webb, and Charles Bouman
- M.S. Control and Instrumentation Engineering (now, ECE), Seoul National University, Korea, Feb. 1995  
Dissertation: *Model-based video compression technology using segmentation*  
Advisor: Sangwook Lee
- B.S. Control and Instrumentation Engineering (now, ECE), Seoul National University, Korea, Feb. 1993  
Advisor: Sang Myung Koh

## Professional Experience

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- Jan 2022 – Current Full Professor, Kim Jaechul Graduate School of AI, KAIST
- Aug. 2004 – Dec. 2021 Assistant, Associate, and Full Professor, Department of Bio and Brain Engineering, KAIST
- Mar. 2017 - Dec. 2021 Adjunct Professor, Department of Mathematical Sciences, KAIST
- March 2016 KAIST Endowed Chair Professor
- July 2014 - Aug. 2015 Interim Department Head, Dept. of Bio and Brain Engineering, KAIST
- 2012 Invited Professor, Beckman Senior Fellowship Award, Univ. of Illinois at Urbana-Champaign
- Mar. 2007 - March 2013 Adjunct Professor, Department of Electrical Engineering, KAIST
- 2003. - 2004. Senior Researcher, X-ray CT Technology Group, GE Global Research Center, New York
- 2001. - 2003. Senior Member Research Staff, Philips Research Center, Briarcliff Manor, New York

## Area of Research/Expertise

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- **Current Research Focus:**

Machine learning/deep learning for computational imaging, and biomedical imaging such as MRI, CT, ultrasound, optics, etc. Research efforts cover all aspects of deep learning from healthcare/computer vision applications to fundamental theory:

- Applications:
  - CT: low-dose CT, sparse view CT, interior tomography, conebeam artifact
  - MRI: accelerated MRI, MR artifact correction, contrast synthesis, image imputation
  - Ultrasound: deep beamforming, synthetic aperture beamforming, artifact correction
  - Optics: deconvolution, diffuse optical tomography, super-resolution microscopy
  - Electron microscopy: HAADF, EDX tomography, denoising

- Neuroimage: decoding, resting state fMRI, connectivity
  - Theory:
    - deep convolutional framelet representation
    - geometry of deep neural networks
    - Optimal transport-driven unsupervised learning
- **Broad Area of Research Interests:**
  - Image reconstruction/inverse problem
  - Signal processing
  - Image processing
  - Machine learning/deep learning
  - Compressed sensing

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## Honors and Awards

- **Fellow of IEEE** (Jan. 2020) with the citation *"for contributions to signal processing and machine learning for bio-medical imaging"*
- **IEEE EMBS Distinguished Lecturer**, Jan. 2020 -Dec. 2021
- **Nominated to 2020,2021 Technical Achievement Award for IEEE Engineering in Medicine and Biology (EMBS) Society**
- **Beckman Senior Fellowship Award**, Univ. of Illinois at Urbana-Champaign (Feb. 2012 - Jan. 2013)
- **Advisor for Best student papers** (1<sup>st</sup>, 2<sup>nd</sup>) from IEEE International Symp. on Biomedical Imaging (ISBI) (2013, 2016)
- KAIST Research Excellence Award (Feb. 2012)
- 1<sup>st</sup> place winner of Reconstruction Challenge, ISMRM Workshop on Data Sampling and Image Reconstruction (2009)
- 2<sup>nd</sup> Place Award, AAPM (American Association of Physicist in Medicine) Low-Dose CT Grand Challenge (2016)
- 3<sup>rd</sup> Place Award, CVPR NTIRE (New Trends in Image Restoration and Enhancement workshop) on Super-Resolution Imaging Challenge (2017)

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## Plenary, Keynote, and Tutorial Talk

