

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

Weizmann Institute of Science, Rehovot, Israel

VISITING STUDENT **Oct 2022 - Nov 2022**

- Host: [Prof. Yonina Eldar](#)

Microsoft Research, Beijing, China

RESEARCH INTERNSHIP **Nov 2021 - Apr 2022**

- Visual Computing Group
- Mentor: [Yue Cao](#)

MLAI Lab., KAIST, Daejeon, South Korea

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

AITRICS, Seoul, South Korea

RESEARCH INTERNSHIP **Mar 2018 - May 2018**

[C9] **Bitwidth Heterogeneous Federated Learning with Progressive Weight Dequantization**

[Jaehong Yoon*](#), Geon Park*, Wonyong Jeong, and Sung Ju Hwang
International Conference on Machine Learning (**ICML**) **2022**, Baltimore, USA

[C8] **Forget-free Continual Learning with Winning Subnetworks**

Haeyong Kang*, Rusty J. L. Mina*, Sultan R. H. Madjid, [Jaehong Yoon](#), Mark Hasegawa-Johnson, Sung Ju Hwang, and Chang D. Yoo
International Conference on Machine Learning (**ICML**) **2022**, Baltimore, USA

[C7] **Rethinking the Representational Continuity: Towards Unsupervised Continual 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 & Disjoint 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

- [P5] **On the Soft-Subnetwork for Few-shot Class Incremental Learning**
Haeyong Kang, [Jaehong Yoon](#), Sultan Rizky Hikmawan Madjid, Sung Ju Hwang, Chang D. Yoo
Submitted, 2022.
- [P4] **BiTAT: Neural Network Binarization with Task-dependent Aggregated Transformation**
Geon Park*, [Jaehong Yoon*](#), Haiyang Zhang, Xing Zhang, Sung Ju Hwang, and Yonina C. Eldar
Submitted, arXiv:2207.01394, 2022.
- [P3] **Personalized Subgraph Federated Learning**
Jinheon Baek*, Wonyong Jeong*, Jiongdao Jin, [Jaehong Yoon](#), and Sung Ju Hwang
Submitted, arXiv:2206.10206, 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 – 2022 *Neural Information Processing System (NEURIPS)*
- 2020 *International Joint Conferences on Artificial Intelligence (IJCAI)*
- 2020 *Association for the Advancement of Artificial Intelligence (AAAI)*

INTERNATIONAL JOURNALS

- 2022 *Journal of Artificial Intelligence Research (JAIR)*
- 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 REPRESENTATIONAL CONTINUITY FOR UNSUPERVISED CONTINUAL LEARNING

- Korea Computer Congress (KCC), 2022

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
- [Prof. Yonina Eldar](#), Professor, Weizmann Institute of Science, Israel
Email: yonina.eldar@weizmann.ac.il
- [Dr. Yue Cao](#), Senior Researcher, Microsoft Research Asia
Email: yue.cao@microsoft.com