

# Sukwon Yun

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## RESEARCH INTEREST

### Graph Neural Networks and their *real-world* applications

- Mitigating the inductive bias of Graph Neural Networks (GNNs) in real-world scenarios, with their application in the field of Computational Biology, particularly single-cell RNA sequencing (scRNA-seq)
- **Keywords:** Long-Tail Problem, Missing Features, Heterophily, Data Sparsity (Dropout)

## EDUCATION

**Korea Advanced Institute of Technology (KAIST)**, Daejeon, South Korea Aug 2021 – Aug 2023

- M.S. in Industrial & Systems Engineering
  - Research Interest: Graph Neural Networks with their applications
  - Advisor: [Prof. Chanyoung Park](#)

**Hanyang University**, Seoul, South Korea Mar 2015 – Aug 2021

- B.S. in Industrial Engineering
  - Early Graduation, *Summa Cum Laude*
  - Period includes two years of military service, required for all Korean men

## PUBLICATIONS

(\*: Equal contribution)

### CONFERENCES

- [C2] MELT: Mutual Enhancement of Long-Tailed User and Item for Sequential Recommendation  
Kibum Kim, Dongmin Hyun, **Sukwon Yun**, Chanyoung Park  
ACM SIGIR Conference on Research and Development in Information Retrieval (**SIGIR 2023**)
- [C1] LTE4G: Long-Tail Experts for Graph Neural Networks  
**Sukwon Yun**, Kibum Kim, Kanghoon Yoon, Chanyoung Park  
ACM International Conference on Information and Knowledge Management (**CIKM 2022**)

### WORKSHOPS

- [W1] Single-cell RNA-seq data imputation using Feature Propagation  
**Sukwon Yun\***, Junseok Lee\*, Chanyoung Park  
ICML Workshop on Computational Biology (**ICML WCB 2023 Contributed Talk**)

## IN SUBMISSION

### CONFERENCES

- [S3] Oldie but Goodie: Re-illuminating Label Propagation on Graphs with Partially Observed Features  
**Sukwon Yun**, Xin Liu, Yunhak Oh, Junseok Lee, Tsuyoshi Murata, Chanyoung Park  
*Submitted to NeurIPS 2023*
- [S2] Muffin: Music Recommender System via Shuffle Invariant Training  
Yunhak Oh\*, **Sukwon Yun\***, Dongmin Hyun, Sein Kim, Chanyoung Park  
*Submitted to CIKM 2023*
- [S1] Structural Mixup for Graph Neural Networks  
Junghurn Kim\*, **Sukwon Yun\***, Chanyoung Park  
*Submitted to CIKM Short 2023*

## RESEARCH EXPERIENCES

**Tokyo Institute of Technology (Tokyo Tech)**, Tokyo, Japan

Oct 2022 – Feb 2023

- Visiting Researcher in Murata Lab.
  - Host: [Prof. Tsuyoshi Murata](#)
  - Explored weaknesses of structured-based and GNN-based methods in graphs with missing features
  - Proposed supervised contrastive learning that incorporates pseudo-labels in graph domains
  - Submitted a paper that alleviates missing feature problem on graphs at NeurIPS 2023

**Korea Advanced Institute of Technology (KAIST)**, Daejeon, South Korea

Dec 2020 – Feb 2021

- Research Intern in Data Science & Artificial Intelligence Lab. (DSAIL)
  - Advisor: [Prof. Chanyoung Park](#)
  - Explored the theoretical basis and practical implementation of GNNs such as GCN and GAT ([link](#))

**Hanyang University**, Seoul, South Korea

Sep 2020 – Aug 2021

- Research Student in Intelligent Data Systems Lab. (IDSL)
  - Advisor: [Prof. Kichun Lee](#)
  - Proposed an advanced version of Neural Graph Collaborative Filtering using a heterogeneous graph
  - Implemented Matrix Factorization of the BPR model using multiprocessing on the Epinion dataset
  - Implemented One-Class SVM on anomaly detection task using MNIST dataset

<b>TEACHING EXPERIENCE</b>	<b>IE343: Statistical Machine Learning, KAIST</b>	Spring, 2022
	<ul style="list-style-type: none"> <li>▪ Gave a tutorial and hosted Kaggle Competition (Course Project) as a Teaching Assistant <ul style="list-style-type: none"> <li>• Competition: Predicting a person's income using a demographic dataset under an imbalance situation</li> </ul> </li> </ul>	
<b>AWARDS &amp; SCHOLARSHIPS</b>	<b>Korea National Scholarship</b>	2021 – Present
	<ul style="list-style-type: none"> <li>▪ Awarded by the Ministry of Science and ICT, South Korea</li> </ul>	
	<b>Poster Competition Excellence Award</b>	2022
	<ul style="list-style-type: none"> <li>▪ Awarded at Industrial/Social Problem Solving Session held by Department of ISysE, KAIST</li> </ul>	
	<b>SIGIR Student Travel Award</b>	2022
	<ul style="list-style-type: none"> <li>▪ ACM International Conference on Information and Knowledge Management, Georgia, USA</li> </ul>	
	<b>Merit Based Scholarship</b>	2021
	<ul style="list-style-type: none"> <li>▪ Awarded by the Department of Industrial Engineering, Hanyang University</li> </ul>	
	<b>Hanyang Academic Achievement Award</b>	2021
	<ul style="list-style-type: none"> <li>▪ Awarded within the top 3% among the College of Engineering, Hanyang University</li> </ul>	
	<b>Certificate of Recognition</b>	2018
	<ul style="list-style-type: none"> <li>▪ Awarded when serving military service as auxiliary police by Seoul Metropolitan Police</li> </ul>	
<b>PROFESSIONAL SERVICES</b>	<b>Conference Reviews</b>	
	<ul style="list-style-type: none"> <li>▪ Conference on Neural Information Processing Systems (NeurIPS)</li> </ul>	2023
<b>PROJECTS</b>	<b>Recommending Financial Products based on Graph Embeddings</b>	Feb 2021 – Feb 2022
	<ul style="list-style-type: none"> <li>▪ Collaboration with Hana Bank, South Korea <ul style="list-style-type: none"> <li>• Generated financial networks via Jaccard similarity from user's data and enhanced user representation via GNN</li> </ul> </li> </ul>	
<b>REFERENCES</b>	<ul style="list-style-type: none"> <li>▪ <b>Prof. Chanyoung Park</b>, Assistant Professor, KAIST Email: cy.park@kaist.ac.kr</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ <b>Prof. Tsuyoshi Murata</b>, Professor, Tokyo Tech Email: murata@c.titech.ac.jp</li> </ul>	
	<ul style="list-style-type: none"> <li>▪ <b>Prof. Kichun Lee</b>, Associate Professor, Hanyang University Email: skylee@hanyang.ac.kr</li> </ul>	