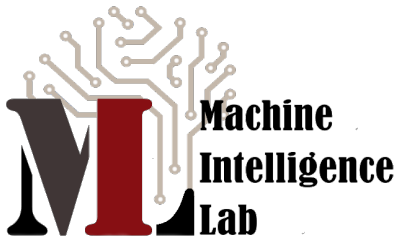
About Me

윤지석

고려대학교 뇌공학과 석박통합과정

지도교수: 인공지능학과 석흥일 교수

https://milab.korea.ac.kr



소개

학적	
12.03 ~ 18.09	고려대 컴퓨터학과 졸업
16.04 ~ 18.09	고려대 기계지능연구실 학부연구생
18.09 ~ 현재	고려대 뇌공학과 재학

경력	
13.03 ~ 14.05	모바일 소개팅 “당사받” 창업
18.06 ~ 18.09	(주)카카오 연구 인턴
17.09 ~ 현재	SK mySUNI AI College 딥러닝 강의 실습

해외 경험	
96’~99’	인도네시아 자카르타
05’~07’	호주 퍼스
08’~11’	방글라데시 다카

관심 연구 분야	
주제	**Explainable AI**, Representation Learning, Meta Learning
응용	Style Transfer, Few-shot Learning, Medical Image Analysis

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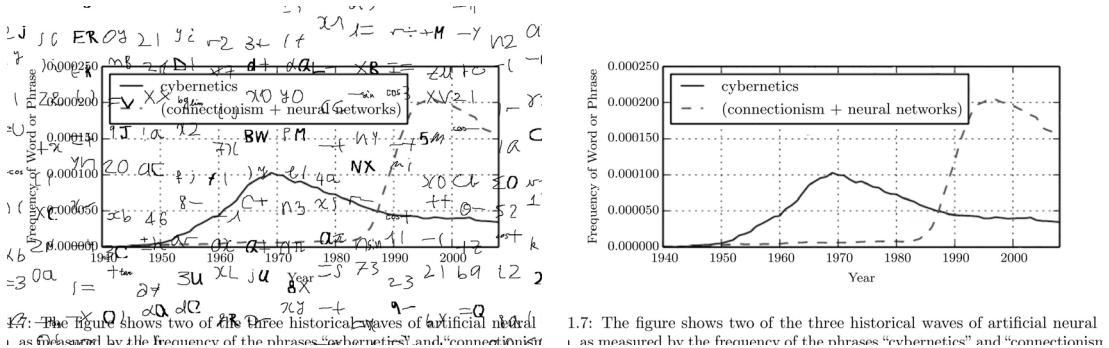
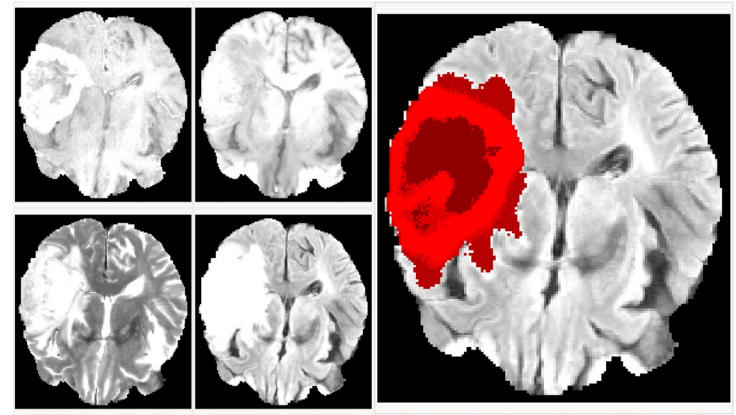
진행 프로젝트 요약

