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Seoul, South Korea

# Jee Seok Yoon

PhD Student @ Korea University

## INTERESTS

Explainable AI, Representation Learning, Medical Image Analysis

Current Interests: Federated Learning, Disentangled Representation, Image Style Transfer, Few-shot Learning

## EDUCATION

**Korea University (Coursework Completed Aug. 2021)** — Seoul, South Korea
*Integrated M.S./Ph.D. student in Dept. of Brain and Cognitive Engineering* — Sep. 2018 –
*Advisor: Professor Heung-Il Suk*
GPA: 4.27 / 4.5 (97.4 / 100)

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

## AWARDS & HONORS

**Graduate Student Achievement Award (~$1,700 Reward)** — Seoul, South Korea
Korea University (Link) — Oct. 2021

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

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

**Student Travel Award ($1,000 Reward)** — 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

## SELECTED PUBLICATIONS

*In order of importance*

**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 8.793***, paper, code, accepted)

**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)

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," *arXiv*, 2021 (Paper, code, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence (**IF 16.389**))

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 7.197***, paper, code)

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*, 2020 (**IF 3.179**, paper)

## EXPERIENCE

**Kakao Enterprise (Computer vision team)** — Pangyo, Gyeonggi, South Korea
*Research Intern* — Mar. 2021 – Sep. 2021
- Generative models for natural/medical image synthesis

**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 in the field

**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 [4])

**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…!)

# PROJECTS

| | | |
|---|---|---|
| CHALLENGE | SEGMENTATION | **9th place** in Ischemic Stroke Lesion Segmentation Challenge 2016 (Official Leaderboard, [11]) |
| | | **10th place** in Brain Tumor Image Segmentation Challenge 2016 ([12, 13]) |
| | DETECTION | **4th place** in Lung Nodule Analysis 2016 (Official Leaderboard, under the name *MILAB*, [7]) |
| APPLICATIONS | LCD CRACK DETECTION | **Carrot Insurance PhoneCare LCD Insurance**<br>Developed smartphone LCD crack detector (News) |
| | FIBROSIS DIAGNOSIS | **SmartCarworks Inc. GoCDSS**<br>Fully automated liver, spleen segmentation and liver fibrosis diagnosis system (News, [6]) |

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

# PUBLICATIONS

**First Author(s)*

| TYPE | # | ROLE | PUBLICATIONS |
|---|---|---|---|
| JOURNAL | 1 | CO. | 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," *arXiv*, 2021 (Paper, code, submitted to IEEE Transactions on Pattern Analysis and Machine Intelligence (**IF 16.389**)) |
| | 2 | | 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 8.793***, paper, accepted) |
| | 3 | | 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) |
| | 4 | **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*, 2021(***IF 8.793***, paper, code, accepted) |
| | 5 | | 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) |
| | 6 | CO. | 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) |
| | 7 | CO. | 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 7.197***, paper, code) |
| INTERNATIONAL CONFERENCE | 8 | **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) |
| | 9 | | 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) |
| | 10 | | 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) |
| | 11 | **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) |

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| DOMESTIC CONFERENCE | 12 | **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) |
| | 13 | **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 | 14 | **1ST** | **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 | 15 | **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) |

*For those interested, summary in PowerPoint (Korean, ~~English [To Be Published]~~)*

*Thank you for your interest.*