

# Jihoon Tack

Homepage: <https://jihoontack.github.io>

Email: [jihoontack@kaist.ac.kr](mailto:jihoontack@kaist.ac.kr) / [jihoontack@gmail.com](mailto:jihoontack@gmail.com)

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## RESEARCH INTERESTS

My research is primarily centered on developing efficient machine learning frameworks to tackle the emerging challenges of large models. In particular, I have focused on developing efficient pre-training and adaptation algorithms by leveraging useful prior knowledge extracted from multiple tasks, e.g., meta- and continual-learning, and designing efficient data representations for signals that scale resolution while reducing the storage requirements, i.e., Neural Fields. Furthermore, I have recently been working on continually adapting large language models to learn novel knowledge from new data efficiently.

**Keywords:** Meta-Learning, Continual-Learning, Neural Fields, Large Language Models

## EDUCATION

**M.S. & Ph.D. in Artificial Intelligence** Mar. 2019 - Feb. 2025 (expected)  
KAIST, Daejeon, South Korea  
Advisor: Prof. [Jinwoo Shin](#)

**B.S. in Electrical Engineering and Mathematics (minor)** Mar. 2014 - Feb. 2019  
KAIST, Daejeon, South Korea

## WORK EXPERIENCE

**Visiting Ph.D. Student** Jun. 2023 - Present  
University of Oxford, Oxford, United Kingdom  
with Prof. [Yee Whye Teh](#)

**External Collaborator** Jun. 2022 - Present  
Google DeepMind, London, United Kingdom (remote)  
with Dr. [Jonathan Richard Schwarz](#)

**External Collaborator** Apr. 2022 - May 2023  
POSTECH, Pohang, South Korea (remote)  
with Prof. [Jaeho Lee](#)

## PUBLICATIONS

\* denotes equal contribution

### Conferences

- [1] Learning Large-scale Neural Fields via Context Pruned Meta-Learning  
**Jihoon Tack**, Subin Kim, Sihyun Yu, Jaeho Lee, Jinwoo Shin, Jonathan Richard Schwarz  
Conference on Neural Information Processing Systems ([NeurIPS](#)) 2023
- [2] Modality-Agnostic Self-Supervised Learning with Meta-Learned Masked Auto-Encoder  
Huiwon Jang\*, **Jihoon Tack**\*, Daewon Choi, Jongheon Jeong, Jinwoo Shin  
Conference on Neural Information Processing Systems ([NeurIPS](#)) 2023
- [3] Modality-Agnostic Variational Compression of Implicit Neural Representations  
**Jihoon Tack**\*, Jonathan Richard Schwarz\*, Yee Whye Teh, Jaeho Lee, Jinwoo Shin  
International Conference on Machine Learning ([ICML](#)) 2023
- [4] STUNT: Few-shot Tabular Learning with Self-generated Tasks from Unlabeled Tables  
Jaehyun Nam, **Jihoon Tack**, Kyungmin Lee, Hankook Lee, Jinwoo Shin  
International Conference on Learning Representations ([ICLR](#)) 2023 (**spotlight presentation**)
- [5] Rethinking the Entropy of Instance in Adversarial Training  
Minseon Kim, **Jihoon Tack**, Jinwoo Shin, Sung Ju Hwang  
IEEE Conference on Secure and Trustworthy Machine Learning ([SaTML](#)) 2023

- [6] Meta-Learning with Self-Improving Momentum Target  
**Jihoon Tack**, Jongjin Park, Hankook Lee, Jaeho Lee, Jinwoo Shin  
Conference on Neural Information Processing Systems (NeurIPS) 2022
- [7]  $K$ -centered Patch Sampling for Efficient Video Recognition  
Seong Hyeon Park, **Jihoon Tack**, Byeongho Heo, Jung-Woo Ha, Jinwoo Shin  
European Conference on Computer Vision (ECCV) 2022
- [8] Generating Videos with Dynamics-aware Implicit Generative Adversarial Networks  
Sihyun Yu\*, **Jihoon Tack\***, Sangwoo Mo\*, Hyunsu Kim, Junho Kim, Jung-Woo Ha, Jinwoo Shin  
International Conference on Learning Representations (ICLR) 2022
- [9] Consistency Regularization for Adversarial Robustness  
**Jihoon Tack**, Sihyun Yu, Jongheon Jeong, Minseon Kim, Sung Ju Hwang, Jinwoo Shin  
AAAI Conference on Artificial Intelligence (AAAI) 2022
- [10] Meta-Learning Sparse Implicit Neural Representations  
**Jihoon Tack\***, Jaeho Lee\*, Namhoon Lee, Jinwoo Shin  
Conference on Neural Information Processing Systems (NeurIPS) 2021
- [11] CSI: Novelty Detection via Contrastive Learning on Distributionally Shifted Instances  
**Jihoon Tack\***, Sangwoo Mo\*, Jongheon Jeong, Jinwoo Shin  
Conference on Neural Information Processing Systems (NeurIPS) 2020
- [12] Adversarial Self-Supervised Contrastive Learning  
Minseon Kim, **Jihoon Tack**, Sung Ju Hwang  
Conference on Neural Information Processing Systems (NeurIPS) 2020