- **Keynote Speaker**, ICCV (IEEE Conf. on Computer Vision) Learning Computational Imaging (LCI) Workshop, Nov.2, 2019, Seoul, Korea, Title: Geometry of Deep Learning for Inverse Problems,
- **Keynote Speaker**, the 2<sup>nd</sup> PRIME (PRedictive Intelligence in Medicine) Workshop @ MICCAI, Oct 13<sup>th</sup>, Shenzhen, China, Title: Geometrical Understanding of CNN for Biomedical Image Reconstruction,
- **Keynote Speaker**, IMA (Institute for Mathematics and Its Applications) Special Workshop on Computational Imaging, Oct, Minneapolis, 16<sup>th</sup>, 2019, Title: Geometry of Convolutional Neural Networks for Computational Imaging,
- **Plenary Speaker**, Applied Inverse Problems (AIP) conference, Grenoble, July 11<sup>th</sup>, 2019, Title: Understanding Geometry of Encoder-Decoder CNNs for Inverse Problems,
- **Plenary Speaker**, The 27<sup>th</sup> Annual Meeting of ISMRM, Montreal, Canada, May 14<sup>th</sup>, 2019, Title: Machine Learning in Medical Imaging,
- Tutorial Talk @ Sunday Education Session, The 27<sup>th</sup> Annual Meeting of ISMRM, May 12<sup>th</sup>, 2019, Montreal, Canada, Title: Low-Rank plus Sparse Reconstruction

- Tutorial Talk, IEEE Symp. on Biomedical Imaging (ISBI), April 11th, 2019, Venice, Italy, Title: Deep Learning for Biomedical Image Reconstruction
- **Keynote Speaker**, ISMRM Workshop on Machine Learning, Part II, Oct 26, 2018, Washington DC, USA, Title: Overview of Machine Learning Methods for Reconstruction of Imaging Data,
- **Keynote Speaker**, MLMIR - Machine Learning for Medical Image Reconstruction, MICCAI Workshop, Sept. 16th, 2018, Granada, Spain, Title: Deep Convolutional Framelets: A general deep learning framework for inverse problems
- Extensive tutorial lecture, the 13th IEEE EMBS International Summer School on Biomedical Imaging, June 14-21, 2018, Saint-Jacut de la Mer, France, Title: Sparse and Deep Learning Approaches for Biomedical Image Reconstruction,
- Refresher Course Tutorial, CT Meeting 2018, The Fifth International Conference on Image Formation in X-Ray Computed Tomography, May 20-23, 2018, Salt Lake City, USA, Title: Deep Learning for CT Reconstruction: From Concept to Practices
- **Keynote Speaker**, SPIE Medical Imaging 2018, Feb, 24, 2018, Houston, USA, Title: Deep Learning for CT Reconstruction
- Tutorial talk, IEEE Symposium on Biomedical Imaging (ISBI), April 18, 2017, Melbourne, Australia, Title: Continuous domain sparse recovery of biomedical image data using structured low-rank approaches

## Media interview

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- AuntMinnie.com 5/15/2018, Interview after the Plenary Speaker at ISMRM 2019  
[https://www.auntminnie.com/index.aspx?sec=rca&sub=ismr\\_2019&pag=dis&ItemID=125484](https://www.auntminnie.com/index.aspx?sec=rca&sub=ismr_2019&pag=dis&ItemID=125484)
- ISMRM's MR Pulse Blog
  - QA Yoseob Han and Jong Chul Ye, 8/23/2019.  
<https://blog.ismrm.org/2019/08/23/qa-yoseob-han-and-jong-chul-ye/>
  - QA Dongwook Lee and Jong Chul Ye, 12/8/2016.  
<https://www.ismrm.org/qa-with-dongwook-lee-and-jong-chul-ye/>

## Editorial Activities

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- Founding Executive Editor, Biological Imaging, Cambridge University Press, 2021- current
- Senior Editor, IEEE Signal Processing Magazine, Mar. 2018 – current
- Associate Editor, IEEE Trans. Medical Imaging, May 2018 - current
- Section Editor, BMC Biomedical Engineering, July 2018 - Dec. 2020
- International Advisory Board, Physics in Medicine and Biology, Jan. 2017 - Dec. 2018
- Associate Editor, *IEEE Transactions on Computational Imaging*, Sept. 2014 - Dec. 2018 :
- Guest Editor for IEEE Journal of Selected Topics in Signal Processing Special Issue on “Domain Enriched Learning for Medical Imaging”, Aug. 2019 – current
- Guest Editor for IEEE Signal Processing Magazine for Special Issue on “Computational MRI: Compressed Sensing and Beyond”, Dec. 2018 – current
- Guest Editor for IEEE Trans. Medical Imaging for Special Issue on “Machine Learning for Image Reconstruction”, Mar. 2017 – May 2018
- Associate Editor, *IEEE Transactions on Image Processing*, Jan. 2013 - Dec. 2015
- Editorial Board Member, *Magnetic Resonance in Medicine*, Jan. 2015 - Dec. 2017