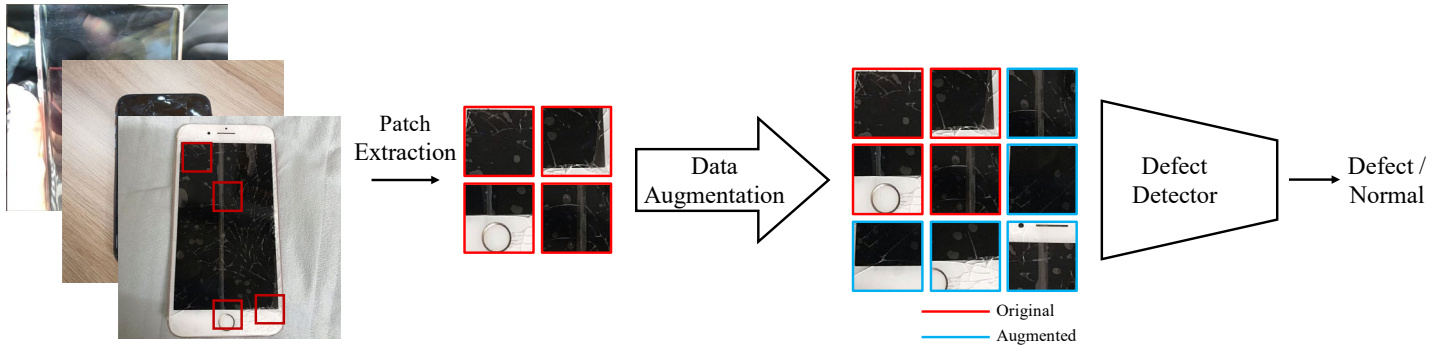


1.7: The figure shows two of the three historical waves of artificial neural as measured by the frequency of the phrases "cybernetics" and "connectionism

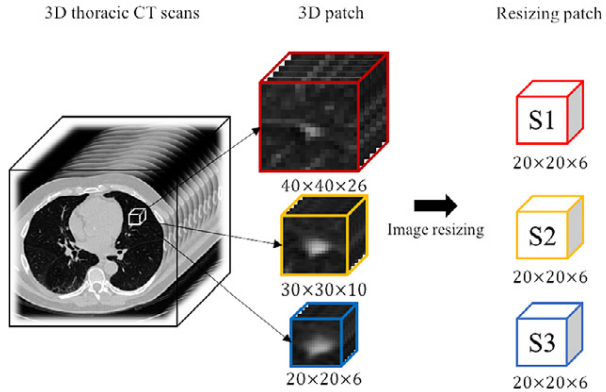
낙서(노이즈) 제거
(17.09~18.02, 학사졸업논문)



뇌종양 Segmentation
(16.04~17.12 [6, 7, 8])



휴대폰 결함 검출
(19.11~현재, 기업프로젝트)



폐 결절 검출
(17.12~18.06 [2])

