

<b>EDUCATION</b>	<b>Purdue University</b> West Lafayette, IN, USA Ph.D. in Electrical and Computer Engineering 8/2009–8/2015 <ul style="list-style-type: none"><li>• Thesis title: Advances in medical imaging and image reconstruction</li><li>• Thesis advisors: Prof. Thomas M. Talavage and Prof. Ben Adcock</li></ul>
	<b>Korea University</b> Seoul, South Korea B.Eng. in electrical engineering 3/2002–2/2009
	<b>University of Hong Kong</b> Hong Kong, China Exchange Student in Electrical and Electronic Engineering 8/2007–5/2008
<b>ACADEMIC EXPERIENCE</b>	<b>Sungkyunkwan University (SKKU)</b> Suwon, South Korea Associate Professor in the following departments: 9/2024– Electrical & Computer Engn. (ECE (previously EEE); home department), Artificial Intelligence (AI), Advanced Display Engn. (ADE), Semiconductor Convergence Engn. (SCE), and Display Convergence Engn. (DCE) Assistant Professor in the following departments: 2/2022–8/2024 Electronic and Electrical Engn. (EEE; home department), AI, ECE, SCE, and DCE <ul style="list-style-type: none"><li>• Research: AI, machine learning, computational imaging &amp; vision, autonomous driving</li><li>• Teaching: Foundations of Modern Artificial Intelligence (ICE3056), Modern Artificial Intelli- gence (ECE5992), Introduction to Machine Learning (ICE3045)</li></ul>
	<b>Institute for Basic Science (IBS)</b> Suwon, South Korea Associate Professor in the Center for Neuroscience Imaging Research (CNIR) 9/2024– Assistant Professor in the Center for Neuroscience Imaging Research (CNIR) 2/2022–8/2024
	<b>University of Hawai'i at Mānoa</b> Honolulu, HI, USA Assistant Professor in Electrical and Computer Engineering (tenure-track) 8/2019–12/2021 <ul style="list-style-type: none"><li>• Research: AI, machine learning, optimization, imaging, image processing, computer vision</li><li>• Teaching: Introduction to Image Processing &amp; Computer Vision (EE416), Computational Im- age Processing &amp; Computer Vision (EE616)</li></ul>
	<b>University of Michigan</b> Ann Arbor, MI, USA Research Fellow in Electrical Engineering and Computer Science 5/2016–7/2019 Visiting Scholar in Electrical Engineering and Computer Science 8/2019–7/2020 (supervisor: Prof. Jeffrey Fessler) <ul style="list-style-type: none"><li>• Iterative neural networks: Theory and appl. to extreme imaging</li><li>• Block optimization: Theory and appl. to learning convolutional regularizers</li><li>• Tensor decomposition and appl. to light-field photography</li></ul>
	<b>Purdue University</b> West Lafayette, IN, USA Postdoctoral Research Associate in Mathematics 8/2015–5/2016 (supervisor: Prof. Ben Adcock) <ul style="list-style-type: none"><li>• Compressed sensing and parallel acquisition: Theory</li></ul>
	<b>Neuroscience Research Institute</b> Incheon, South Korea Lecturer (supervisor: Prof. Zang-Hee Cho) 5/2013–6/2013 <ul style="list-style-type: none"><li>• Teaching: Intro. to optimization</li><li>• Research: High-resolution PET image reconstruction</li></ul>
	<b>Purdue University</b> 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 <ul style="list-style-type: none"><li>• Signals and systems (ECE301)</li></ul>
	<b>NON- ACADEMIC EXPERIENCE</b>

**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

Grant amount: ₩434,955k

“From image reconstruction to physical artificial intelligence: Unsupervised image reconstruction-based anomaly detection toward near-zero false negative and false positive”

Outstanding Young Researcher Program of the National Research Foundation of Korea (NRF), Ministry of Education 3/1/2026–2/28/2029

Role: Principal Investigator

Grant amount: ₩89,760k

“Preliminary development of deep learning-based self-supervised learning technology”

Hyundai MOBIS Co., Ltd. 8/1/2025–5/31/2026

Role: Co-Principal Investigator

Grant amount: ₩60,000k

“Development, verification, and utilization of AI models for smart crane safety alarm systems”