## International Committees Activities

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- **Chairman**, IEEE Technical Committee on Computational Imaging (TC CI), Jan. 2020-Dec. 2021
- Elected Member of IEEE Signal Processing Society (SPS) TC Computational Imaging (CI), 8/2015-current
- Elected member of IEEE Signal Processing Society (SPS) TC Bioimaging and Signal Processing (BISP), 1/2013–12/2018
- IEEE Engineering in Biology & Medicine Society (EMBS) TC Biomedical Imaging and Image Processing), 7/2012–current

## Selected Conference/Society Leadership

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- General Co-Chair, IEEE Symp. On Biomedical Imaging (ISBI), Iowa City, 2020.
- Program Chair, IEEE Conf. Acoustics, Speech and Signal Processing (ICASSP), Seoul, 2024
- Chair, IEEE Technical Committee on Computational Imaging (TC CI), 2020-2022
- Vice President, Korean Society for Artificial Intelligence in Medicine (KoSAIM), 2019-

## Book

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- Jong Chul Ye, Geometry of Deep Learning: A Signal Processing Perspective, Springer, ISBN-13: 978-9811660450, 2022

## Peer-Reviewed Journal Publications (no of citation= 13,855, h-index=55 as of March. 20<sup>st</sup>, 2022)

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1. Makoto Araki et al, "Optical coherence tomography in coronary atherosclerosis assessment and intervention", Nature Reviews Cardiology (in press), 2022.
2. Eunju Cha, Chanseok Lee, Mooseok Jang, and Jong Chul Ye, "DeepPhaseCut: Deep Relaxation in Phase for Unsupervised Fourier Phase Retrieval", IEEE Trans. on Pattern Analysis and Machine Intelligence (in press), 2021
3. Taesung Kwon, Jong Chul Ye, "Cycle-free CycleGAN using Invertible Generator for Unsupervised Low-Dose CT Denoising", IEEE Transactions on Computational Imaging (in press), 2021.
4. Sangjoon Park, Gwanghyun Kim, Yujin Oh, Joon Beom Se, Sang Min Lee, Jin Hwan Kim, Sungjun Moon, Jae-Kwang Lim, Jong Chul Ye, "Multi-task vision transformer using low-level chest X-ray feature corpus for COVID-19 diagnosis and severity quantification", Medical Image Analysis, Vol. 75, January 2022, 102299.
5. Mehmet Akcakaya, Burhaneddin Yaman, Hyungjin Chung, and Jong Chul Ye, "Unsupervised Deep Learning Methods for Biological Image Reconstruction and Enhancement", IEEE Signal Processing Magazine (in press), 2021.
6. Hyungjin Chung and Jong Chul Ye, "Feature Disentanglement in generating three-dimensional structure from two-dimensional slice with sliceGAN", Nature Machine Intelligence (in press), 2021.
7. Shujaat Khan, Jaeyoung Huh, and Jong Chul Ye, "Switchable and Tunable Deep Beamformer using Adaptive Instance Normalization for Medical Ultrasound", IEEE Trans. Medical Imaging (in press), 2021.
8. Jawook Gu, Tae Seong Yang, Jong Chul Ye, Dong Hyun Yang, "CycleGAN denoising of extreme low-dose cardiac CT using wavelet-assisted noise disentanglement", Medical Image Analysis (in press), 2021.
9. Junghyun Lee, Jawook Gu, and Jong Chul Ye, "Unsupervised CT Metal Artifact Learning using Attention-guided CycleGAN", IEEE Trans. on Medical Imaging (in press), 2021