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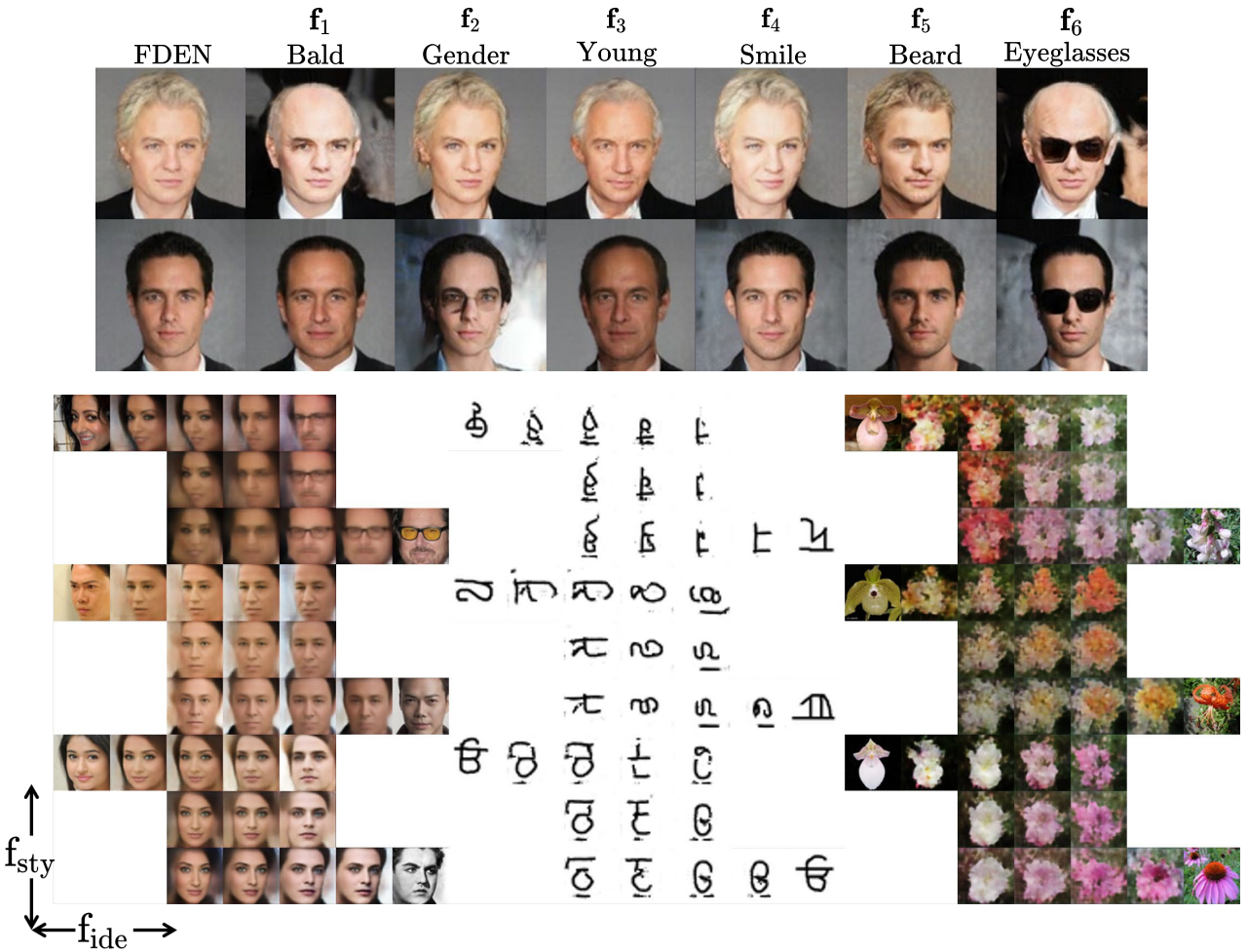
진행 프로젝트 요약



Style Transfer*, Image-to-image Translation
(18.06~현재 [2, 4, 10, 11])

*신호 데이터에 적용 중

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진행 프로젝트 요약

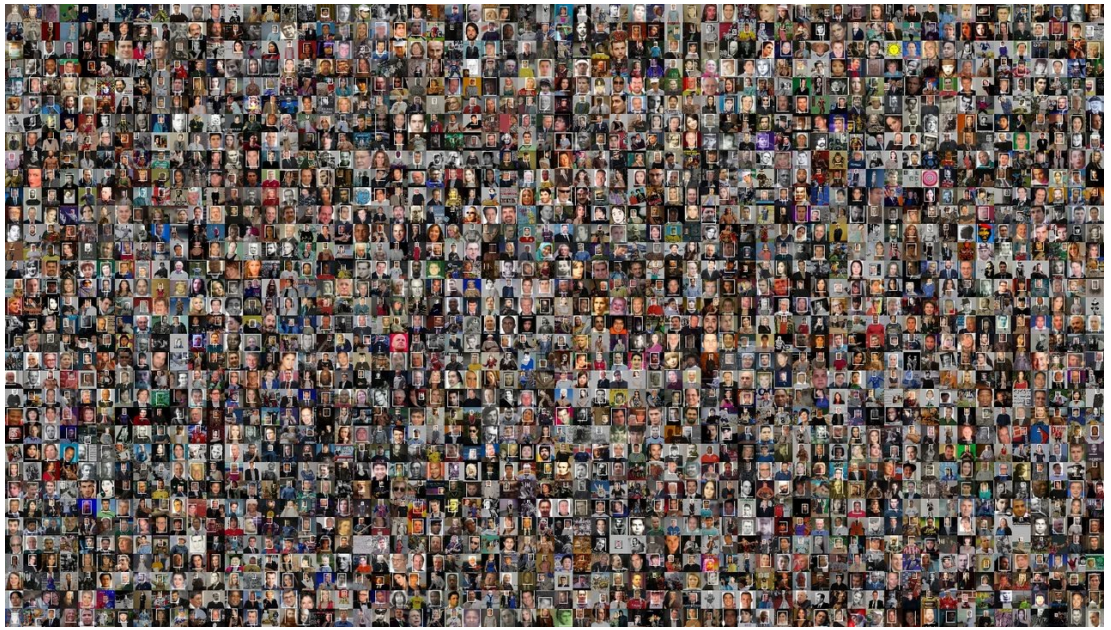
Few-shot Classes

C1

C2

C3

C4~C1000



C???

