wltjr1007@korea.ac.kr
Seoul, South Korea

Jee Seok Yoon

PhD Student @ Korea University

Interests

Generative models and model explainability/interpretability for medical and natural images.

Current Interests: ***Diffusion Model***, ***Domain Generalization***, Image Synthesis and Manipulation

Education

Korea University — Seoul, South Korea
Ph.D. candidate in Dept. of Brain and Cognitive Engineering — Sep. 2018 – ***(Anticipated)*** Feb. 2025
Advisor: Professor Heung-Il Suk
GPA: 4.18 / 4.5 (96.3 / 100) (Coursework and Quals Completed)
Started as undergrad intern since sophomore (2016-2018)

University of British Columbia — Vancouver, Canada
Visiting Research Student in Dept. of Electrical and Computer Engineering — Aug. 2022 – Aug. 2023
Co-Advisor: Professor Xiaoxiao Li and Professor Heung-Il Suk
Research Topic: Diffusion model for medical image synthesis [15]

Korea University — Seoul, South Korea
Undergraduate in Dept. of Computer Science and Engineering — Mar. 2012 – Aug. 2018
GPA: 3.23 / 4.5 (85.5 / 100)

Selected Publications

In order of importance
** 1st / Co. 1st Author*

[1] **Jee Seok Yoon***, Kwanseok Oh, Yooseung Shin, Maciej A. Mazurowski, Heung-Il Suk, "Domain Generalization for Medical Image Analysis: A Survey," *arXiv*, 2024 (Paper)

[15] **Jee Seok Yoon***, Chenghao Zhang, Heung-Il Suk, Jia Guo, Xiaoxiao Li, "SADM: Sequence-Aware Diffusion Model for Longitudinal Medical Image Generation," *IPMI*, 2023 (Paper, Code)

[5] **Jee Seok Yoon***, M.C. Roh, and H.-I. Suk, "A Plug-in Method for Representation Factorization in Connectionist Models," *IEEE Transactions on Neural Networks and Learning Systems*, 2021 (***IF 10.451***, paper, code)

[4] K. Oh*, **Jee Seok Yoon***, and H.-I. Suk, "Learn-Explain-Reinforce: Counterfactual Reasoning and Its Guidance to Reinforce an Alzheimer's Disease Diagnosis Model," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 2022 (**IF 16.389,** paper, code)

[14] Bum-Chae Kim*, **Jee Seok Yoon***, Jun-Sik Choi, and Heung-Il Suk, "Multi-scale Gradual Integration Convolutional Neural Network for False Positive Reduction in Pulmonary Nodule Detection," *Neural Networks*, 2019 (***IF 8.050***, paper, code)

Experience

Kakao Enterprise (AI Laboratory) — Pangyo, Gyeonggi, South Korea
Research Intern — Mar. 2021 – Sep. 2021
- Developed a diffusion model for natural/medical image synthesis (partial work for [15])

SK Telecom — Eulji-ro, Seoul, South Korea
Teaching Assistant — Sep. 2017 – Sep. 2020
- Taught TensorFlow and PyTorch to employees of SK Group ranging from experts to beginners

Kakao Corp. (Computer Vision Team) — Pangyo, Gyeonggi, South Korea
Research Intern — Jun. 2018 – Aug. 2018
- Mainly focused on meta-learning and few-shot learning (produced [5])

Venture Company — Anam, Seoul, South Korea
Co-founder, CTO, Backend Developer — Mar. 2013 – May. 2014
- Developed the backend for a mobile dating service (currently out of business...!)

Skills

Python: 8+ years of daily use of Tensorflow and PyTorch **(+Very rusty on Java, C#, C++)**

HPC: Experience with AWS, GCP, SLURM, PBS **(+I'm in charge of our lab's GPU clusters)**

Dataset: Few-shot [5], 1D (signal) [7], 2D [16], 3D [14], 4D (3D+time) [15]

English Proficiency: 9Y+ Overseas Education, TOEIC Speaking 170/200 [Outdated: TOEFL 111/120, TOEIC 980/990]

Projects

Challenge	Segmentation	**9th place** in Ischemic Stroke Lesion Segmentation Challenge 2016 (Official Leaderboard, [20])
		10th place in Brain Tumor Image Segmentation Challenge 2016 ([23], [24], unofficial)
	Detection	**4th place** in Lung Nodule Analysis 2016 (Official Leaderboard, under the name *MILAB*, [14])
Applications	LCD Crack Detection	**Carrot Insurance PhoneCare LCD Insurance** Developed smartphone LCD crack detector (News)
	Fibrosis Diagnosis	**SmartCarworks Inc. GoCDSS** Fully automated liver, spleen segmentation and liver fibrosis diagnosis system (News, [13])

Participated as the main/1st contributor in the listed projects

Awards & Honors

International Research Grant ($34,000+$5,000) — Seoul, South Korea
Korea University — Aug., Dec. 2022

Naver Ph.D. Fellowship ($4,600) — Seoul, South Korea
Naver Corp. (Link) — Dec. 2021

Research Scholarship ($1,700) — Seoul, South Korea
Korea University (Link) — Oct. 2021