10. Hyungjin Chung, Jaeyoung Huh, Geon Kim, Yong Keun Park, and Jong Chul Ye, "Missing Cone Artifact Removal in ODT Using Unsupervised Deep Learning in the Projection Domain", *IEEE Trans. Computational Imaging* (in press), 2021
11. Dhaval Kolte, Taishi Yonetsu, Jong Chul Ye, Peter Libby, Valentin Fuster, Ik-Kyoung Jang, "Plaque Erosion: Pathobiology, Diagnosis, and Clinical Implications", *Journal of the American College of Cardiology* (in press), 2021
12. Joon Yeol Nam, Hyungjin Chung, Kyu Sung Choi, Hyuk Lee, Tae Jun Kim, Hosim Soh, Eun Ae Kang, Soo Jeong Cho, Jong Chul Ye, Jong Pil Im, Sang Gyun Kim, Joo Sung Kim, Hyunsoo Chung, Jeong-Hoon Lee, "A deep learning model for diagnosing gastric mucosal lesions using endoscopic images: development, validation, and method comparison", *Gastrointestinal Endoscopy* (in press), 2021.
13. Gyutaek Oh, Jeong Eun Lee, and J.C. Ye, "Unpaired MR Motion Artifact Deep Learning using Outlier-Rejecting Bootstrap Aggregation", *IEEE Trans. Medical Imaging* (in press), 2021.
14. Yang, S., Kim, E.Y. and Ye, J.C., "Continuous Conversion of CT Kernel using Switchable CycleGAN with AdaIN". *IEEE Trans. on Medical Imaging* (in press), 2021.
15. Kim, Y., Oh, D.Y., Chang, W., Kang, E., Ye, J.C., Lee, K., Kim, H.Y., Kim, Y.H., Park, J.H., Lee, Y.J. and Lee, K.H., "Deep learning-based denoising algorithm in comparison to iterative reconstruction and filtered back projection: a 12-reader phantom study". *European Radiology*, pp.1-10, 2021
16. Hyungjin Chung, Eunju Cha, Leonard Sunwoo, Jong Chul Ye, "Two-Stage Deep Learning for Accelerated 3D Time-of-Flight MRA without Matched Training Data," *Medical Image Analysis* (in press), 2021.
17. Joonyoung Song, Jae-Heon Jeong, Dae-Soon Park, Hyun-Ho Kim, Doo-Chun Seo, Jong Chul Ye, "Unsupervised Denoising for Satellite Imagery using Wavelet Directional CycleGAN", *IEEE Trans. on Geoscience and Remote Sensing*, vol. 59, no. 8, pp. 6823-6839, Aug. 2021,
18. Kim, Boah, Dong Hwan Kim, Seong Ho Park, Jieun Kim, June-Goo Lee, and Jong Chul Ye. "CycleMorph: Cycle consistent unsupervised deformable image registration." *Medical Image Analysis*, vol 71, July 2021, 102036
19. S. Khan, J. Huh and J. C. Ye, "Variational Formulation of Unsupervised Deep Learning for Ultrasound Image Artifact Removal," in *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol. 68, no. 6, pp. 2086-2100, June 2021
20. Ryu, D., Ryu, D., Baek, Y., Cho, H., Kim, G., Kim, Y.S., Lee, Y., Kim, Y., Ye, J.C., Min, H.S. and Park, Y., "DeepRegularizer: Rapid Resolution Enhancement of Tomographic Imaging using Deep Learning", *IEEE Transactions on Medical Imaging*, vol. 40, no. 5, pp. 1508-1518, May 2021.
21. J. Gu and J. C. Ye, "AdaIN-Based Tunable CycleGAN for Efficient Unsupervised Low-Dose CT Denoising," in *IEEE Transactions on Computational Imaging*, vol. 7, pp. 73-85, 2021, doi: 10.1109/TCI.2021.3050266.
22. Yoseob Han, Jaeduck Jang, Eunju Cha, Junho Lee, Hyungjin Chung, MyoungHo Jeong, Tae-Gon Kim, Byeong Gyu Chae, Hee Goo Kim, Shinae Jun, Sungwoo Hwang, Eunha Lee and Jong Chul Ye, "Deep learning STEM-EDX tomography of nanocrystals", *Nature Machine Intelligence*, 1-8, Feb., 2021
23. Eunju Cha, Hyungjin Chung, Eung Yeop Kim, and Jong Chul Ye, "Unpaired Training of Deep Learning tMRA for Flexible Spatio-Temporal Resolution", *IEEE Trans. on Medical Imaging*, Vol. 40, no. 1, pp. 166-179, Jan. 2021
24. Wang, Ge, Jong Chul Ye, and Bruno De Man. "Deep learning for tomographic image reconstruction." *Nature Machine Intelligence* 2, 737-748, Dec., 2020
25. Sim, B., Oh, G., Kim, J., Jung, C., & Ye, J. C. Optimal Transport Driven CycleGAN for Unsupervised Learning in Inverse Problems. *SIAM Journal on Imaging Sciences*, 13(4), 2281-2306, Dec., 2020
26. Y. Han, J. Kim and J. C. Ye, "Differentiated Backprojection Domain Deep Learning for Conebeam Artifact Removal," in *IEEE Transactions on Medical Imaging*, vol. 39, no. 11, pp. 3571-3582, Nov. 2020, doi: 10.1109/TMI.2020.3000341.