Few-shot Learning
(18.06~현재 [2, 4, 10, 11])

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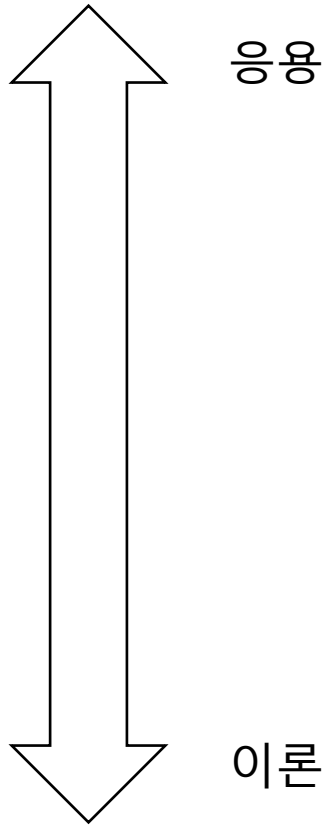
연구 계획

기간	구분	내용
16’~18’	학부연구생	Medical Image Analysis
18’~20’	석사 과정	Style Transfer Few-shot Learning
20’~22’	박사 과정	Explainable AI
연구 주제: Representation Learning, Meta Learning		



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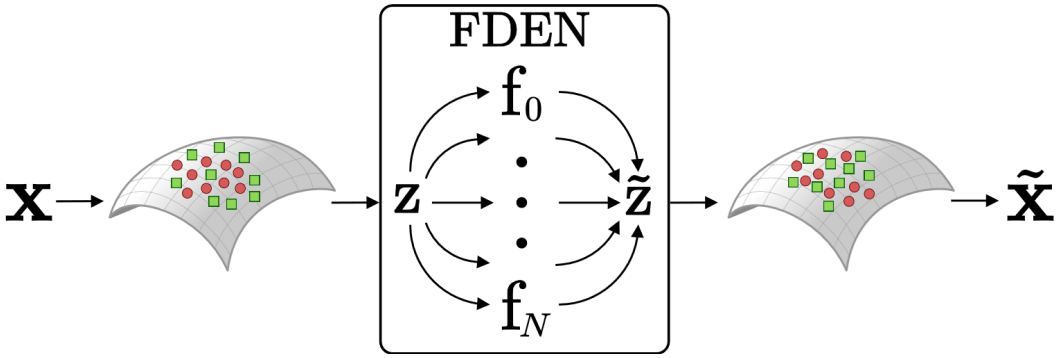
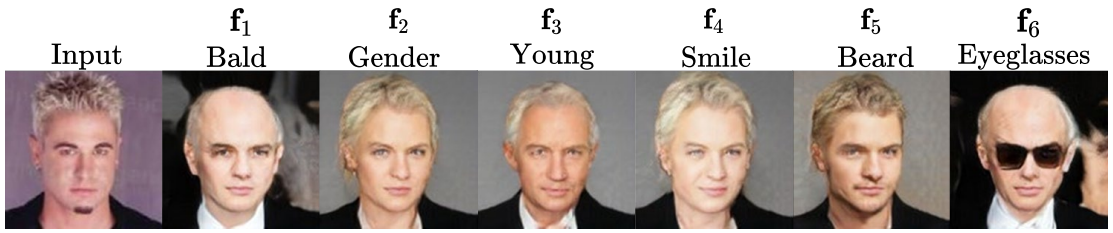
Explainable AI (XAI)





Factorial Representation

인공지능의 추론 과정을 분해(factorize)