HD Hyundai Heavy Industries Co., Ltd. 9/19/2024–9/18/2025

Role: Co-Principal Investigator

Grant amount: ₩300,000k

“Development of a digital therapeutic device for early detection and personalized treatment of mood disorders”

National IT Industry Promotion Agency (NIPA), Ministry of Science and ICT (MSIT) 9/1/2024–12/31/2027

Role: Co-Principal Investigator

Grant amount: ₩150,000k

“Development of digital therapeutics for depression from COVID-19”

Korea Evaluation Institute of Industrial Technology (KEIT), Ministry of Trade, Industry and Energy (MOTIE) 8/1/2023–12/31/2024

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

Wontae Choi, Jaelin Lee, Hyung Sup Yun<sup>(†)</sup>, Byeungwoo Jeon<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “MoTDiff: High-resolution Motion Trajectory estimation from a single blurred image using Diffusion models,” submitted to *IEEE Trans. Comput. Imaging.*, Oct. 2025. arXiv:2510.26173.

Jin Bok Park, Jinkyu Lee, Muhyun Back, Hyunmin Han, David T. Ma, Sang Min Won<sup>(†)</sup>, Sung Soo Hwang<sup>(†)</sup>, **Il Yong Chun**<sup>(†)</sup>, “End-to-end driving via self-supervised imitation learning using camera and LiDAR data,” submitted to *IEEE Intl. Conf. Robotics and Automation (ICRA)*, Sep. 2025. arXiv:2308.14329.

**Il Yong Chun**<sup>(\*,†)</sup>, Dongwon Park<sup>(\*)</sup>, Xuehang Zheng<sup>(\*)</sup>, Se Young Chun<sup>(†)</sup>, and Yong Long<sup>(†)</sup>, “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

Sumin Roh, Harim Kim, Ho Yun Lee<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “Equilibrium contrastive learning for imbalanced image classification,” *IEEE Trans. Emerg. Top. Comput. Intell.* (Early Access), Apr. 2026. doi:10.1109/TETCI.2026.3670635.

Sang Uk Park, Hee Kyu Lee, Hyun Bin Kim, Doyoung Kim, Wooseok Kim, Janghoon Joo, Bogeun Kim, Byeong Woon Lee, Yei Hwan Jung, Sungjun Park, **Il Yong Chun**, Hyoyoung Jeong, Joohoon Kang, Jae-Young Yoo, and Sang Min Won, “Wearable interactive full-body motion tracking and haptic feedback network systems with deep learning,” *Nature Commun.*, 16:8604:1–14, Sep. 2025. doi:10.1038/s41467-025-63644-3.

Muhamad Dwisnanto Putro, Agung Sutrisno, Indri Shelovita Manembu, **Il Yong Chun**, and Tae-Hyun Oh, “STAR: Sea Turtle basic Activity Recognizer network via efficient transformer,” *IEEE Access*, 13:171356–171370, Sep. 2025. doi:10.1109/ACCESS.2025.3615067.

Hee Kyu Lee<sup>(\*)</sup>, Sang Uk Park<sup>(\*)</sup>, Sunga Kong, Heyin Ryu, Hyun Bin Kim, Sang Hoon Lee, Danbee Kang, Sun Hye Shin, Ki Jun Yu, Juhee Cho, Joohoon Kang, **Il Yong Chun**<sup>(†)</sup>, Hye Yun Park<sup>(†)</sup>, and Sang Min Won<sup>(†)</sup>, “Real-time deep learning-assisted mechano-acoustic system for respiratory diagnosis and multifunctional classification,” *npj Flexible Electronics*, 8:69:1–12, Oct. 2024. doi:10.1038/s41528-024-00355-7.

Hye Bin Yoo<sup>(\*)</sup>, Hyun Min Han<sup>(\*)</sup>, Sung Soo Hwang<sup>(†)</sup>, and **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.

Heykyoung 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/electronics13010

**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**, Sumra Bari, Evan L. Breedlove, Brian R. Cumiskey, 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.