27. E. Cha, G. Oh and J. C. Ye, "Geometric Approaches to Increase the Expressivity of Deep Neural Networks for MR Reconstruction," in *IEEE Journal of Selected Topics in Signal Processing*, vol. 14, no. 6, pp. 1292-1305, Oct. 2020, doi: 10.1109/JSTSP.2020.2982777.
28. Oh, Gyutaek, Byeongsu Sim, HyungJin Chung, Leonard Sunwoo, and Jong Chul Ye. "Unpaired Deep Learning for Accelerated MRI using Optimal Transport Driven CycleGAN." *IEEE Transactions on Computational Imaging*, vol. 6, pp. 1285-1296, August, 2020
29. Eun Young Chae, Hak Hee Kim\*, Sohail Sabir, Yejin Kim, Hyeongseok Kim, Sungho Yoon, Jong Chul Ye, Seungryong Cho, Duchang Heo, Kee Hyun Kim, Young Min Bae, Young-Wook Choi, "Development of digital breast tomosynthesis and diffuse optical tomography fusion imaging for breast cancer detection", *Scientific Reports*, 13127, Aug., 2020.
30. Kyu Sung Choi, Sung-Hye You, Yoseob Han, Jong Chul Ye, Bumseok Jeong, Seung Hong Choi, "Improving the reliability of pharmacokinetic parameters in dynamic contrast-enhanced MRI in astrocytomas: Deep learning approach", *Radiology*, <https://doi.org/10.1148/radiol.2020192763>, Aug., 2020.
31. Y. Oh, S. Park and J. C. Ye, "Deep Learning COVID-19 Features on CXR Using Limited Training Data Sets," in *IEEE Transactions on Medical Imaging*, vol. 39, no. 8, pp. 2688-2700, Aug. 2020, doi: 10.1109/TMI.2020.2993291.
32. Sungjun Lim, Hyoungjun Park, Sang-Eun Lee, Sunghoe Chang, Byeongsu Sim, and Jong Chul Ye, "CycleGAN With a Blur Kernel for Deconvolution Microscopy: Optimal Transport Geometry", *IEEE Trans. on Computational Imaging*, 6, 1127-1138, July, 2020.
33. Byung-Hoon Kim, Jong Chul Ye, "Understanding Graph Isomorphism Network for rs-fMRI Functional Connectivity Analysis", *Frontiers in Neuroscience*, DOI:10.3389/fnins.2020.00630, June, 2020.
34. Mi-Sun Kang, Eunju Cha, Eunhee Kang, Jong Chul Ye, Nam-Gu Her, Jeong-Woo Oh, Do-Hyun Nam, Myoung-Hee Kim, and Sejung Yang, Accuracy improvement of quantification information using super-resolution with convolutional neural network for microscopy images. *Biomedical Signal Processing and Control*, 58, p.101846, April, 2020
35. Shujaat Khan, Jaeyoung Huh, and Jong Chul Ye, "Adaptive and Compressive Beamforming using Deep Learning for Medical Ultrasound", *IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control*, vol 67, No. 8, pp.1558 - 1572, March, 2020.
36. Yoon Joo Shin, Won Chang, Jong Chul Ye, Eunhee Kang, Dong Yul Oh, Yoon Jin Lee, Ji Hoon Park, and Young Hoon Kim, "Low-Dose Abdominal CT Computed Tomography Using a Deep Learning-Based Denoising Algorithm: A Compared Comparison with CT Computed Tomography Reconstructed with Filtered Back Projection or Iterative Reconstruction Algorithm", *Korean Journal of Radiology (impact factor 3.73)*, 21(e15), March, 2020.
37. Won, Joon Do, Sunghun Seo, Yoseob Han, Jong Chul Ye, Seung Hong Choi, and Sung, Hong Park, "Reconstruction of Multi-contrast MR Images through Deep Learning," *Medical Physics*, 47 (3), 983-997, March, 2020.
38. Hyun-Seo Ahn, Sung-Hong Park, and Jong Chul Ye, "Quantitative Susceptibility Map Reconstruction Using Annihilating Filter-based Low-Rank Hankel Matrix Approach", *Magnetic Resonance in Medicine*, 83(3), 858-871, March, 2020
39. Yoseob Han, Leonard Sunwoo, and Jong Chul Ye, "k-Space Deep Learning for Accelerated MRI", *IEEE Trans. on Medical Imaging*, 39(2), 377-386, Feb. 2020
40. Donwook Lee, Won-Jin Moon, and Jong Chul Ye, "Assessing the importance of magnetic resonance contrasts using collaborative generative adversarial networks", *Nature Machine Intelligence*, 2, 34-42, January, 2020

