# Yunhak Oh

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**PROFESSIONAL SUMMARY**

Ph.D. candidate at KAIST specializing in AI for Science (Biology), Graph Representation Learning, and Recommender Systems. My research is published in top-tier venues, including NeurIPS, ICML, ICLR, and KDD. I bring proven industry experience as a Data Science Manager at NielsenIQ, where I led projects that reduced costs by $54K and enabled a $901K M&A data integration.
I am seeking a Research/Applied Scientist role where I can leverage this unique blend of research and practical experience to solve complex challenges and build high-impact solutions.

**TECHNICAL AREAS**

**Artificial Intelligence for Science**

- AI for Science (Biology), Graph Representation Learning, Recommender Systems, and Data Mining

**PROFESSIONAL EXPERIENCE**

**NielsenIQ** (formerly Nielsen), Seoul, South Korea

- Manager, Data Science — Jul 2018 – Aug 2021
  - Reduced operational costs by $54K USD in three months by spearheading an auto-coding project that used ML models to classify web-crawled product descriptions.
  - Generated $71.9K USD in new revenue by engineering a novel e-commerce analysis model that integrated disparate retailer data to more accurately capture market growth.
  - Enabled a $901K USD M&A project by spearheading the critical data and solutions integration between the two merging companies.
  - As Technical Lead, directed a global initiative to automate client inquiry resolution, driving major operational efficiency gains across international teams.
- Senior Executive, Data Science — Jul 2017 – Jun 2018
  - Cut production time by 83% by developing and implementing a data-driven methodology for historical data estimation.
  - Modernized trade practices by orchestrating the transition to modern retail point-of-sale (POS) systems, enhancing data accuracy and operational readiness.
- Executive, Data Science — Jan 2015 – Jun 2017
  - Slashed reporting and data extraction times by 50% and 92% respectively by proactively developing a new suite of software automation tools.

**EDUCATION**

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

- Ph.D. in Graduate School of Data Science — Sep 2023 – Present
  - Research Interest: Recommender System, Graph Representation Learning, AI4Science (Cell Biology)
  - Adviser: Prof. Chanyoung Park
- M.S. in Industrial & Systems Engineering — Sep 2021 – Aug 2023
  - Research Interest: Recommender System, Graph Representation Learning
  - Adviser: Prof. Chanyoung Park

**SungKyunKwan University**, Gyeonggi, South Korea — Mar 2009 – Feb 2015

- B.S.E. in System Management Engineering
  - *Ranked 1st in my graduating class* (1 / 133)
  - Included two years of mandatory military service in the Office of the President of the Republic of Korea
- B.A. in Psychology
  - Dual Degree

**PUBLICATIONS**

(*: Equal contribution)

**CONFERENCES**

[C6] 3D Interaction Geometric Pre-training for Molecular Relational Learning
Namkyeong Lee, **Yunhak Oh**, Heewoong Noh, Gyoung S. Na, Tianfan Fu, Chanyoung Park
**NeurIPS 2025 (Spotlight)** - Thirty-Ninth Conference on Neural Information Processing Systems
*and* **NeurIPS 2024 Workshop** - AI for New Drug Modalities

[C5] Oldie but Goodie: Re-illuminating Label Propagation on Graphs with Partially Observed Features
Sukwon Yun, Xin Liu, **Yunhak Oh**, Junseok Lee, Tianlong Chen, Tsuyoshi Murata, Chanyoung Park
**KDD 2025** - ACM SIGKDD Conference on Knowledge Discovery and Data Mining

[C4] Global Context-aware Representation Learning for Spatially Resolved Transcriptomics
**Yunhak Oh***, Junseok Lee*, Yeongmin Kim, Sangwoo Seo, Namkyeong Lee, Chanyoung Park
**ICML 2025** - International Conference on Machine Learning

[C3] 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, top 1.8%)** - International Conference on Learning Representations *and*
**KDD 2024 Workshop** (Oral, Best Paper Award) - Federated Learning for Data Mining and Graph Analytics (FedKDD)

[C2] MUSE: Music Recommender System with Shuffle Play Recommendation Enhancement
**Yunhak Oh***, Sukwon Yun*, Dongmin Hyun, Sein Kim, Chanyoung Park
**CIKM 2023** - ACM International Conference on Information and Knowledge Management

[C1] GraFN: Semi-Supervised Node Classification on Graph with Few Labels via Non-Parametric Distribution Assignment
Junseok Lee, **Yunhak Oh**, Yeonjun In, Namkyeong Lee, Dongmin Hyun, Chanyoung Park
**SIGIR 2022** - ACM SIGIR Conference on Research and Development in Information Retrieval (Short paper)

**JOURNALS**

[J2] Discovering relationships between skin type and life style using data mining techniques: A case study of Korea
Taeheung Kim, Jihyun Ha, Jong-Seok Lee, **Yunhak Oh**, Yong Ju Cho
Industrial Engineering and Management Systems (2016.03)

[J1] Using data mining techniques to predict win-loss in Korean professional baseball games
**Yunhak Oh**, Han Kim, Jaesub Yun, Jong-Seok Lee
Journal of Korean Institute of Industrial Engineers (2014.02)

## AWARDS & SCHOLARSHIPS

**Best Paper Award** 2024
- KDD 2024 Workshop on Federated Learning for Data Mining and Graph Analytics (FedKDD), Barcelona, Spain

**Nielsen Simply Excellent Awards**, NielsenIQ
- **Gold Award**, Developed and rolled out a Client Inquiry Tool for the global market 2020
- **Gold Award**, Created a best practice of Digitalization and Automation 2020
- **Silver Award**, Developed a Client Inquiry Automation tool 2019
- **Platinum Award**, Developed and rolled out auto-coding project 2019
- **Gold Award**, Contributed data and solution integration in the M&A process 2018
- **Gold Award**, Launched E-commerce Market Read Index version 3.0 of South Korea 2018
- **Gold Award**, Led Digitalization and Automation project 2017
- **Gold Award**, Enhanced Ice-cream Market Read Index of South Korea 2017
- **Gold Award**, Enhanced FMCG Market Read Index of South Korea and boosted client satisfaction 2015

**Certificate**, Nielsen 2019
- Selected as one of the top 20 global data science talents to participate in a leadership development program

**Certificate**, SungKyunKwan University 2015
- Awarded as a representative of the Department of System Management Engineering at the commencement

**National Science and Engineering Scholarship**, Korea Student Aid Foundation 2013 – 2014
- Awarded to a top student in the Department of System Management Engineering

**Bronze Award**, Korea Institute of Industrial Engineers 2013
- 3rd place, Solved industrial problems by building an ML model at a University Student Project Competition

**Academic Excellence Scholarship**, SungKyunKwan University 2009 – 2011

## PROFESSIONAL SERVICES

**PROGRAM COMMITTEE/REVIEWER**
- AI4Science Workshop @ NeurIPS 2025
- Conference on Information and Knowledge Management (CIKM) - Short & Applied Research 2025
- International Conference on Learning Representations (ICLR) 2025

## TALKS AND SEMINARS

**MUSE: Music Recommender System with Shuffle Play Recommendation Enhancement**
- Top Conference Session of Korea Software Congress (KSC) 2023

## REFERENCES

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

**Prof. Jong-Seok Lee**, Associate Professor, KAIST
Email: jongseok.lee@kaist.ac.kr