

**EDUCATION****Purdue University**

West Lafayette, IN, USA

Ph.D. in Electrical and Computer Engineering

8/2009–8/2015

- Thesis title: Advances in medical imaging and image reconstruction
- Thesis advisors: Prof. Thomas M. Talavage and Prof. Ben Adcock

**Korea University**

Seoul, South Korea

B.Eng. in electrical engineering

3/2002–2/2009

**University of Hong Kong**

Hong Kong, China

Exchange Student in Electrical and Electronic Engineering

8/2007–5/2008

**ACADEMIC  
EXPERIENCE****Sungkyunkwan University (SKKU)**

Suwon, South Korea

Associate Professor in the following departments:

9/2024–

Electronic and Electrical Engn. (EEE; home department), Artificial Intelligence (AI), Electrical &amp; Computer Engn. (ECE), Advanced Display Engn. (ADE), Semiconductor Convergence Engn. (SCE), Display Convergence Engn. (DCE), and Center for Neuroscience Imaging Research (CNIR)

Assistant Professor of EEE, AI, ECE, SCE, DCE, and CNIR

2/2022–8/2024

Electronic and Electrical Engn. (EEE; home department), Artificial Intelligence (AI), Electrical &amp; Computer Engn. (ECE), Semiconductor Convergence Engn. (SCE), Display Convergence Engn. (DCE), and Center for Neuroscience Imaging Research (CNIR)

- Research: AI, machine learning, optimization, computational imaging & vision
- Teaching: AI, machine learning, data science

**University of Hawai'i at Mānoa**

Honolulu, HI, USA

Assistant Professor in Electrical and Computer Engineering (tenure-track)

8/2019–12/2021

- Research: AI, machine learning, optimization, imaging, image processing, computer vision
- Teaching: Introduction to Image Processing & Computer Vision (EE416), Computational Image Processing & Computer Vision (EE616)

**University of Michigan**

Ann Arbor, MI, USA

Research Fellow in Electrical Engineering and Computer Science

5/2016–7/2019

Visiting Scholar in Electrical Engineering and Computer Science  
(supervisor: Prof. Jeffrey Fessler)

8/2019–7/2020

- Iterative neural networks: Theory and appl. to extreme imaging
- Block optimization: Theory and appl. to learning convolutional regularizers
- Tensor decomposition and appl. to light-field photography

**Purdue University**

West Lafayette, IN, USA

Postdoctoral Research Associate in Mathematics

8/2015–5/2016

(supervisor: Prof. Ben Adcock)

- Compressed sensing and parallel acquisition: Theory

**Neuroscience Research Institute**

Incheon, South Korea

Lecturer (supervisor: Prof. Zang-Hee Cho)

5/2013–6/2013

- Teaching: Intro. to optimization
- Research: High-resolution PET image reconstruction

**Purdue University**

West Lafayette, IN, USA

Research Assistant (advisor: Prof. Thomas M. Talavage)

8/2010–8/2015

Teaching Assistant (advisor: Prof. Michael D. Zoltowski)

1/2011–5/2011

- Signals and systems (ECE301)

**NON-  
ACADEMIC  
EXPERIENCE****Samsung Advanced Institute of Technology**

Yongin, South Korea

Graduate Intern (supervisor: Dr. Jung-Bae Kim)

6/2013–7/2013

- Multi-modal (ultrasonography & MRI) image registration

**Intel Labs**

Hillsboro, OR, USA

Graduate Intern (supervisor: Dr. Willem M. Beltman)

5/2011–7/2011

- Blind source separation of convolutive speech mixtures in mobile environment

## RESEARCH GRANTS & CONTRACTS

Role: Principal Investigator at SKKU Grant amount: ₩60,000k  
 “AI-based multi-modal and multi-task medical image analysis: Calculating volume and size, investigating metastatic potential, and predicting prognosis of tumors in cancer patients”  
 SKKU–Kangbuk Samsung Medical Center (KBSMC) Future Clinical Convergence Research Program, SKKU 5/1/2023–4/30/2024

Role: Principal Investigator Grant amount: ₩445,728k  
 “Fast iterative artificial intelligence: Theory and applications to computational imaging”  
 Outstanding Young Researcher Program of the National Research Foundation of Korea (NRF), Ministry of Education 3/1/2023–2/28/2026

Role: Principal Investigator at SKKU Grant amount: ₩50,000k  
 “Improving image denoising and lung anomalies detection using parallel multi-tasking neural networks in low-dose CT”  
 SKKU–Samsung Medical Center (SMC) Future Convergence Research Program, SKKU 10/1/2022–9/30/2023