41. Mathews Jacob, Merry P. Mani, and Jong Chul Ye, "Structured Low-Rank Algorithms: Theory, MR Applications, and Links to Machine Learning", *IEEE Signal Processing Magazine*, 37(1), 54-68, January, 2020.
42. B. Kim and J. C. Ye, "Mumford-Shah Loss Functional for Image Segmentation With Deep Learning," in *IEEE Transactions on Image Processing*, vol. 29, pp. 1856-1866, 2020, doi: 10.1109/TIP.2019.2941265.
43. S. Ravishankar, J. C. Ye and J. A. Fessler, "Image Reconstruction: From Sparsity to Data-Adaptive Methods and Machine Learning," in *Proceedings of the IEEE*, vol. 108, no. 1, pp. 86-109, Jan. 2020, doi: 10.1109/JPROC.2019.2936204.
44. Juyoung Lee, Yoseob Han, Jae-Kyun Ryu, Jang-Yeon Park and Jong Chul Ye, "k-Space Deep Learning for Reference-free EPI Ghost Correction", *Magnetic Resonance in Medicine*, 82(6), 2299-2313, December, 2019
45. Yoseob Han and Jong Chul Ye, "One Network to Solve All ROIs: Deep Learning CT for Any ROI using Differentiated Backprojection", *Medical Physics*, 46(12), 855-872, December, 2019
46. Jong Chul Ye, "Compressed Sensing MRI: A Review from Signal Processing Perspective", *BMC Biomedical Engineering* (invited review for the inaugural issue), 1(1), p.8, December, 2019.
47. Jaejun Yoo, Sohail Sabir, Duchang Heo, Kee Hyun Kim, Abdul Wahab, Yoonseok Choi, Seul-I Lee, Eun Young Chae, Hak Hee Kim, Young Min Bae, Young-Wook Choi, Seungryong Cho, and Jong Chul Ye, "Deep Learning for Diffuse Optical Tomography", *IEEE Trans., on Medical Imaging*, 39 (4), 877-887, August, 2019
48. Eunhee Kang, Hyun Jung Koo, Dong Hyun Yang, Joon Bum Seo and Jong Chul Ye, "Cycle Consistent Adversarial Denoising Network for Multiphase Coronary CT Angiography", *Medical physics* 46, no. 2, pp. 550-562. Feb., 2019
49. Y. H. Yoon, S. Khan, J. Huh and J. C. Ye, "Efficient B-Mode Ultrasound Image Reconstruction From Sub-Sampled RF Data Using Deep Learning," in *IEEE Transactions on Medical Imaging*, vol. 38, no. 2, pp. 325-336, Feb. 2019, doi: 10.1109/TMI.2018.2864821.
50. Jaejun Yoo, Abdul Wahab, and Jong Chul Ye, "A Mathematical Framework for Deep Learning in Elastic Source Imaging", *SIAM Journal on Applied Mathematics* 78(5), 2791-2818, 2018
51. Junhong Min, Kyoung Hwan Jin, Michael Unser, and Jong Chul Ye, "Grid-Free Localization Algorithm Using Low Rank Hankel Matrix For Super-Resolution Microscopy", *IEEE Trans. on Image Processing*, Volume: 27, Issue: 10, 4771 - 4786, Oct. 2018.
52. K. Lee, Y. Li, K. H. Jin and J. C. Ye, "Unified Theory for Recovery of Sparse Signals in a General Transform Domain," in *IEEE Transactions on Information Theory*, vol. 64, no. 8, pp. 5457-5477, Aug. 2018, doi: 10.1109/TIT.2018.2846643.
53. Ge Wang, Jong Chul Ye, Klaus Mueller, Jeffrey A Fessler, "Image Reconstruction Is a New Frontier of Machine Learning", *IEEE Trans. on Medical Imaging*, Vol. 37 no. 6, pp. 1289 - 1296, June 2018.
54. Y. Han and J. C. Ye, "Framing U-Net via Deep Convolutional Framelets: Application to Sparse-View CT," in *IEEE Transactions on Medical Imaging*, vol. 37, no. 6, pp. 1418-1429, June 2018, doi: 10.1109/TMI.2018.2823768. (MatConvNet implementation)
55. E. Kang, W. Chang, J. Yoo and J. C. Ye, "Deep Convolutional Framelet Denosing for Low-Dose CT via Wavelet Residual Network," in *IEEE Transactions on Medical Imaging*, vol. 37, no. 6, pp. 1358-1369, June 2018, doi: 10.1109/TMI.2018.2823756.. (MatConvNet implementation)
56. D. Lee, J. Yoo, S. Tak and J. C. Ye, "Deep Residual Learning for Accelerated MRI Using Magnitude and Phase Networks," in *IEEE Transactions on Biomedical Engineering*, vol. 65, no. 9, pp. 1985-1995, Sept. 2018, doi: 10.1109/TBME.2018.2821699.
57. Jong Chul Ye, Yoseob Han and Eunju Cha, "Deep convolutional framelets: a general deep learning framework for inverse problems", *SIAM Journal on Imaging Sciences* 11(2), 991-1048, 2018.



