

Jaehong Yoon

CONTACT INFORMATION

KAIST, South Korea
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LINKS: [HOMEPAGE](#), [GOOGLE SCHOLAR](#), [TWITTER](#)

RESEARCH INTERESTS

My research interest mainly focuses on developing **lifelong and meta-cognitive algorithms** for tackling practical challenges in deploying **on-device artificial general intelligence system to various real-world application domains**. I've been focusing on bridging my research experience to relevant research areas, such as open-world problems, online/streaming learning, reinforcement learning, multimodal, and language models. I currently focus on the following topics:

- **Lifelong Machine learning**: Online Learning, Continual Learning
- **Collective Machine Intelligence**: On-device Learning, Federated Learning
- **Learning with incomplete data**: Un-/Self-supervised Learning, Coreset Selection
- **Low-resource learning**: Network Compression, Quantization

EDUCATION

[KAIST](#), Daejeon, South Korea

Ph.D. student, School of Computing, **Aug 2018 - Current**

- [Machine Learning and Artificial Intelligence \(MLAI\) Lab](#)
- Adviser: [Sung Ju Hwang](#)
- Area of Study: Machine Learning
- Anticipated Graduation Date: **Feb 2023**

[UNIST](#), Ulsan, South Korea

M.S., Computer Science, **Aug 2016 - Feb 2018**

- Thesis: *Combined Group and Exclusive Sparsity for Deep Neural Networks*
- Adviser: [Sung Ju Hwang](#)
- Area of Study: Machine Learning

B.S., Computer Science Engineering, **Mar 2012 - Aug 2016**

- Biological Science Minor

RESEARCH EXPERIENCE

Microsoft Research, Beijing, China

RESEARCH INTERNSHIP **Nov 2021 - Apr 2022**

- Visual Computing Group
- Research topic: Vision transformers for continual learning
- Mentor: [Yue Cao](#)

MLAI Lab., KAIST, Daejeon, South Korea

CONTRACT RESEARCH SCIENTIST **Feb 2018 - Aug 2018**

- Research topic: Efficient data sampling to accelerate the convergence

AITRICS, Seoul, South Korea

RESEARCH INTERNSHIP **Mar 2018 - May 2018**

- Research topic: Structured weight transformation for continual learning

*: equal contribution

ONGOING
PROJECTS

Research on **Continual Self-supervised Learning**

[Jaehong Yoon](#), Sung Ju Hwang, and Yue Cao
working on, 2022.

Research on **Neural Network Pruning and Quantization**

Geon Park*, [Jaehong Yoon](#)*, Haiyang Zhang, Xing Zhang, Sung Ju Hwang, and
Yonina C. Eldar
working on, 2022.

Research on **Unsupervised Federated Learning**

Wonyong Jeong, Jeeyeop Rhu, [Jaehong Yoon](#), and Sung Ju Hwang
working on, 2022.

CONFERENCE
PUBLICATIONS

[C7] **Rethinking the Representational Continuity: Towards Unsupervised Con-
tinual Learning**

Divyam Madaan, [Jaehong Yoon](#), Yuanchun Li, Yunxin Liu, and Sung Ju Hwang
International Conference on Machine Learning (**ICLR**) **2022**, Virtual
Oral Presentation (Acceptance Rate = 54/3391 = 1.6%)

[C6] **Online Coreset Selection for Rehearsal-based Continual Learning**

[Jaehong Yoon](#), Divyam Madaan, Eunho Yang, and Sung Ju Hwang
International Conference on Machine Learning (**ICLR**) **2022**, Virtual

[C5] **Federated Continual Learning with Weighted Inter-client Transfer**

[Jaehong Yoon](#)*, Wonyong Jeong*, Giwoong Lee, Eunho Yang, and Sung Ju Hwang
International Conference on Machine Learning (**ICML**) **2021**, Virtual

[C4] **Federated Semi-supervised Learning with Inter-Client Consistency & Dis-
joint Learning**

Wonyong Jeong, [Jaehong Yoon](#), Eunho Yang, and Sung Ju Hwang
International Conference on Learning Representations (**ICLR**) **2021**, Virtual

[C3] **Scalable and Order-robust Continual Learning with Additive Parameter
Decomposition**

[Jaehong Yoon](#), Saehoon Kim, Eunho Yang, and Sung Ju Hwang
International Conference on Learning Representations (**ICLR**) **2020**, Addis ababa,
Ethiopia, Virtual