Role: Principal Investigator Grant amount: ₩58,106k  
 “Self-supervised learning of iterative AI systems for high-quality low-dose computational tomography”  
 Basic Science Research Program of the National Research Foundation of Korea (NRF), Ministry of Education 6/1/2022–5/31/2023

Role: Principal Investigator Grant amount: \$49,910  
 “Enabling high-quality low-dose X-ray CT for lung cancer screening with self-supervised iterative AI systems”  
 Ingeborg v.F. McKee Fund of the Hawai’i Community Foundation 12/2/2020–6/1/2022

## PUBLICATION

Authorship and contributorship: The asterisks (\*) indicate equal contributions. I am the corresponding author of all my first-authored papers; except for some special cases, I let my students/mentees hold the corresponding authorship as the first author. For non-first-authored papers, daggers (†) indicate my (co-)corresponding authorship. The last author position is reserved for the individual who may have given significant intellectual inputs and/or supervised the overall work.

### Preprints

Xiyu Zhang, Haowei Xiang, **Il Yong Chun**, Mert Pilanci, and Jeffrey A. Fessler, “Accelerated convolutional operator learning,” preprint, Jun. 2019.

### Submitted Papers

U Jin Jeong, Sumin Roh(\*), and **Il Yong Chun**(\*), “LaB-CL: Localized and Balanced Contrastive Learning for improving parking slot detection,” submitted to *IEEE Intl. Conf. Robotics and Automation (ICRA)*, Sep. 2024.

Yun Su Jeong(\*), Jinkyu Lee(\*), and **Il Yong Chun**, “DX2CT: Diffusion model for 3D CT reconstruction from bi or mono-planar 2D X-ray(s),” submitted to *IEEE Intl. Conf. on Acoust., Speech, and Signal Process. (ICASSP)*, Sep. 2024. arXiv:2409.08850.

Hyung Sup Yun and **Il Yong Chun**, “Improving light field reconstruction from limited focal stack using diffusion models,” to appear in *Proc. IEEE Intl. Workshop on Machine Learning and for Signal Processing (MLSP)*, London, UK, Sep. 2024.

Jin Bok Park(\*), Jinkyu Lee(\*), Muhyun Back, Hyunmin Han, David T. Ma, Sang Min Won(†), Sung Soo Hwang(†), **Il Yong Chun**(†), “End-to-end driving via self-supervised imitation learning using camera and LiDAR data,” submitted to *Adv. Intell. Syst.*, Aug. 2023. arXiv: 2308.14329.

**Il Yong Chun**(\*,†), Dongwon Park(\*), Xuehang Zheng(\*), Se Young Chun(†), and Yong Long(†), “Self-supervised regression learning using domain knowledge: Applications to improving self-supervised denoising in imaging,” submitted to *IEEE Trans. Image Process.*, May 2022. arXiv:2205.04821.

Md Yousuf Harun, Thomas T. F. Huang, Joshua Mellinger, Willy Chang, Adrianna Saymo, Brienne Walker, Kristen Hori, M Arifur Rahman, **Il Yong Chun**<sup>(†)</sup>, and Aaron T. Ohta<sup>(†)</sup>, “Improved UNet architecture for human embryo image segmentation,” submitted to *IEEE Trans. Med. Imag.*, Aug. 2020. preprint.

Xuehang Zheng<sup>(\*)</sup>, **Il Yong Chun**<sup>(\*)</sup>, Zhipeng Li, Yong Long, and Jeffrey A. Fessler, “Sparse-view X-ray CT reconstruction using  $\ell_1$  prior with learned transform,” submitted to *IEEE Trans. Comput. Imag.*, Feb. 2019. arXiv:1711.00905.

### **Journal Papers**

Hye Bin Yoo<sup>(\*)</sup>, Hyun Min Han<sup>(\*)</sup>, Sung Soo Hwang<sup>(†)</sup>, **Il Yong Chun**<sup>(†)</sup>, “Improving neural radiance fields using near-surface sampling with point cloud generation,” *Neural Process. Lett.*, 56:214:1–22, Jul. 2024. doi: 10.1007/s11063-024-11654-5.

