# 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 Adavanced 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**

[C4]   Muffin: Music Recommender System via Shuffle Invariant Training
Yunhak Oh\*, **Sukwon Yun**\*, Dongmin Hyun, Sein Kim, Chanyoung Park
ACM International Conference on Information and Knowledge Management (**CIKM 2023**)

[C3]   Structural Mixup for Graph Neural Networks
Junghurn Kim\*, **Sukwon Yun**\*, Chanyoung Park
ACM International Conference on Information and Knowledge Management (**CIKM Short 2023**)

[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 Best Paper Award**)

**IN SUBMISSION**

**CONFERENCES**

[S1]   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*

**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 Adavanced 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

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| **TEACHING EXPERIENCE** | **IE343: Statistical Machine Learning**, KAIST | Spring, 2022 |

**TEACHING EXPERIENCE**

**IE343: Statistical Machine Learning**, KAIST                                    Spring, 2022
- Gave a tutorial and hosted Kaggle Competition (Course Project) as a Teaching Assistant
  - Competition: Predicting a person's income using a demographic dataset under an imbalance situation

**AWARDS & SCHOLARSHIPS**

**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

**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 auxiliary police by Seoul Metropolitan Police

**PROFESSIONAL SERVICES**

**Conference Reviews**
- Conference on Neural Information Processing Systems (NeurIPS)                 2023

**PROJECTS**

**Recommending Financial Products based on Graph Embeddings**        Feb 2021 – Feb 2022
- Collaboration with Hana Bank, South Korea
  - Generated financial networks via Jaccard similarity from user's data and enhanced user representation via GNN

**REFERENCES**

- **Prof. Chanyoung Park**, Assistant Professor, KAIST
  Email: cy.park@kaist.ac.kr

- **Prof. Tsuyoshi Murata**, Professor, Tokyo Tech
  Email: murata@c.titech.ac.jp

- **Prof. Kichun Lee**, Associate Professor, Hanyang University
  Email: skylee@hanyang.ac.kr