

Sukwon Yun

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RESEARCH INTEREST

AI for Science, Multi-Agent LLMs

- Addressing inductive bias of AI (LLMs, MoE, GNNs) with their application in Computational Biology

EDUCATION

- University of North Carolina at Chapel Hill**, Chapel Hill, NC, USA Aug 2024 – Present
- Ph.D. in Computer Science (Advisor: [Prof. Tianlong Chen](#))
- Korea Advanced Institute of Technology (KAIST)**, Daejeon, South Korea Aug 2021 – Aug 2023
- M.S. in Industrial & Systems Engineering (Advisor: [Prof. Chanyoung Park](#))
- Hanyang University**, Seoul, South Korea Mar 2015 – Aug 2021
- B.S. in Industrial Engineering, *Summa Cum Laude*

PUBLICATIONS (*: Equal contribution)

CONFERENCES

- [C14] I²MoE: Interpretable Multimodal Interaction-aware Mixture-of-Experts
Jiayi Xin, **Sukwon Yun**, Jie Peng, Inyoung Choi, Jenna L. Ballard, Tianlong Chen, Qi Long
ICML 2025
- [C13] Modalities Contribute Unequally: Enhancing Medical Multi-modal Learning through Adaptive Modality Token Re-balancing
Jie Peng, Jenna L. Ballard, Mohan Zhang, **Sukwon Yun**, Jiayi Xin, Qi Long, Yanyong Zhang, Tianlong Chen
ICML 2025
- [C12] Sparse MoE as a New Treatment: Addressing Forgetting, Fitting, Learning Issues in Multi-Modal Multi-Task Learning
Jie Peng, **Sukwon Yun**, Kaixiong Zhou, Ruida Zhou, Thomas Hartvigsen, Yanyong Zhang, Zhangyang Wang, Tianlong Chen
CPAL 2025
- [C11] Cut the Crap: An Economical Communication Pipeline for LLM-based Multi-Agent Systems
Guibin Zhang, Yanwei Yue, Zhixun Li, **Sukwon Yun**, Guancheng Wan, Kun Wang, Dawei Cheng, Jeffrey Xu Yu, Tianlong Chen
ICLR 2025
- [C10] PortLLM: Personalizing Evolving Large Language Models with Training-Free and Portable Model Patches
Rana Muhammad Shahroz Khan, Pingzhi Li*, **Sukwon Yun***, Zhenyu Wang, Shahriar Nirjon, Chau-Wai Wong, Tianlong Chen
ICLR 2025
- [C9] Subgraph Federated Learning for Local Generalization
Sungwon Kim, Yoonho Lee, Yunhak Oh, Namkyeong Lee, **Sukwon Yun**, Junseok Lee, Sein Kim, Carl Yang, Chanyoung Park
ICLR 2025 **Oral**
- [C8] Flex-MoE: Modeling Arbitrary Modality Combination via the Flexible Mixture-of-Experts
Sukwon Yun, Inyoung Choi, Jie Peng, Yangfan Wu, Jingxuan Bao, Qiyiwen Zhang, Jiayi Xin, Qi Long, Tianlong Chen
NeurIPS 2024 **Spotlight**
- [C7] DALK: Dynamic Co-Augmentation of LLMs and KG to answer Alzheimer’s Disease Questions with Scientific Literature
Dawei Li, Shu Yang, Zhen Tan, Jae Young Baik, **Sukwon Yun**, Joseph Lee, Aaron Chacko, Bojian Hou, Duy Duong-Tran, Ying Ding, Huan Liu, Li Shen, Tianlong Chen
EMNLP 2024 Findings
- [C6] Mew: Multiplexed Immunofluorescence Image Analysis through an Efficient Multiplex Network
Sukwon Yun, Jie Peng, Alexandro Trevino, Chanyoung Park, Tianlong Chen
ECCV 2024
- [C5] DEGNN: Dual Experts Graph Neural Network Handling Both Edge and Node Feature Noise
Tai Hasegawa, **Sukwon Yun**, Xin Liu, Yin Jun Phua, Tsuyoshi Murata
PAKDD 2024

- [C4] MUSE: Music Recommender System with Shuffle Play Recommendation Enhancement
Yunhak Oh*, **Sukwon Yun***, Dongmin Hyun, Sein Kim, Chanyoung Park
CIKM 2023
- [C3] S-Mixup: Structural Mixup for Graph Neural Networks
Junghurn Kim*, **Sukwon Yun***, Chanyoung Park
CIKM 2023 Short
- [C2] MELT: Mutual Enhancement of Long-Tailed User and Item for Sequential Recommendation
Kibum Kim, Dongmin Hyun, **Sukwon Yun**, Chanyoung Park
SIGIR 2023
- [C1] LTE4G: Long-Tail Experts for Graph Neural Networks
Sukwon Yun, Kibum Kim, Kanghoon Yoon, Chanyoung Park
CIKM 2022

JOURNALS

- [J1] Single-cell RNA sequencing data imputation using bi-level feature propagation
Junseok Lee*, **Sukwon Yun***, Yeongmin Kim, Tianlong Chen, Manolis Kellis, Chanyoung Park
Briefings in Bioinformatics 2024