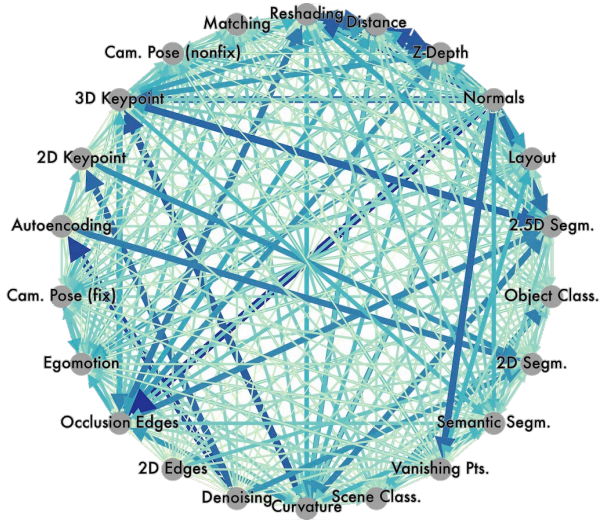
Factorial Explanation

분해된 추론에서 각 인자들의 역할 설명

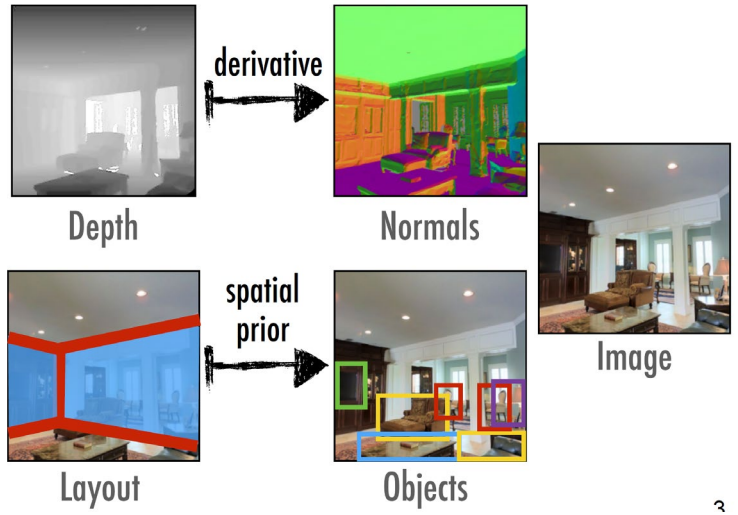
아직은 XAI라고 할 수 없음...
XAI의 building block 수준

* FDEN: Factors Decomposer-Entangler Network(ICCV 게재, TNNLS 제출 [2, 4])

Explainable AI (XAI)



Transfer Affinity Map



Multi-Task Explanation

인공지능이 추론을 할 때 다른 task에서 배울 수 있을까?

어떤 것을 배울 수 있으며, 왜 배우는지?

또 다른 XAI의 building block

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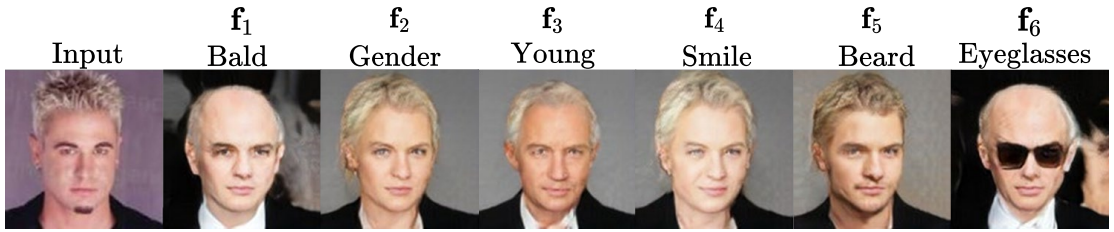
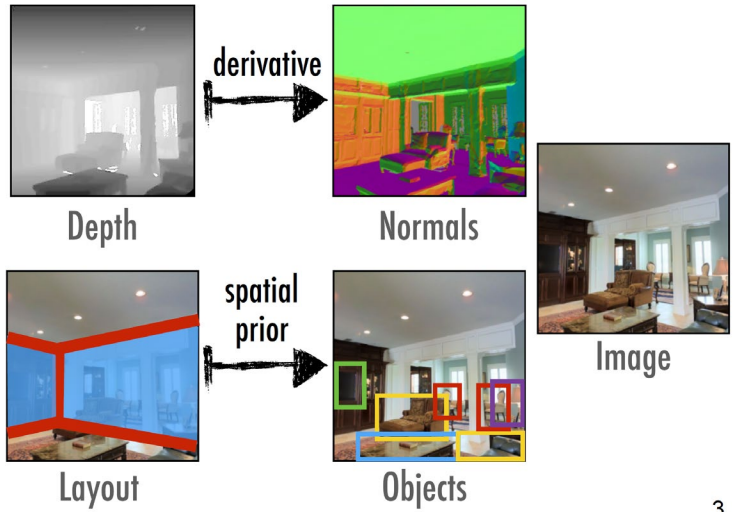
* 그림 출처: Zamir *et al.*, "Taskonomy: Disentangling Task Transfer Learning," 2018.