Hyekyoung Hwang, **Il Yong Chun**<sup>(†)</sup>, and Jitae Shin<sup>(†)</sup>, “Improved test input prioritization using verification monitors with false prediction cluster centroids,” *Electronics Special Issue: Image/Video Processing and Encoding for Contemporary Applications*, 13(1):21:1–12, Dec. 2023. doi: 10.3390/electronics13010021

**Il Yong Chun**, Zhengyu Huang<sup>(\*)</sup>, Hongki Lim<sup>(\*)</sup>, and Jeffrey A. Fessler, “Momentum-Net: Fast and convergent iterative neural network for inverse problems,” *IEEE Trans. Pattern Anal. Mach. Intell.*, 45(5):4915–4931, Apr. 2023. doi: 10.1109/TPAMI.2020.3012955.

Zhipeng Li, Yong Long<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “An improved iterative neural network for high-quality image-domain material decomposition in dual-energy CT,” *Med. Phys.*, 50(4): 2195–2211, Apr. 2023. doi: 10.1002/mp.15817.

Jinkyu Lee, Muhyun Back, Sung Soo Hwang<sup>(†)</sup>, **Il Yong Chun**<sup>(†)</sup>, “Improved real-time monocular SLAM using semantic segmentation on selective frames,” *IEEE Trans. Intell. Transp. Syst.*, 24(3):2800–2813, Mar. 2023. doi: 10.1109/TITS.2022.3228525

Dehui Zhang<sup>(\*)</sup>, Zhen Xu<sup>(\*)</sup>, Zhengyu Huang<sup>(\*)</sup>, Audrey Rose Gutierrez, Cameron J. Blocker, Che-Hung Liu, Miao-Bin Lien, Gong Cheng, Zhe Liu, **Il Yong Chun**<sup>(†)</sup>, Jeffrey A. Fessler<sup>(†)</sup>, Zhaohui Zhong<sup>(†)</sup>, Theodore B. Norris<sup>(†)</sup>, “Neural network based 3D tracking with a graphene transparent focal stack imaging system,” *Nat. Commun.*, 12:2413:1–7, Apr. 2021. doi: 10.1038/s41467-021-22696-x.

Hongki Lim, **Il Yong Chun**, Yuni K. Dewaraja, and Jeffrey A. Fessler, “Improved low-count quantitative PET reconstruction with an iterative neural network,” *IEEE Trans. Med. Imag.*, 39(11):3512–3522, Nov. 2020. doi: 10.1109/TMI.2020.2998480.

Miao-Bin Lien, Che-Hung Liu, **Il Yong Chun**, Saiprasad Ravishankar, Hung Nien, Minmin Zhou, Jeffrey A. Fessler, Theodore B. Norris, and Zhaohui Zhong, “Ranging and light field imaging with transparent photodetectors,” *Nat. Photonics*, 14(3):143–148, Mar. 2020. doi: 10.1038/s41566-019-0567-3.

**Il Yong Chun** and Jeffrey A. Fessler, “Convolutional analysis operator learning: Acceleration and convergence,” *IEEE Trans. Image Process.*, 29:2108–2122, 2020. doi: 10.1109/TIP.2019.2937734.

**Il Yong Chun** and Ben Adcock, “Uniform recovery from subgaussian multi-sensor measurements,” *Appl. Comput. Harmon. Anal.*, 48(2):731–765, Mar. 2020. doi: 10.1016/j.acha.2018.09.003.

**Il Yong Chun**<sup>(\*)</sup>, David Hong<sup>(\*)</sup>, Ben Adcock, and Jeffrey A. Fessler, “Convolutional analysis operator learning: Dependence on training data,” *IEEE Signal Process. Lett.*, 26(8):1137–1141, Aug. 2019. doi: 10.1109/LSP.2019.2921446.

Ikbeom Jang, **Il Yong Chun**, Bari Sumra, Evan L. Breedlove, Brian R. Cummiskey, Taylor A. Lee, Roy J. Lycke, Victoria N. Poole, Trey E. Shenk, Diana O. Svaldi, Gregory G. Tamer, Jr., Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “Every hit matters: White matter integrity changes in high school football athletes are correlated with repetitive head acceleration event exposure,” *Neuroimage: Clinical*, 24:101930, Jul. 2019. doi: 10.1016/j.nicl.2019.101930.

**Il Yong Chun** and Jeffrey A. Fessler, “Convolutional dictionary learning: Acceleration and convergence,” *IEEE Trans. Image Process.*, 27(4):1697–1712, Apr. 2018. doi: 10.1109/TIP.2017.2761545.

**Il Yong Chun** and Ben Adcock, “Compressed sensing and parallel acquisition,” *IEEE Trans. Inf. Theory*, 63(8):4860–4882, May 2017. doi: 10.1109/TIT.2017.2700440.

