

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

HITS, Seoul, South Korea

- Research Intern, AI Research 1 Team Nov 2025 – May 2026
 - Engineering a novel single-cell foundation model by leveraging large-scale scRNA-seq datasets (e.g., 80M+ cells) to simulate cellular dynamics within the 'Virtual Cell' project.

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
 - Graduated 1st in the department among 133 students
 - 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

- [C9] scTrilemma: Balancing Identity, Invariance, and Fidelity in Single-Cell Representation Learning
Yunhak Oh, Yoonho Lee, Junseok Lee, Namkyeong Lee, Sang-Yeon Hwang, Yinhua Piao, Hyomin Kim, Seonghwan Kim, Jaechang Lim, Woo Youn Kim, Sungsoo Ahn, Chanyoung Park
NeurIPS 2026 - The Fortieth Annual Conference on Neural Information Processing Systems
- [C8] Screening Lipid Nanoparticles through Structure-Ratio Alignment
Yoonho Lee, **Yunhak Oh**, Hoyoung Choi, Chanyoung Park
NeurIPS 2026 - The Fortieth Annual Conference on Neural Information Processing Systems

- [C7] Learning Adaptive Perturbation-Conditioned Contexts for Robust Transcriptional Response Prediction
Yinhua Piao, Hyomin Kim, Seonghwan Kim, **Yunhak Oh**, Junhyeok Jeon, Sang-Yeon Hwang, Jaechang Lim, Woo Youn Kim, Chanyoung Park, Sungsoo Ahn
ICML 2026 - The International Conference on Machine Learning
and ICLR 2026 Workshop - Machine Learning for Genomics Explorations
and ICLR 2026 Workshop - Generative and Experimental Perspectives for Biomolecular Design
- [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) - The 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 - The 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%) - The 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	

	Departmental Excellence Award , SungKyunKwan University	2015
	▪ Presented to the top-ranked graduate as the department's representative at the commencement ceremony	
	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	ORGANIZING COMMITTEE	
	▪ MM4SciReal: Multimodal AI for Science and the Real World (Workshop @ ACCV)	2026
	PROGRAM COMMITTEE/REVIEWER	
	▪ Conference on Neural Information Processing Systems (NeurIPS)	2026
	▪ International Conference on Learning Representations (ICLR)	2025 – Present
	▪ AI4Science Workshop @ NeurIPS / ICML	2025 – Present
	▪ Conference on Information and Knowledge Management (CIKM) - Short & Applied Research	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	

[CV compiled on 2026-09-24]