58. Yoseob Han, Jaejun Yoo, Hak Hee Kim, Hee Jung Shin, Kyunghyun Sung, and Jong Chul Ye, "Deep Learning with Domain Adaptation for Accelerated Projection-Reconstruction MR", *Magnetic Resonance in Medicine*, Volume 80, Issue 3, September Pages 1189-1205, 2018.
59. Maryam Ghahremani, Jaejun Yoo, Sun Ju Chung, Kwangsun Yoo, Jong C. Ye\*, and Yong Jeong\*. Alteration in the local and global functional connectivity of resting state networks in Parkinson's disease. *J Mov Disord* ,11(1): 13-23, 2018.
60. K. H. Jin and J. C. Ye, "Sparse and Low-Rank Decomposition of a Hankel Structured Matrix for Impulse Noise Removal," in *IEEE Transactions on Image Processing*, vol. 27, no. 3, pp. 1448-1461, March 2018, doi: 10.1109/TIP.2017.2771471.
61. Tasawar Abbas, Shujaat Khan, Muhammad Sajid, Abdul Waha and Jong Chul Ye, "Topological sensitivity based far-field detection of elastic inclusions", *Results in Physics* vol 8, March 2018, Pages 442-460
62. Joowon Lim, Abdul Wahab, Gwangsik Park, Kyeoreh Lee, Yongkeun Park and Jong Chul Ye, "Beyond Born-Rytov limit for super-resolution optical diffraction tomography", *Optics Express*, Vol. 25 (24), pp. 30445-30458, 2017.
63. Eunhee Kang, Junhong Min and Jong Chul Ye, "A Deep Convolutional Neural Network using Directional Wavelets for Low-dose X-ray CT Reconstruction", *Medical Physics* 44, no. 10 (2017): e360-e375. October, 2017.
64. Kyong Hwan Jin, Ji-Yong Um, Dongwook Lee, Juyoung Lee, Sung-Hong Park and Jong Chul Ye, "MRI artifact correction using sparse + low-rank decomposition of annihilating filter-based Hankel matrix", *Magnetic Resonance in Medicine* 78, no. 1 (2017): 327-340.
65. Jawook Gu, Woong Bae, and Jong Chul Ye, "Translational Motion Correction Algorithm for Truncated Cone-Beam CT using Opposite Projections", *Journal of X-ray Science and Technology* 2017 Jun 3. doi: 10.3233/XST-16231
66. Jaejun Yoo, Younghoon Jung, Mikyoung Lim, Jong Chul Ye, and Abdul Wahab, "A Joint Sparse Recovery Framework for Accurate Reconstruction of Inclusions in Elastic Media", *SIAM Journal on Imaging Sciences*, 10 (3), 1104-1138, 2017
67. Tasawar Abbas and Habib Ammari and Guanghui Hu and Abdul Wahab and Jong Chul Ye, "Two-Dimensional Elastic Scattering Coefficients and Enhancement of Nearly Elastic Cloaking", *Journal of Elasticity*, January, 2017 (online:doi:10.1007/s10659-017-9624-7)
68. Jong Chul Ye, Jong Min Kim, Kyong Hwan Jin and Kiryung Lee, "Compressive sampling using annihilating filter-based low-rank interpolation", *IEEE Trans. on Information Theory*, vol. 63, no. 2, pp.777-801, Feb. 2017.
69. Sohail Sabir, Changhwan Kim, Sanghoon Cho, Duchang Heo, Kee Hyun Kim, Jong Chul Ye, Seungryong Cho, "Sampling scheme optimization for diffuse optical tomography based on data and image space rankings", *J. Biomed. Opt.*, 21.10 (2016): 106004-106004
70. Kyong Hwan Jin, Dongwook Lee, and Jong Chul Ye. "A general framework for compressed sensing and parallel MRI using annihilating filter based low-rank hankel matrix," *IEEE Trans. on Computational Imaging*, vol 2, no. 4, pp. 480 - 495, Dec. 2016.
71. Jaejun Yoo, Eun Young Kim, Yong Min Ahn, Jong Chul Ye," Topological Persistence Vineyard Approach for Dynamic Functional Brain Connectivity during Resting and Gaming Stages", *Journal of Neuroscience Methods*, vol. 267, pp. 1-12, 2016.
72. Paul Kyu Han, Jong Chul Ye, Eung Yeop Kim, Seung Hong Choi, and Sung-Hong Park, "Whole Brain Perfusion Imaging with Balanced Steady-State Free Precession Arterial Spin Labeling", *NMR in Biomedicine*, 2016 Mar 1;29(3):264-74.
73. Juyoung Lee, Kyong Hwan Jin, and Jong Chul Ye, "Reference-free single-pass EPI Nyquist ghost correction using annihilating filter-based low rank Hankel matrix (ALOHA)", *Magnetic Resonance in Medicine*, Dec 1;76(6):1775-89.