**Il Yong Chun**, Song Noh, David J. Love, Thomas M. Talavage, Stephen Beckley, and Sherman J. Kisner, “Mean squared error (MSE)-based excitation pattern design for parallel transmit and receive SENSE MRI image reconstruction,” *IEEE Trans. Comput. Imag.*, 2(4):424–439, Dec. 2016. doi: 10.1109/TCI.2016.2610141.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, “Efficient compressed sensing SENSE pMRI reconstruction with joint sparsity promotion,” *IEEE Trans. Med. Imag.*, 5(1):354–368, Jan. 2016. doi: 10.1109/TMI.2015.2474383.

**Il Yong Chun**, Xianglun Mao, Eric L. Breedlove, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “DTI detection of longitudinal WM abnormalities due to accumulated head impacts,” *Dev. Neuropsychol.*, 40(2):92–97, May 2015. doi: 10.1080/87565641.2015.1020945.

### Selected-Conference Papers

**Il Yong Chun**<sup>(\*)</sup>, Xuehang Zheng<sup>(\*)</sup>, Yong Long, and Jeffrey A. Fessler, “BCD-Net for low-dose CT reconstruction: Acceleration, convergence, and generalization,” in *Proc. Med. Image Compt. and Computer Assist. Interven. (MICCAI)*, pp. 31–40, Shenzhen, China, Oct. 2019. doi: 10.1007/978-3-030-32226-7\_4.

### Conference Papers & Abstracts

Hyung Sup Yun and **Il Yong Chun**, “Improving light field reconstruction from limited focal stack using diffusion models,” to appear in *Proc. IEEE Intl. Workshop on Machine Learning and for Signal Processing (MLSP)*, London, UK, Sep. 2024.

Minseo Lee<sup>(\*)</sup>, Nari Hong<sup>(\*)</sup>, Byungjun Lee<sup>(\*)</sup>, Joo Hun Yoo, Yongho Lee, Hong Jin Jeon, Sumin Roh<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “Supervised contrastive learning for improving mental illness detection using smartwatch ECG,” in *Proc. Conf. of Korean Artificial Intelligence Association (JKAIA, Fall)*, Nov. 2023.

Minhyung Lee, Jitae Shin<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “CDPW-S3R3: Self-supervised super-resolution imaging using conditional diffusion model,” in *Proc. Conf. of Korean Artificial Intelligence Association (JKAIA, Fall)*, Nov. 2023.

Minhyung Lee and **Il Yong Chun**<sup>(†)</sup>, “Self-supervised super-resolution imaging using denoising diffusion probabilistic model,” in *Proc. Joint Conf. of Korean Artificial Intelligence Association and NAVER (JKAIA, Fall)*, Nov. 2022.

Hyun Min Han, **Il Yong Chun**<sup>(†)</sup>, and Sung Soo Hwang<sup>(†)</sup>, “Improvement of NeRF (Neural Radiance Field) using depth information,” in *Proc. Inst. Elect. & Info. Eng. (IEIE) Conf. (Fall)*, 44(2):329–332, Nov. 2021.

Muhyun Back, Jinkyu Lee, Kyuho Bae, Sung Soo Hwang<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “Improved and efficient inter-vehicle distance estimation using road gradients of ego and target vehicles,” in *Proc. IEEE Intl. Conf. Auton. Syst. (ICAS)*, pp. 324–328, Virtual Conf., Aug. 2021. doi: 10.1109/ICAS49788.2021.9551167.

Siqi Ye, Yong Long<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “Momentum-Net for low-dose CT image reconstruction,” in *Proc. Asilomar Conf. on Signals, Syst., and Comput.*, pp. 1–4, Pacific Grove, CA, Nov. 2020. doi: 10.1109/IEEECONF51394.2020.9443547.

Zhengyu Huang, Jeffrey A. Fessler, Theodore B. Norris, **Il Yong Chun**, “Light-field reconstruction and depth estimation from focal stack images using convolutional neural networks,” in *Proc. IEEE Intl. Conf. on Acoust., Speech, and Signal Process. (ICASSP)*, pp. 8648–8652, Barcelona, Spain, May 2020. doi: 10.1109/ICASSP40776.2020.9053586. **(Invited paper)**

Zhipeng Li, **Il Yong Chun**<sup>(†)</sup>, and Yong Long<sup>(†)</sup>, “Image-domain material decomposition using an iterative neural network for dual-energy CT,” in *Proc. IEEE Intl. Symp. Biomed. Imag. (ISBI)*, pp. 651–655, Iowa City, IA, Apr. 2020. doi: 10.1109/ISBI45749.2020.9098590.