### Premier Conference Papers

Seo Hyun Kim, Jin Bok Park, Do Yeon Koo, Hogun Park<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “SToRM: Supervised Token Reduction for Multi-modal LLMs toward efficient end-to-end autonomous driving,”

to appear in *Proc. IEEE Intl. Conf. on Robotics and Automation (ICRA)*, Vienna, Austria, Jun. 2025. arXiv:2602.11656 (**Bronze Award at IPIU 2026**)

Woonho Ko, Jin Bok Park, and **Il Yong Chun**<sup>(†)</sup>, “Autoregression-free video prediction using diffusion model for mitigating error propagation,” *Proc. IEEE Intl. Conf. on Image Processing (ICIP)*, pp. 1414–1419, Anchorage, AK, Sep. 2025. doi:10.1109/ICIP55913.2025.11084404

U Jin Jeong, Sumin Roh<sup>(†)</sup>, and **Il Yong Chun**<sup>(†)</sup>, “LaB-CL: Localized and Balanced Contrastive Learning for improving parking slot detection,” *Proc. IEEE Intl. Conf. on Robotics and Automation (ICRA)*, pp. 8344–8350, Atlanta, GA, May 2025. doi:10.1109/ICRA55743.2025.11127470

Yun Su Jeong<sup>(\*)</sup>, Hye Bin Yoo<sup>(\*)</sup>, and **Il Yong Chun**, “DX2CT: Diffusion model for 3D CT reconstruction from bi or mono-planar 2D X-ray(s),” in *Proc. IEEE Intl. Conf. on Acoust., Speech, and Signal Process. (ICASSP)*, pp. 1–5, Hyderabad, India, Apr. 2025. doi:10.1109/ICASSP49660.2025.10888986

Sangho Lee, **Il Yong Chun**<sup>(†)</sup>, and Hogun Park<sup>(†)</sup>, “MAMS: Model-Agnostic Module Selection framework for video captioning,” in *Proc. AAAI Conf. on Artificial Intelligence (AAAI)*, pp. 4535–4543, Philadelphia, PA, Mar. 2025. doi:10.1609/aaai.v39i5.32478 (**Oral presentation**)

Hyung Sup Yun and **Il Yong Chun**, “Improving light field reconstruction from limited focal stack using diffusion models,” in *Proc. IEEE Intl. Workshop on Machine Learning and for Signal Processing (MLSP)*, pp. 1–6, London, UK, Sep. 2024. doi:10.1109/MLSP58920.2024.10734835 (**Oral presentation**)

Zhengyu Huang, Jeffrey A. Fessler, Theodore B. Norris, and **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.

**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.

**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/ITW.2016.7606838.

### Conference Papers & Abstracts

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

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.

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.2018.8635935 **(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/NSSMIC.2018.8882000

