Taehyeon Kim

85, Hoegi-ro, Dongdaemun-gu, Seoul, Republic of Korea

+82 10 6556 3876

potter32@kaist.ac.kr, taehyeon@qti.qualcomm.com

taehyeon-kim-6a1239207

Born 10 June 1995

RESEARCH INTERESTS

- **Optimization** for training deep neural networks
- **Auto-ML**: automating the tasks of applying machine learning to real-world problems.
- **Trustworthy and real-world** AI/ML challenges
- **Federated Learning** : train an algorithm across multiple decentralized edge devices

EDUCATION

2020 – Present

Ph. D. Candidate in Machine Learning

Korea Advanced Institute of Science and Technology (KAIST) - Seoul, Korea

- Advisor: Prof. Se-Young Yun

2018 – 2020

Master's degree in Knowledge Service Engineering

Korea Advanced Institute of Science and Technology (KAIST) - Daejeon, Korea

- Advisor: Prof. Se-Young Yun
- To train robust deep neural networks in the presence of **adversarial instances** for image classification
- Thesis title: *Orthogonal Feature Regularization: A Novel Approach for Training Robust Models*

2013 – 2018

Bachelor's degree in Mathematical Sciences

Korea Advanced Institute of Science and Technology (KAIST) - Daejeon, Korea

- **Intellectual Property Minor Program** for Undergraduate Students (Minor)

RESEARCH EXPERIENCE

April 2021 – June 2021

Research project manager position

Collaboration with Electronics and Telecommunications Research Institute (ETRI)

- Develop the **Federated Learning** Algorithms for the deployment of edge devices

October 2020 – December 2020

Research project manager position

Collaboration with Electronics and Telecommunications Research Institute (ETRI)

- Designed and developed **storage- and computation-efficient object detection models**

September 2020 – November 2020

Research project manager position

Collaboration with Electronics and Telecommunications Research Institute (ETRI)

- Developed the **image classification & object detection** source code for the **deployment to test-bed (Nvidia-Jetson)**

April 2020 – December 2020

Research assistant

Venture Research Program for Graduate and Ph. D students, KAIST

- Developed the automated machine learning algorithm for **user and task aware dynamic control of exoskeleton suit dimensions for paraplegics**

January 2020 – December 2020

Research project manager position

Collaboration with Electronics and Telecommunications Research Institute (ETRI)

- Developed the **automated hyper-parameter search algorithm** for ML algorithms.

April 2018 – December 2019

Research assistant

Collaboration with Electronics and Telecommunications Research Institute (ETRI)

- Developed the efficient models and training algorithms for **Edge Device**

AWARDS & ACHIEVEMENTS

December 2020 **8th Award in NeurIPS 2020 Black-Box Optimization Challenge**
- BBO-challenge homepage: https://bbochallenge.com/
- Subjects: Auto-ML, Bayesian Learning, Hyperparameter Optimization.

December 2019 **2nd & 3rd Awards in NeurIPS 2019 MicroNet Challenge, CIFAR-100 Track.**
- MicroNet-challenge homepage: https://micronet-challenge.github.io/
- Subjects: Image Classification, Model Compression.

WORK EXPERIENCES

Qualcomm **Computer Vision and Machine Learning R&D Intern for Autonomous Drivingreporting**
June 2020 – Present Developing efficient and effective algorithms for object detection and semantic segmentation
- Subjects: High Resolution Vision Tasks, Neural Architecture Search.

PUBLICATIONS

[C3] **Kim, T.**, Oh, J., Kim, N., Cho, S., & Yun, S. Y. (2021). Comparing Kullback-Leibler Divergence and Mean Squared Error Loss in Knowledge Distillation. *In the 30th International Joint Conference on Artificial Intelligence (IJCAI)*, Aug. 2021 (**top conference**, acceptance rate: 13.9%)

[C2] **Kim, T.**, Ahn, J., Kim, N., & Yun, S. (2020). Adaptive Local Bayesian Optimization Over Multiple Discrete Variables. Workshop at NeurIPS 2020 Competition Track on Black-Box Optimization Challenge, Dec. 2020.

[C1] **Kim, T.**, Kim, J. & Yun, S.. (2020). Efficient Model for Image Classification With Regularization Tricks. Proceedings of the NeurIPS 2019 Competition and Demonstration Track, in Proceedings of Machine Learning Research 123:13-26 Available from http://proceedings.mlr.press/v123/kim20a.html .

UNDER REVIEW & WORKING PAPERS

[U2] **Kim, T.** & Yun, S.. (2021). The impact of the Kernel Orthogonality Regularization in Training Deep Convolutional Neural Networks, Under review.

[U1] **Kim, T.**, Ko, J., Cho, S., Choi, J. & Yun, S.. (2021). FINE Samples for Learning with Noisy Labels., Under review.

[W1] **Kim, T.**, Bae, S., Lee, J. & Yun, S.. (2021). Accurate and Fast Federated Learning via Combinatorial Multi-Armed Bandits., Working in Progress.

LEADERSHIP

March 2021 – Present **Representative of doctoral students**
Graduate School of AI, KAIST, Korea.
- Construct organizations
- Being an intermediator between the professors and the students

March 2020 – February 2021 **Lab master**
Optimization and Statistical Inference Laboratory (OSI LAB), KAIST, Korea.
- Advisor: Prof. Se-Young Yun
- Construct organizations
- Being an intermediator between the advisor and the students
- Project team building

TEACHING EXPERIENCES

October 2020 – November 2020 **Teaching assistant**
Teaching theories and practices for deep learning in the LG AI CAMP Module(3) Computer Vision, LG, Academy, Korea
- Deal with image classification and semantic segmentation using public COVID dataset in Kaggle.

March 2020 – October 2020 **Advisory committee**
AI Exploration Program, National Science Museum, Korea.
- Provide advice for advanced students to develop their research
- Subjects: reinforcement learning, object detection, image classification, evolutionary algorithm, bandit algorithm.

March 2019 – July 2019 **Teaching assistant**
Dept. Knowledge Service Engineering, KAIST, Korea.
- The lecture dealt with the basic overview of deep learning
- Assist lectures by making supplementary materials, assignments, and helping grading

January 2019 – January 2019 **Teaching assistant**
Teaching theories and practices for deep learning in the LG AIB Intermediate CAMP, LG Academy, Korea.
- Subjects: optimization in deep learning, image classification.

January 2019 – January 2019 **Lecturer**
Teaching python code implementation in the Samsung SW Academy Start CAMP, Saumsung SW Academy, Korea.
- Subjects: Chatbot, basic python (e.g., for loop, condition)

SKILLS & OTHERS

Languages Strong reading, writing and speaking competencies for Korean and English.

Coding Python, PyTorch, LaTeX, ...

Misc. Academic research, teaching, training, consultation, LaTeX typesetting and publishing.