Caroline Crockett, David Hong, **Il Yong Chun**, and Jeffrey A. Fessler, “Incorporating handcrafted

filters in convolutional analysis operator learning for ill-posed inverse problems,” in *Proc. IEEE Intl. Workshop on Compt. Adv. in Multi-Sensor Adaptive Process. (CAMSAP)*, pp. 316–320, Guadeloupe, West Indies, Dec. 2019. doi: 10.1109/CAMSAP45676.2019.9022669. **(Invited paper)**

Hongki Lim, **Il Yong Chun**, Jeffrey A. Fessler, and Yuni K. Dewaraja, “Improved low count quantitative SPECT reconstruction with a trained deep learning based regularizer,” *J. Nuc. Med. (Abs. Book)*, 60(s1):42, May 2019. [Online] Available: [http://jnm.snmjournals.org/content/60/supplement\\_1/42.short](http://jnm.snmjournals.org/content/60/supplement_1/42.short).

Dehui Zhang, Zhen Xu, Zhengyu Huang, Audrey Rose Gutierrez, **Il Yong Chun**, Cameron J. Blocker, Gong Cheng, Zhe Liu, Jeffrey A. Fessler, Zhaohui Zhong, and Theodore B. Norris, “Graphene-based transparent photodetector array for multiplane imaging,” in *Proc. Conf. on Lasers and Electro-Optics (CLEO)*, p. SM4J.2, San Jose, CA, May 2019. doi: 10.1364/CLEO\_SI.2019.SM4J.2.

**Il Yong Chun**, Hongki Lim<sup>(\*)</sup>, Zhengyu Huang<sup>(\*)</sup>, and Jeffrey A. Fessler, “Fast and convergent iterative signal recovery using trained convolutional neural networks,” in *Proc. Annual Allerton Conf. on Commun., Control, and Comput.*, pp. 155–159, Monticello, IL, Oct. 2018. doi: 10.1109/ALLERTON.2018.8635932. **(Invited paper)**

**Il Yong Chun** and Jeffrey A. Fessler, “Convolutional analysis operator learning: Application to sparse-view CT,” in *Proc. Asilomar Conf. on Signals, Syst., and Comput.*, pp. 1631–1635, Pacific Grove, CA, Oct. 2018. doi: 10.1109/ACSSC.2018.8645500. **(Invited paper)**

Hongki Lim, Jeffrey A. Fessler, Yuni K. Dewaraja, and **Il Yong Chun**<sup>(†)</sup>, “Application of trained deep BCD-Net to iterative low-count PET image reconstruction,” in *Proc. IEEE Nuclear Science Symp. and Med. Imag. Conf. (NSS-MIC)*, pp. 1–4, Sydney, Australia, Nov., 2018. doi: 10.1109/NSS-MIC.2018.8824563.

**Il Yong Chun** and Jeffrey A. Fessler, “Deep BCD-Net using identical encoding-decoding CNN structures for iterative image recovery,” in *Proc. IEEE Image, Video, and Multidim. Signal Process. (IVMSP) Workshop*, pp. 1–5, Zagori, Greece, Apr. 2018. doi: 10.1109/IVMSPW.2018.8448694.

Cameron J. Blocker<sup>(\*)</sup>, **Il Yong Chun**<sup>(\*)</sup>, and Jeffrey A. Fessler, “Low-rank plus sparse tensor models for light-field reconstruction from focal stack data,” in *Proc. IEEE Image, Video, and Multidim. Signal Process. (IVMSP) Workshop*, pp. 1–5, Zagori, Greece, Apr. 2018. doi: 10.1109/IVMSPW.2018.8448509.

Saiprasad Ravishankar, **Il Yong Chun**, and Jeffrey A. Fessler, “Physics-driven deep training of dictionary-based algorithms for MR image reconstruction,” in *Proc. Asilomar Conf. on Signals, Syst., and Comput.*, pp. 1859–1863, Pacific Grove, CA, Nov. 2017. doi: 10.1109/ACSSC.2017.8335685. **(Invited paper)**

**Il Yong Chun** and Jeffrey A. Fessler, “Convergent Convolutional Dictionary Learning using Adaptive Contrast Enhancement (CDL-ACE): Application of CDL to image denoising,” in *Proc. Sampling Theory and Appl. (SampTA)*, pp. 460–464, Tallinn, Estonia, Jul. 2017. doi: 10.1109/SAMPTA.2017.8024378.