Explainable AI (XAI)





Factorial Explanation + Multi-task Explanation

인공지능의 추론을 분해하고

서로 다른 인공지능의 연관성을 파악

공통 인자 추출
어떤 인자가 중요한지?

독립 인자 추출
어떤 인자가 인공지능의 추론에 도움을 주는지?

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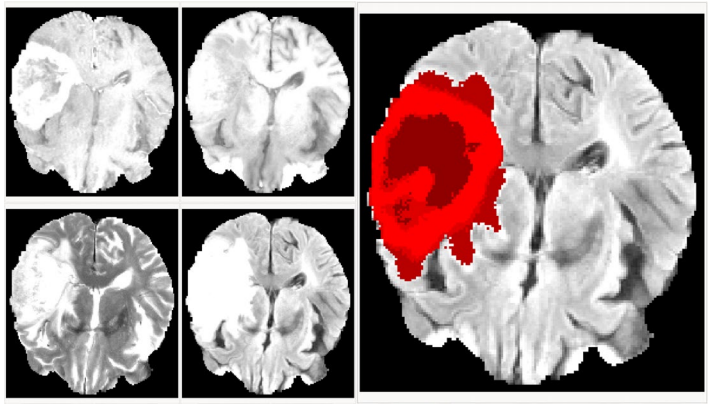
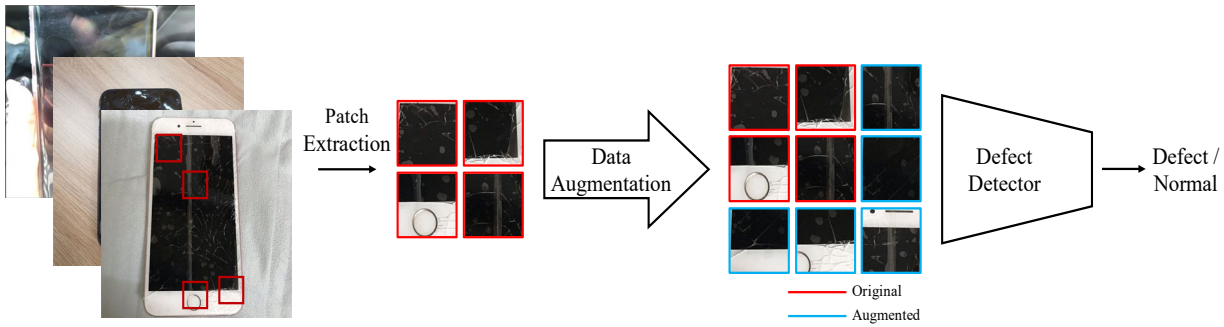
Explainable AI (XAI)