### Workshops

- [1] Semi-supervised Tabular Classification via In-context Learning of Large Language Models  
Jaehyun Nam, Woomin Song, Seong Hyeon Park, **Jihoon Tack**, Sukmin Yun, Jaehyung Kim, Jinwoo Shin  
ICML Workshop on Efficient Systems for Foundation Models (ICMLW-ES-FoMo) 2023
- [2] Consistency Regularization for Training Confidence-Calibrated Classifiers  
Youngbum Hur\*, **Jihoon Tack\***, Eunho Yang, Sung Ju Hwang, Jinwoo Shin  
ICML Workshop on Uncertainty & Robustness in Deep Learning (ICMLW-UDL) 2021

### HONORS

**Google Ph.D. Fellowship 2023**, Research Area: Machine Learning  
**Samsung Humantech Paper Awards 2023**, Bronze Prize  
**Best Paper Award**, Korean Artificial Intelligence Association 2021  
**Qualcomm Innovation Fellowship Korea 2020**  
**Reviewer Awards:** NeurIPS 2020, CVPR 2021, NeurIPS 2022

### INVITED TALKS

“Learning Large-scale Neural Fields” LG AI Research (Seoul, Korea)	Apr. 2023
“Meta-Learning Sparse Implicit Neural Representation” Rokit Healthcare (Seoul, Korea)	Jun. 2022
“Consistency Regularization for Adversarial Robustness” Korean Artificial Intelligence Association (remote)	Nov. 2021
“Consistency Regularization for Adversarial Robustness” ICML workshop on Adversarial Machine Learning (remote)	Jul. 2021

“CSI: Novelty Detection via Contrastive Learning on Distributionally Shifted Instances” Feb. 2021  
Qualcomm AI Research Korea (remote)

“CSI: Novelty Detection via Contrastive Learning on Distributionally Shifted Instances” Dec. 2020  
NeurIPS Social: ML in Korea (remote)

“CSI: Novelty Detection via Contrastive Learning on Distributionally Shifted Instances” Dec. 2020  
Korea Software Congress (remote)

ACADEMIC  
ACTIVITIES

**Conference Reviewer:** NeurIPS, ICML, ICLR, CVPR, ICCV, AAAI  
**Journal Reviewer:** TMLR, IJCV, IEEE TNNLS, IEEE T-IFS, IEEE TIP  
**Workshop Reviewer:** AI4CC@CVPR, VAND@CVPR, Neural-Field@ICLR, DistShift@NeurIPS

TEACHING  
EXPERIENCE

**Head Teaching Assistant**, “AI503: Mathematics for AI”, KAIST Fall 2021  
**Head Teaching Assistant**, “AI602: Recent Advances in Deep Learning”, KAIST Spring 2021  
**Teaching Assistant**, “AI504: Programming for AI”, KAIST Fall 2020  
**Teaching Assistant**, “AI-Expert Program”, Samsung-DS Summer 2020  
**Teaching Assistant**, “AI703: Systems and Applications of AI and ML”, KAIST Spring 2020  
**Teaching Assistant**, “EE209: Programming Structure for EE”, KAIST Fall 2019

PROJECTS

**Confidence Calibrated Regression for Large-scale Used Car Tabular Data** Jul. 2017 - Mar. 2020

- Developed an AI system that predicts price, depreciation, and sales duration intervals of a used car.
- Developed core ML algorithms in the system: (i) uncertainty estimation for regression tasks, (ii) confidence calibration for estimated uncertainty, and (iii) removing spurious feature correlation.
- The system is deployed at [KBchachacha](#) (implemented in Tensorflow; only Korean supported).
- Worked as an undergraduate research intern (Host: Prof. Jinwoo Shin, Prof. Dongsu Han).

TECH. SKILLS

C, Python / PyTorch, TensorFlow / huggingface {transformer, peft}, functorch, torchmeta, higher

last update: October 2023