**Il Yong Chun**, Xuehang Zheng, Yong Long, and Jeffrey A. Fessler, “Sparse-view X-ray CT reconstruction using  $\ell_1$  regularization with learned sparsifying transform,” in *Proc. Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)*, pp. 115–119, Xi’an, China, Jun. 2017. [Online] Available: <http://onlinelibrary.fully3d.org/papers/2017/Fully3D.2017-11-3109002.pdf>.

Ikbeom Jang, **Il Yong Chun**, Sumra Bari, Yukai Zou, Eric A. Nauman, and Thomas M. Talavage, “DTI reveals persistent effects on white matter in football players with history of sports-related concussion,” *IN Neuroimaging Symp.*, Bloomington, IN, Nov. 2016.

**Il Yong Chun** and Ben Adcock, “Compressed sensing and parallel acquisition: Optimal uniform and nonuniform recovery guarantees,” *Shannon Centennial Symp.*, Ann Arbor, MI, Sep. 2016.

**Il Yong Chun**, Chen Li, and Ben Adcock, “Sparsity and parallel acquisition: Optimal uniform and nonuniform recovery guarantees,” in *Proc. IEEE Intl. Conf. on Multimedia and Expo Workshop (ICMEW)*, pp. 1–6, Seattle, WA, Jul. 2016. doi: 10.1109/ICMEW.2016.7574710.

**Il Yong Chun** and Ben Adcock, “Optimal sparse recovery for multi-sensor measurements,” in *Proc. IEEE Inf. Theory Workshop (ITW)*, pp. 270–274, Cambridge, UK, Sep. 2016. doi: 10.1109/IT

W.2016.7606838.

Sumra Bari, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “DTI detection of WM abnormalities using randomization test with complete and incomplete pairs,” in *Proc. Org. for Hum. Brain Mapp. (OHBM)*, Honolulu, HI, Jun. 2015.

Ikbeom Jang, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “DWI detection of WM abnormality and relation with collision events in high school athletes,” in *Proc. Org. for Hum. Brain Mapp. (OHBM)*, Honolulu, HI, Jun. 2015.

Ikbeom Jang, **Il Yong Chun**, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “Robust detection of axonal abnormalities in high school collision-sport athletes: Longitudinal single subject analysis,” in *Proc. Intl. Soc. Mag. Res. Med. (ISMRM)*, Toronto, ON, May 2015.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, “Efficient compressed sensing SENSE parallel MRI reconstruction with joint sparsity promotion and mutual incoherence enhancement,” in *Proc. IEEE Eng. Med. Biol. Conf. (EMBC)*, pp. 2424–2427, Chicago, IL, Aug. 2014. doi: 10.1109/EMBC.2014.6944111.

**Il Yong Chun**, Ben Adcock, and Thomas M. Talavage, “Non-convex compressed sensing CT reconstruction based on tensor discrete Fourier slice theorem,” in *Proc. IEEE Eng. Med. Biol. Conf. (EMBC)*, pp. 5141–5144, Chicago, IL, Aug. 2014. doi: 10.1109/EMBC.2014.6944782.

**Il Yong Chun**, Allan Diaz, Sijia Qiu, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “DTI detection of symptomatic and asymptomatic injury due to repetitive hit exposures,” in *IN Neuroimaging Symp.*, Bloomington, IN, Oct. 2013.

**Il Yong Chun** and Thomas M. Talavage, “Efficient compressed sensing statistical X-ray/CT reconstruction from fewer measurements,” in *Proc. Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)*, pp. 30–33, Lake Tahoe, CA, Jun. 2013. [Online] Available: <http://onlinelibrary.fully3d.org/papers/2017/Fully3D.2017-11-3109002.pdf>.

**Il Yong Chun**, Allan Diaz, Xiaodong Li, Yun Jang Jin, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “DTI detection of symptomatic and asymptomatic injury due to repetitive head blows,” in *Proc. Org. for Hum. Brain Mapp. (OHBM)*, Seattle, WA, Jun. 2013.