WORKSHOPS

- [W4] Generate, Then Retrieve: Addressing Missing Modalities in Multimodal Learning via Generative AI and MoE
Sukwon Yun*, Jiayi Xin*, Inyoung Choi, Jie Peng, Qi Long, Tianlong Chen
AAAI GenAI4Health 2025 **Best Paper Award**
- [W3] Subgraph Federated Learning for Local Generalization
Sungwon Kim, Yoonho Lee, Yunhak Oh, Namkyeong Lee, **Sukwon Yun**, Junseok Lee, Sein Kim, Carl Yang, Chanyoung Park
KDD FedKDD 2024 **Best Paper Award**
- [W2] Noise Robust Graph Learning under Feature-Dependent Graph-Noise
Yeonjun In, Kanghoon Yoon, **Sukwon Yun**, Kibum Kim, Sungchul Kim, Chanyoung Park
WWW DCAI 2024 **Oral**
- [W1] Single-cell RNA-seq data imputation using Feature Propagation
Sukwon Yun*, Junseok Lee*, Chanyoung Park
ICML 2023 WCB **Best Paper Award**

PREPRINT

- [P3] Symbolic Mixture-of-Experts: Adaptive Skill-based Routing for Heterogeneous Reasoning
Justin Chih-Yao Chen*, **Sukwon Yun***, Elias Stengel-Eskin*, Tianlong Chen, Mohit Bansal
- [P2] GRNFormer: A Biologically-Guided Framework for Integrating Gene Regulatory Networks into RNA Foundation Models
Mufan Qiu, Xinyu Hu, Fengwei Zhan, **Sukwon Yun**, Jie Peng, Ruichen Zhang, Bhavya Kailkhura, Jiekun Yang, Tianlong Chen
- [P1] scMoE: single-cell Multi-Modal Multi-Task Learning via Sparse Mixture-of-Experts
Sukwon Yun*, Jie Peng*, Namkyeong Lee, Yanyong Zhang, Chanyoung Park, Zunpeng Liu, Tianlong Chen

RESEARCH EXPERIENCES

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|---|---|
| <p>Massachusetts Institute of Technology (MIT), Cambridge, MA</p> <ul style="list-style-type: none"> ▪ Remote Research Intern in Kellis Lab. <ul style="list-style-type: none"> • Mentors: Dr. Tianlong Chen, Dr. Zunpeng Liu, Dr. Leandro Z. Agudelo, Dr. Lei Xiong <p>Tokyo Institute of Technology (Tokyo Tech), Tokyo, Japan</p> <ul style="list-style-type: none"> ▪ Visiting Researcher in Murata Lab. <ul style="list-style-type: none"> • Host: Prof. Tsuyoshi Murata <p>Korea Advanced Institute of Technology (KAIST), Daejeon, South Korea</p> <ul style="list-style-type: none"> ▪ Research Intern in Data Science & Artificial Intelligence Lab. (DSAIL) <ul style="list-style-type: none"> • Mentor: Prof. Chanyoung Park <p>Hanyang University, Seoul, South Korea</p> <ul style="list-style-type: none"> ▪ Student Researcher in Intelligent Data Systems Lab. (IDSL) <ul style="list-style-type: none"> • Mentor: Prof. Kichun Lee | <p>Aug 2023 – Jul 2024</p> <p>Oct 2022 – Feb 2023</p> <p>Dec 2020 – Feb 2021</p> <p>Sep 2020 – Aug 2021</p> |
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TEACHING EXPERIENCE

KAIST

	▪ IE343: Statistical Machine Learning	Spring, 2022
AWARDS & SCHOLARSHIPS	Best Paper Award	2025
	▪ AAAI Workshop on Large Language Models and Generative AI for Health, Philadelphia, PA, USA	
	Best Paper Award	2024
	▪ KDD Workshop on Federated Learning for Data Mining and Graph Analytics, Barcelona, Spain	
	Best Paper Award	2023
	▪ ICML Workshop on Computational Biology, Honolulu, Hawai'i, USA	
	Korea National Scholarship	2021 – 2023
	▪ Awarded by the Ministry of Science and ICT, South Korea	
	Poster Competition Excellence Award	2022
	▪ Awarded at Industrial/Social Problem Solving Session held by Department of ISysE, KAIST	
	SIGIR Student Travel Award	2022
	▪ ACM International Conference on Information and Knowledge Management, Georgia, USA	
PROFESSIONAL SERVICES	Merit Based Scholarship	2021
	▪ Awarded by the Department of Industrial Engineering, Hanyang University	
	Hanyang Academic Achievement Award	2021
	▪ Awarded within the top 3% among the College of Engineering, Hanyang University	
	Certificate of Recognition	2018
	▪ Awarded when serving military service as an auxiliary police by Seoul Metropolitan Police	
	Event Organizations	
	▪ Session Chair, Knowledge Representation 3, Birmingham, UK, CIKM (2023)	
	Program Committee	
	▪ AAAI (2025)	
	Conference Reviews	
	▪ NeurIPS (2023 -), ICLR (2024 -), ICML (2024 -), CVPR (2025), ICCV (2025), ECCV (2024), MICCAI (2025), ACL (2025), COLM (2025), KDD (2025), CPAL (2024 -)	
	Workshop Reviews	
	▪ GenAI4Health @ AAAI (2025), ML4LMS @ ICML (2024), ASEA @ AAAI (2024)	