[C2] **Lifelong Learning with Dynamically Expandable Networks**

[Jaehong Yoon](#), Eunho Yang, Jeongtae Lee, and Sung Ju Hwang
International Conference on Learning Representations (**ICLR**) **2018**, Vancouver, Canada

[C1] **Combined Group and Exclusive Sparsity for Deep Neural Networks**

[Jaehong Yoon](#) and Sung Ju Hwang
International Conference on Machine Learning (**ICML**) **2017**, Sydney, Australia

PREPRINTS

- [P4] **Forgetting-free Continual Learning with Winning Subnetworks**
Haeyong Kang, Rusty John Lloyd Mina, Sultan Rizky Hikmawan Madjid,
Jaehong Yoon, Chang D. Yoo, Sung Ju Hwang, and Mark Hasegawa-Johnson
Submitted, 2022.
- [P3] **Bitwidth Heterogeneous Federated Learning with Progressive Weight De-quantization**
Jaehong Yoon*, Geon Park*, Wonyong Jeong, and Sung Ju Hwang
Submitted, arXiv:2202.11453, 2022.
- [P2] **Rapid Structural Pruning of Neural Networks with Set-based Task-Adaptive Meta-Pruning**
Minyoung Song, **Jaehong Yoon**, Eunho Yang, and Sung Ju Hwang
arXiv:2006.12139, 2020.
- [P1] **Adaptive Network Sparsification with Dependent Beta-Bernoulli Dropout**
Juho Lee, Saehoon Kim, **Jaehong Yoon**, Haebeom Lee, Eunho Yang, and Sung Ju Hwang
arXiv:1805.10896, 2018.

WORKSHOP
PRESENTATIONS

- [W2] **Federated Semi-supervised Learning with Inter-client Consistency**
Wonyong Jeong, **Jaehong Yoon**, Eunho Yang, and Sung Ju Hwang
ICML Workshop on Federated Learning for User Privacy and Data Confidentiality,
ICML 2020 (**Long Presentation**), (**Best Student Paper Award**)
- [W1] **Federated Continual Learning with Weighted Inter-client Transfer**
Jaehong Yoon*, Wonyong Jeong*, Giwoong Lee, Eunho Yang, and Sung Ju Hwang
ICML Workshop on Lifelong Machine Learning, ICML 2020

PATENTS
(US ONLY)

- Method and Apparatus with Neural Network and Training
Jaehong Yoon, Saehoon Kim, Eunho Yang, and Sung Ju Hwang
US 20210256374 A1, Aug 2021
- Electronic Apparatus and Method for Re-learning Trained Model
Jaehong Yoon, Eunho Yang, Jeongtae Lee, and Sung Ju Hwang
US 20180357539 A1, Dec 2018

REVIEWER
SERVICES

INTERNATIONAL CONFERENCES

- 2022 *Conference on Lifelong Learning Agents* (CoLLAs)
- 2019 – 2022 *International Conference on Machine Learning* (ICML)
- 2019 – 2022 *International Conference on Learning Representations* (ICLR)
- 2018 – 2021 *Neural Information Processing System* (NEURIPS)
- 2020 *International Joint Conferences on Artificial Intelligence* (IJCAI)
- 2020 *Association for the Advancement of Artificial Intelligence* (AAAI)

INTERNATIONAL JOURNALS

- 2020, 2022 *IEEE Transactions on Neural Networks and Learning Systems* (TNNLS)
- 2021 *IEEE Transactions on Pattern Analysis and Machine Intelligence* (TPAMI)
- 2021 *IEEE/ACM Transactions on Networking* (ToN)
- 2020 *Neural Networks*

- AWARDS NAVER Ph.D. Fellowship Award, 2017
- INVITED TALKS LIFELONG LEARNING WITH DYNAMICALLY EXPANDABLE NETWORKS
- Samsung SDS, 2019
 - Tech. Talk from NAVER Corp., 2018
 - Tech. Open Connect (T-T.O.C) from SK-Telecom, 2018
- COMBINED GROUP AND EXCLUSIVE SPARSITY FOR DEEP NEURAL NETWORKS
- Korea Software Congress (KSC), 2017
- REFERENCES • [Prof. Sung Ju Hwang](#), Professor, KAIST
Email: sjhwang82@kaist.ac.kr
- [Prof. Eunho Yang](#), Associate Professor, KAIST
Email: eunhoy@kaist.ac.kr
- [Dr. Yue Cao](#), Senior Researcher, Microsoft Research Asia
Email: yue.cao@microsoft.com