**Il Yong Chun** and Thomas M. Talavage, “Fast non-convex statistical compressed sensing MRI reconstruction based on approximated  $L_p(0 < p < 1)$ -quasi-norm with fewer measurements than using  $L_1$ -norm,” in *Proc. Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun** and Thomas M. Talavage, “Edge-preserving non-iterative MAP SENSE MRI reconstruction,” in *Proc. Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun** and Thomas M. Talavage, “Sparse Tikhonov-regularized SENSE MRI reconstruction,” in *Proc. Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

**Il Yong Chun**, Allan Diaz, Yun Jang Jin, Xiaodong Li, Larry J. Leverenz, Eric A. Nauman, and Thomas M. Talavage, “Robust detection of progressive white matter abnormalities in mTBI using DW-MRI,” in *Proc. Intl. Soc. Mag. Res. Med. (ISMRM)*, Salt Lake City, UT, Apr. 2013.

## TALKS

### Conference Presentations

“Iterative neural networks for inverse problems in medical imaging,”  
*IEEE Intl. Conf. on Nano/Molecular Med. & Eng. (NANOMED)* (**Invited talk**) 12/2020

“Momentum-Net for low-dose CT image reconstruction,”  
*Asilomar Conf. on Signals, Syst., and Comput.*, 11/2020.

“Light-field reconstruction and depth estimation from focal stack images using convolutional neural networks”

Lecture session on *Learning based inversion*

*IEEE Intl. Conf. on Acoust., Speech, and Signal Process. (ICASSP)* (**Invited lecture**) 5/2020

“Incorporating handcrafted filters in convolutional analysis operator learning for ill-posed inverse problems”

Special session on *Computational biomedical imaging*

- IEEE Intl. Workshop on Comput. Adv. in Multi-Sensor Adaptive Process. (CAMSAP)* **(Invited poster)** 12/2019
- “BCD-Net for low-dose CT reconstruction: Acceleration, convergence, and generalization,”  
*Med. Image Compt. and Computer Assist. Interven. (MICCAI)* **(Selected poster)** 10/2019
- “Application of trained Deep BCD-Net to iterative low-count PET image reconstruction”  
*IEEE Nuclear Science Symp. (NSS) and Med. Imag. Conf. (MIC)* 11/2018
- “Signal recovery using trained CNNs: Relation to compressed sensing and application to sparse-view CT”  
Special session on *Machine learning advances in medical imaging*  
*Asilomar Conf. on Signals, Syst., and Comput.* **(Invited talk)** 10/2018
- “Convergent iterative signal recovery using trained convolutional neural networks”  
Special session on *Computational imaging and inverse problems*  
*Annual Allerton Conf. on Commun., Control, and Comput.* **(Invited talk)** 10/2018
- “From convolutional analysis operator learning (CAOL) to convolutional neural network (CNN)”  
Minisymposium on *Recent advances in convolutional sparse representations*  
*SIAM Conf. on Imaging Science (IS)* **(Invited talk)** 6/2018
- “Deep BCD-Net using identical encoding-decoding CNN structures for iterative image recovery”  
*IEEE Image, Video, and Multidim. Signal Process. (IVMSP) Workshop* 6/2018
- “Low-rank plus sparse tensor models for light-field reconstruction from focal stack data”  
*IEEE Image, Video, and Multidim. Signal Process. (IVMSP) Workshop* 6/2018.
- “Physics-driven deep training of dictionary-based algorithms for image reconstruction”  
*Asilomar Conf. on Signals, Syst., and Comput.* **(Invited talk)** 11/2017
- “Convergent convolutional dictionary learning using adaptive contrast enhancement (CDL-ACE): Application of CDL to image denoising”  
*Intl. Conf. on Sampling Theory and Appl. (SampTA)* 7/2017
- “Efficient sparse-view X-ray CT reconstruction using  $\ell_1$  regularization with learned sparsifying transform”  
*Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)* 6/2017
- “DTI reveals persistent effects on white matter in football players with history of sports-related concussion”  
*IN Neuroimaging Symp.* 11/2016
- “Optimal sparse recovery for multi-sensor measurements”  
*IEEE Inf. Theory Workshop (ITW)* 8/2016
- “Sparsity and parallel acquisition: Optimal uniform and nonuniform recovery guarantees”  
*Workshop on Sparsity and Compressive Sensing in Multimedia (MM-SPARSE)*  
*IEEE Intl. Conf. on Multimedia and Expo (ICME)* 7/2016
- “Robust detection of axonal abnormalities in high school collision-sport athletes: longitudinal single subject analysis”  
*Intl. Soc. Mag. Res. Med. (ISMRM)* **(E-poster)** 5/2015
- “Non-convex compressed sensing CT reconstruction based on tensor discrete Fourier slice theorem”  
*IEEE Eng. Med. Biol. Conf. (EMBC)* 8/2014
- “Efficient compressed sensing statistical X-ray/CT reconstruction from fewer measurements”  
*Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)* 6/2013
- “Robust detection of progressive white matter abnormalities in mTBI using DW-MRI”  
*Intl. Soc. Mag. Res. Med. (ISMRM)* **(E-poster)** 4/2013