Junior Fellow Research Grant ($2,500) — Seoul, South Korea
Korea University (Link) — Jul. 2021

Fundamental Scientist Scholarship ($22,000) — Seoul, South Korea
JW Foundation (Link) — Jan. 2021

Student Travel Award ($1,000) — Quebec, Canada
Medical Image Computing and Computer Assisted Intervention Conference (MICCAI, link) — Sep. 2017

Best Paper Award — Jeju Island, South Korea
Korean Institute of Information Scientists and Engineers (KIISE) Korea Computer Congress (KCC, link) — Jun. 2017

Best Undergraduate Student Paper Award — Pyeongchang, South Korea
Korean Institute of Information Scientists and Engineers (KIISE) Winter Conference (Link, code) — Dec. 2016

Thank you to my sponsors for their generous support ☺

Publications

** 1st / Co. 1st Author*

Type	#	Role	Publications
Journal	[1]	1st	**Jee Seok Yoon***, Kwanseok Oh, Yooseung Shin, Maciej A. Mazurowski, Heung-Il Suk, "Domain Generalization for Medical Image Analysis: A Survey," *arXiv*, 2024 (Paper, submitted to *IEEE TPAMI*)
	[2]		A. W. Mulyadi, W. Jung, K. Oh, **Jee Seok Yoon**, K. H. Lee, and H.-I. Suk, "Estimating Explainable Alzheimer's Disease Likelihood Map via Clinically-guided Prototype Learning," *NeuroImage*, 2023 (**IF 7.4**, Paper, code)
	[3]		J.Y. Choi, S.S. Lee, N.Y. Kim, H.J. Park, Y.S. Sung, Y. Lee, **Jee Seok Yoon**, and H.-I. Suk, "The Effect of Hepatic Steatosis on Liver Volume Determined by Proton Density Fat Fraction and Deep Learning–Measured Liver Volume," *European Radiology*, 2023 (**IF 7.034**, Paper)

[4] Co. **1ST** K. Oh*, **Jee Seok Yoon***, and H.-I. Suk, "Learn-Explain-Reinforce: Counterfactual Reasoning and Its Guidance to Reinforce an Alzheimer's Disease Diagnosis Model," IEEE Transactions on Pattern Analysis and Machine Intelligence, 2022 (**IF 16.389,** paper, code)

[5] **1ST** **Jee Seok Yoon***, M.C. Roh, and H.-I. Suk, "A Plug-in Method for Representation Factorization in Connectionist Models," *IEEE Transactions on Neural Networks and Learning Systems*, 2022(***IF 10.451*****,** paper, code)

[6] Co. **1ST** H.J. Park*, **Jee Seok Yoon***, S.S. Lee, H.-I. Suk, B. Park, Y.S. Sung, S.B. Hong, H. Ryu, "Deep Learning-Based Assessment of Functional Liver Capacity Using Gadoxetic Acid-Enhanced Hepatobiliary Phase Magnetic Resonance Imaging," Korean Journal of Radiology, 2022 (***IF 3.179***, paper)

[7] W. Ko, E. Jeon, **Jee Seok Yoon**, and H.-I. Suk, "Semi-Supervised Generative and Discriminative Adversarial Learning for Motor Imagery-based Brain-Computer Interface," Scientific Reports, 2022 (**IF 4.380**, paper, code)

[8] S.S. Lee*, R. Park, Y.S. Sung, **Jee Seok Yoon**, H.-I. Suk, H.J. Kim, and S.H. Choi, "Accuracy and efficiency of right-lobe graft weight estimation using deep learning-assisted CT volumetry for living donor liver transplantation," Diagnostics, 2022 (**IF 3.706**, paper)

[9] E. Jeon*, W. Ko, **Jee Seok Yoon**, and H.-I. Suk, "Mutual Information-driven Subject-invariant and Class-relevant Deep Representation Learning in BCI," *IEEE Transactions on Neural Networks and Learning Systems*, 2021 (***IF 10.451***, paper)

[10] D.W. Kim*, J. Ha*, S. Lee, J.H. Kwon, N.Y. Kim, Y. Sung, **Jee Seok Yoon**, H.-I. Suk, Y. Lee, and B.-K. Kang, "Population-based and Personalized Reference Intervals for Liver and Spleen Volumes in healthy individuals and those with viral hepatitis," *Radiology*, Vol. 301, No. 2, 2021 (***IF 11.105***, paper)

[11] J.H. Kwon, S.S. Lee, **Jee Seok Yoon**, H.-I. Suk, Y.S. Sung, H.S. Kim, C. Lee, K.M. Kim, S.J. Lee, and S.Y. Kim, "Liver-to-Spleen Volume Ratio Automatically Measured on CT Predicts Decompensation in Patients with B Viral Compensated Cirrhosis," Korean Journal of Radiology, 2021 (***IF 3.179***, paper)

[12] C. Lee*, S.S. Lee, W.-M. Choi, K.M. Kim, Y.S. Sung, S. Lee, S.J. Lee, **Jee Seok Yoon**, and H.-I. Suk, "An index based on deep learning–measured spleen volume on CT for the assessment of high-risk varix in B-viral compensated cirrhosis," *European Radiology*, Vol. 31, No. 5, pp. 3355-3365, 2020 (***IF 5.315***, paper)