**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/SAMP.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.

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.2014.69

**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

- “LaB-CL: Localized and Balanced Contrastive Learning for improving parking slot detection”  
Technical session: *Autonomous Vehicle Perception 5*  
*IEEE Intl. Conf. on Robotics and Automation (ICRA)* 05/2025
- “Fully self-supervised learning for regression problems”  
Special session: *Young Researchers*  
*Korean Inst. of Broadcast and Media Engineers (KIBME) Conf. (Invited talk)* 06/2024
- “Self-supervised regression learning using domain knowledge”  
Special session: *Young Researchers 2*  
*Image Processing and Image Understanding (IPIU) (Invited talk)* 02/2023
- “An improved iterative neural network for high-quality image-domain material decomposition in dual-energy CT”  
*IEIE Joint Conf. on Signal Processing (JCSP) (Invited talk)* 09/2022
- “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: *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: *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: *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: *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” <i>IEEE Eng. Med. Biol. Conf. (EMBC)</i>	8/2014
“Efficient compressed sensing statistical X-ray/CT reconstruction from fewer measurements” <i>Intl. Mtg. on Fully 3D Image Recon. in Rad. and Nuc. Med. (Fully 3D)</i>	6/2013
“Robust detection of progressive white matter abnormalities in mTBI using DW-MRI” <i>Intl. Soc. Mag. Res. Med. (ISMRM) (E-poster)</i>	4/2013
<b><u>Seminar Presentations</u></b>	
“AI & machine learning for computer vision & computational imaging” <i>EE Tech Commercialization Seminar, EEE, SKKU</i>	12/2024
“Trend in lightening large AI models and accelerating iterative AI models” <i>Industry-academic exchange meeting on semiconductor,</i> Fall Meeting of the Korean Institute of Chemical Engineers (KICChE)	10/2024
“AI & machine learning for computational imaging & vision” <i>Exchange meeting b/w SKKU-CICE and ETRI,</i> Electronics and Telecomm. Research Institute (ETRI)	7/2024
“AI & machine learning for computational imaging & vision” <i>EE Tech Commercialization Seminar, EEE, SKKU</i>	3/2023
“AI & machine learning for computational imaging & computer vision” <i>EE Tech Commercialization Seminar, EEE, SKKU</i>	5/2022
“AI & machine learning for computational imaging & computer vision” <i>IT Tech Seminar, ECE, SKKU</i>	5/2022
“AI & ML for Breaking Imaging Limits and Beyond” <i>AI seminar, Handong Global University (CSEE)</i>	11/2021
“AI & ML for Breaking Imaging Limits and Beyond” <i>EEE seminar, Sungkyunkwan University (ICE: EEE)</i>	06/2021
“Iterative AI for breaking imaging limits” <i>ECE Colloquium Series (Eleanore Hale Wilson Lecture), University of Minnesota (ECE)</i>	03/2021
“Machine learning & AI for imaging and potential application to EM imaging” <i>Industry Advisory Board meeting, NSF Industry Univ. Cooperative Research Center</i>	11/2019
“ML & AI for breaking imaging limits” <i>ECE seminar, Michigan State University (ECE)</i>	3/2019
“ML & AI for breaking imaging limits” <i>EE seminar, the University of Hawai‘i, Mānoa (EE)</i>	3/2019
“Breaking imaging limits via ML & AI” <i>Seminar, Shanghai Jiao Tong University (UM-SJTU JI)</i>	9/2018
“Breaking imaging limits via ML & AI” <i>Special seminar, Ulsan National Institute of Science and Technology (ECE)</i>	9/2018
“Breaking imaging limits via ML & AI” <i>Seminar, Yonsei University (CSE)</i>	8/2018
“Breaking imaging limits” <i>Colloquium, Ohio State University (ECE)</i>	3/2018
“Breaking imaging limits” <i>Seminar, Texas Tech University (ECE)</i>	2/2018
“Convolutional dictionary learning using a fast block proximal gradient method” <i>Communications &amp; Signal Processing seminars, the University of Michigan (EECS)</i>	4/2017
“Compressed sensing and parallel acquisition”	

*Communications & Signal Processing seminars*, the University of Michigan (EECS) 1/2016

## HONORS & AWARDS

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

**Organizing committee in conferences:**

- Program Committee (PC) member  
*AAAI Conf. on Artificial Intelligence (AAAI)* 01/2026
- Session chair in Autonomous Vehicle Perception 5  
*IEEE Intl. Conf. on Robotics and Automation (ICRA)* 05/2025
- Session chair  
*Korean Inst. of Broadcast and Media Engineers (KIBME) Conf.* 06/2024
- Local chair & session chair  
*IEEE Visual Commun. and Image Process. (VCIP)* 12/2023
- Session chair  
*Image Processing and Image Understanding (IPIU)* 02/2023
- Session chair in 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 conferences:

- *International Conference on Learning Representations (ICLR)*, 2026
- *AAAI Conference on Artificial Intelligence (AAAI)*, 2026
- *International Joint Conference on Neural Networks (IJCNN)*, 2025–26
- *IEEE International Conference on Visual Communications and Image Processing (VCIP)*, 2024–25
- *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2018–26
- *IEEE Signal Processing in Medicine and Biology (SPMB) Symposium*, 2021

### Membership:

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

## ACTIVITIES

**Artificial Intelligence Convergence Sys. Track in EEE** SKKU  
Head 2/2024–02/2025

**International Collaboration Center**, College of Info. and Comm. Engin. SKKU  
Director 8/2023–

**Associate Dean for Research Search Committee**, College of Engin. University of Hawai'i  
Member 1/2020–4/2020

**Website Committee**, ECE Department  
Member

University of Hawai'i  
11/2019–12/2021

**Graduate Committee**, ECE Department  
Member

University of Hawai'i  
8/2019–8/2021

**Purdue Electrical Engineering Korean Association (PEEKA)**  
Vice President

Purdue University  
8/2011–8/2012

**VISA STATUS**    H1-B

**MILITARY SERVICE**    Republic of Korea Army  
Private (Public Interest Service Personnel)

South Korea  
6/2003 – 11/2005

**PROGRAM SKILL**    MATLAB, Python, C, and C++