전문가를 위한 설명



소비자를 위한 설명

인간을 뛰어넘고, 설득시킬 수 있는
인공지능을 개발 및 연구

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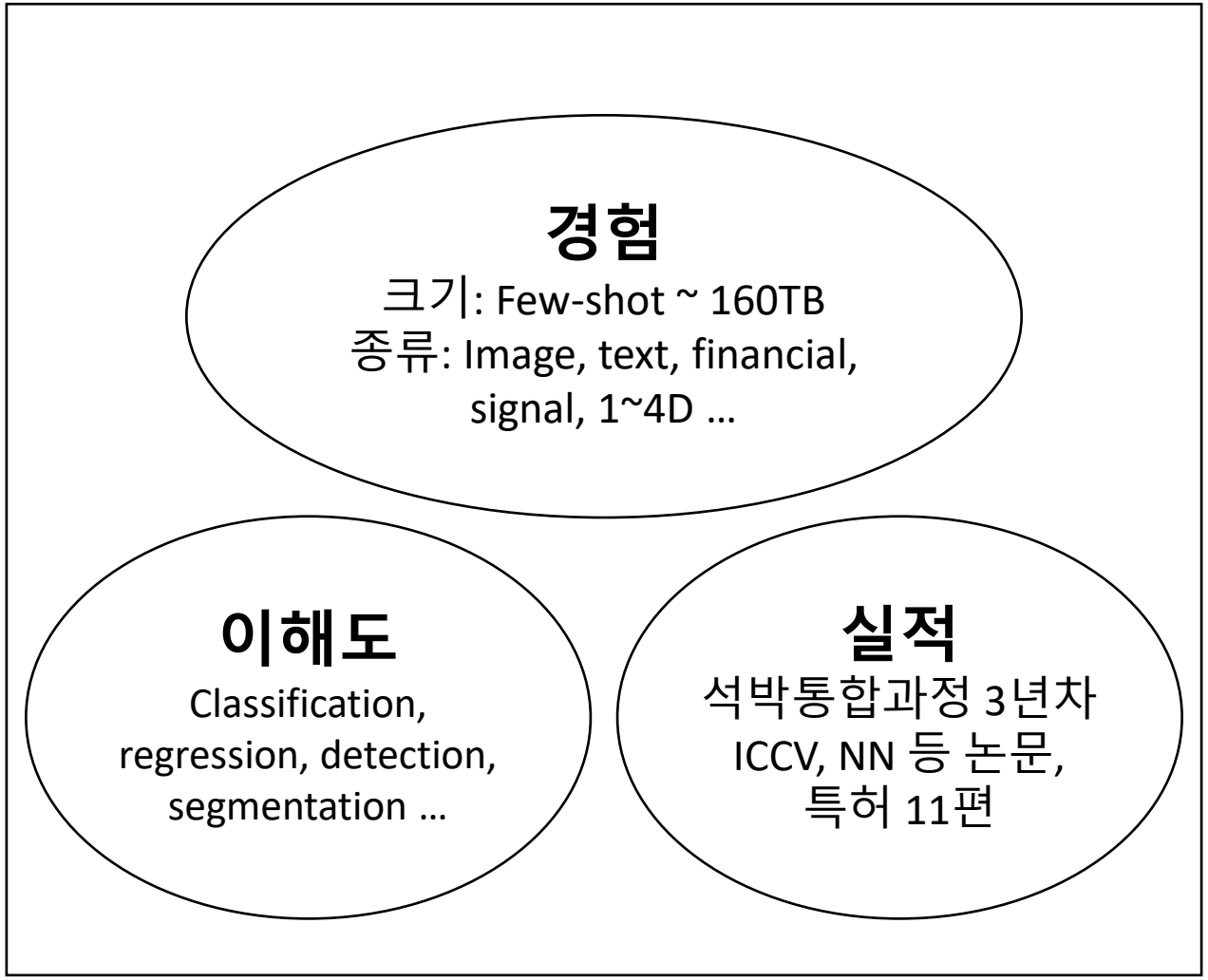
Why Me?



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감사합니다

Q & A

CV: https://www.jsyoon.kr

Lab: https://milab.korea.ac.kr

참조: 연구 실적

구분	#	제목	비고
논문집	1	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)	
	2	**Jee Seok Yoon***, Wonjun Ko, and Heung-Il Suk, "Plug-in Factorization for Latent Representation Disentanglement," *arXiv*, preprint arXiv:1905.11088 (Paper, code, submitted to IEEE TNNLS (**IF 8.793**))	**TNNLS 제출**
	3	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)	**Impact Factor 7.197** **AI 분야 7위 (132개 중)**
국제 학술지	4	**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)	**Splotlight 발표**
	5	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)	
	6	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)	
	7	**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)	**Student Travel Award**
국내 학술지	8	**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)	**인공지능부문 최우수논문상**
	9	**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)	**학부생부문 우수논문상**
국내 특허	10	**Jee Seok Yoon** and Heung-Il Suk*, "A Method and Device for Explainable Few-shot Image Classification," Korean Patent, No. 10-2018-0142824, 19 Nov. 2018 (Pending, link)	
국내 기사	11	**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)	카카오 탐방기

* 1저자 또는 공동 1저자
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