[13] Co. **1ST** Y. Ahn*, **Jee Seok Yoon***, S. Lee, H.-I. Suk J. Son, Y. Sung, Y. Lee, B.-K Kang, and H. Kim, "Deep Learning Algorithm for Automated Segmentation and Volume Measurement of the Liver and Spleen Using Portal Venous Phase Computed Tomography Images," *Korean Journal of Radiology*, Vol. 21, No. 8, pp. 987-997, 2020 (***IF 3.179***, paper)

[14] Co. **1ST** Bum-Chae Kim*, **Jee Seok Yoon***, Jun-Sik Choi, and Heung-Il Suk, "Multi-scale Gradual Integration Convolutional Neural Network for False Positive Reduction in Pulmonary Nodule Detection," *Neural Networks*, Vol. 115, pp. 1-10, 2019. (***IF 8.050***, paper, code)

INTERNATIONAL CONFERENCE

[15] **1ST** **Jee Seok Yoon***, Chenghao Zhang, Heung-Il Suk, Jia Guo, Xiaoxiao Li, "SADM: Sequence-Aware Diffusion Model for Longitudinal Medical Image Generation," *IPMI*, 2023 (Paper, Code)

[16] A. W. Mulyadi*, W. Jung, K. Oh, **Jee Seok Yoon**, and H.-I. Suk, "Clinically-guided Prototype Learning and Its Use for Explanation in Alzheimer's Disease Identification," *Medical Imaging meets NeurIPS*, 2022. (Paper, code, link, oral)

[17] **1ST** **Jee Seok Yoon***, Wonjun Ko, and Heung-Il Suk, "A Plug-in Factorizer for Disentangling a Latent Representation," Proc. of 1st *ICCV Workshop on Interpreting and*

			Explaining Visual Artificial Intelligence Models, Seoul, South Korea, 2019 (Poster **Spotlight**, link)
	[18]		Wonjun Ko*, **Jee Seok Yoon**, and Heung-Il Suk, "Towards Reducing Calibration in BCI: Artificial EEGs Generation by Deep Learning," Proc. of 7th *International Brain-Computer Interface Meeting*, Pacific Grove, USA, 2018. (***Student Award***, Poster, link, paper)
	[19]		Wonjun Ko*, **Jee Seok Yoon**, Eun-song Kang, Eunji Jun, Jun-Sik Choi, and Heung-Il Suk, "Deep Recurrent Spatio-Temporal Neural Network for Motor Imagery based BCI," Proc. of 6th *IEEE International Winter Conference on Brain-Computer Interface*, High1 Resort, Korea, 2018. (Poster, paper)
	[20]	**1ST**	**Jee Seok Yoon*,** Eun-Song Kang, and Heung-Il Suk, "Gated Two-Stage Convolutional Neural Network for Ischemic Stroke Lesion Segmentation," Proc. of 3rd *MICCAI Workshop on Ischemic Stroke Lesion Segmentation Challenge (ISLES)*, Quebec, Canada, 2017. (***Student Travel Award***, poster, paper)
BOOK/ CHAPTERS	[21]		Ahmad Wisnu Mulyadi, **Jee Seok Yoon**, Eunjin Jeon, Wonjun Ko, Heung-Il Suk, "Chapter 1 - An introduction to neural networks and deep learning", *Deep Learning for Medical Image Analysis (Second Edition),* 2024 (Book, chapter)
DOMESTIC CONFERENCE	[22]		Ahmad Wisnu Mulyadi, Wonsik Jung, Kwanseok Oh, **Jee Seok Yoon**, and Heung-Il Suk, "Topological-aware Prototype Learning for Estimating Explainable Alzheimer's Disease Likelihood Map," Proc. of 2023 *KIISE Winter Conference, 2023* (**Oral**)
	[23]	**1ST**	**Jee Seok Yoon*** and Heung-Il Suk, "Auto-context Bagging for Brain Tumor Automatic Segmentation," Proc. of 2017 *KIISE Korea Computer Congress (KCC)*, 2017 (***Best Paper Award***, **oral**, link, paper)
	[24]	**1ST**	**Jee Seok Yoon*** and Heung-Il Suk, "Deep Learning-based Brain Tumor Segmentation from Multi-modal MRI," Proc. of 2016 *KIISE Winter Conference*, 2016 (***Best Paper Award***, poster, link, paper, code)
DOMESTIC PATENT	[25]		**Jee Seok Yoon** and Heung-Il Suk*, "A Method and Device for Explainable Few-shot Image Classification," Korean Patent, No. 10-2316678, 19 Oct. 2021 (Link)
DOMESTIC ARTICLE	[26]	**1ST**	**Jee Seok Yoon*** and Heung-Il Suk, "AI-based Computer Vision Uses in Kakao Corp.," Communications of the Korean Institute of Information Scientists and Engineers, Vol. 37, No. 2, pp. 52-55, Feb 2019 (Link)

Thank you for your interest.

■