### **Seminar Presentations**

- “AI & ML for Breaking Imaging Limits and Beyond”  
*AI seminar, Handong Global University (CSEE)* 11/2021

“AI & ML for Breaking Imaging Limits and Beyond” <i>EEE seminar</i> , Sungkyunkwan University (ICE: EEE)	06/2021
“Iterative AI for breaking imaging limits” <i>ECE Colloquium Series (Eleanore Hale Wilson Lecture)</i> , the University of Minnesota (ECE)	03/2021
“Machine learning & AI for imaging and potential application to EM imaging” <i>Industry Advisory Board meeting</i> , NSF Industry Univ. Cooperative Research Center	11/2019
“ML & AI for breaking imaging limits” <i>ECE seminar</i> , Michigan State University (ECE)	3/2019
“ML & AI for breaking imaging limits” <i>EE seminar</i> , the University of Hawai‘i, Mānoa (EE)	3/2019
“Breaking imaging limits via ML & AI” <i>Seminar</i> , Shanghai Jiao Tong University (UM-SJTU JI)	9/2018
“Breaking imaging limits via ML & AI” <i>Special seminar</i> , Ulsan National Institute of Science and Technology (ECE)	9/2018
“Breaking imaging limits via ML & AI” <i>Seminar</i> , Yonsei University (CSE)	8/2018
“Breaking imaging limits” <i>Colloquium</i> , Ohio State University (ECE)	3/2018
“Breaking imaging limits” <i>Seminar</i> , Texas Tech University (ECE)	2/2018
“Convolutional dictionary learning using a fast block proximal gradient method” <i>Communications &amp; Signal Processing seminars</i> , the University of Michigan (EECS)	4/2017
“Compressed sensing and parallel acquisition” <i>Communications &amp; Signal Processing seminars</i> , the University of Michigan (EECS)	1/2016
<b>HONORS &amp; AWARDS</b>	
Travel Funds for Purdue Engineering Ph.D. Candidates, Purdue University	11/2014
Travel Funds, 12 <sup>th</sup> Fully 3D	6/2013
Magna Cum Laude Merit Award, 21 <sup>st</sup> ISMRM	4/2013
Award of Trainee (Educational) Stipend, 21 <sup>st</sup> ISMRM	4/2013
Semester High Honor, Korea University	12/2005–6/2007
Honors Scholarship, Korea University	2/2006–8/2007

**PROFESSIONAL EXPERIENCE** Conference session chair:

- Session: Image Recovery in Computational Imaging  
*Asilomar Conf. on Signals, Syst., and Comput.* 11/2020

Reviewer for the following journals:

- *IEEE Transactions on Image/Signal Processing*
- *IEEE Transactions on Medical Imaging* (Distinguished Reviewer, 2018-20)
- *IEEE Transactions on Computational Imaging*
- *IEEE Transactions on Cybernetics*
- *IEEE Signal Processing Letters*
- *SIAM Journal on Imaging Sciences*
- *Medical Physics*
- *Medical Image Analysis*

Reviewer for the following proceedings:



- *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2018–23
- *IEEE Signal Processing in Medicine and Biology (SPMB) Symposium*, 2021

**Membership:**

- Member in IEEE
- Affiliated member in IEEE special interest group on computational imaging

<b>ACTIVITIES</b>	<b>Artificial Intelligence Convergence Sys. Track in EEE</b> Head	SKKU 2/2024–
	<b>International Collaboration Center</b> , College of Info. and Comm. Engin. Director	SKKU 8/2023–
	<b>Associate Dean for Research Search Committee</b> , College of Engin. Member	University of Hawai'i 1/2020–4/2020
	<b>Website Committee</b> , ECE Department Member	University of Hawai'i 11/2019–12/2021
	<b>Graduate Committee</b> , ECE Department Member	University of Hawai'i 8/2019–8/2021
	<b>Purdue Electrical Engineering Korean Association (PEEKA)</b> Vice President	Purdue University 8/2011–8/2012
<b>VISA STATUS</b>	H1-B	
<b>MILITARY SERVICE</b>	Republic of Korea Army Private (Public Interest Service Personnel)	South Korea 6/2003 – 11/2005
<b>PROGRAM SKILL</b>	MATLAB, Python, C, and C++	