74. Dongwook Lee, Kyong Hwan Jin, Eung Yeop Kim, Sung-Hong Park and Jong Chul Ye, "Acceleration of MR parameter mapping using annihilating filter-based low rank Hankel matrix (ALOHA)", *Magnetic Resonance in Medicine*, 2016 Dec 1;76(6):1848-64.
75. Young-Beom Lee, Jeonghyeon Lee, Sungho Tak, Kangjoo Lee, Duk L. Na, Sangwon Seo, Yong Jeong, and Jong Chul Ye, "Sparse SPM: Group sparse-dictionary learning in SPM framework for resting-state functional connectivity MRI analysis", *NeuroImage*, vol 125, 15 January 2016, Pages 1032-1045
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## Top Machine Learning Conference Papers

1. Gwanghyun Kim, and Jong Chul Ye. "DiffusionCLIP: Text-guided image manipulation using diffusion models," IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
2. Chanyong Jung, Gihyun Kwon, Jong Chul Ye, "Exploring Patch-wise Semantic Relation for Contrastive Learning in Image-to-Image Translation Tasks", IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
3. Gihyun Kwon, and Jong Chul Ye. "CLIPstyler: Image style transfer with a single text condition," IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.

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5. Hyungjin Chung, Byeongsu Sim, and Jong Chul Ye. "Come-Closer-Diffuse-Faster: Accelerating Conditional Diffusion Models for Inverse Problems through Stochastic Contraction", IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.
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8. Byung-Hoon Kim, Jong Chul Ye, Jae-Jin Kim, "Learning Dynamic Graph Representation of Brain Connectome with Spatio-Temporal Attention", in Proceedings of the Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS), Virtual, December 2021.
9. Kwon Gihyun, Jong Chul Ye, "[Diagonal Attention and Style-based GAN for Content-Style Disentanglement in Image Generation and Translation](#)", *IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021
10. Lee, Dongwook, Junyoung Kim, Won-Jin Moon, and Jong Chul Ye. "CollaGAN: Collaborative GAN for Missing Image Data Imputation." *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 2019. **(Oral Presentation, Best Paper Finalist)**
11. Ye, Jong Chul, and Woon Kyoung Sung. "Understanding Geometry of Encoder-Decoder CNNs." *International Conference on Machine Learning (ICML)*, 2019.
12. Boah Kim, Jieun Kim, June-Goo Lee, Dong Hwan Kim, Seong Ho Park, Jong Chul Ye, "Unsupervised Deformable Image Registration Using Cycle-Consistent CNN", *the 22nd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, 2019.
13. Shujaat Khan, Jaeyoung Huh, Jong Chul Ye, "Deep Learning-based Universal Beamformer for Ultrasound Imaging", *the 22nd International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)*, **(Oral Presentation)**, 2019.

#### Peer Reviewed Conferences Papers (ICASSP, ICIP, ISBI, ISMRM, etc.)

- Around 200 publications in IEEE conferences, SPIE, IS&T, etc.