

JINWOO KIM

Ph.D. Student
Graph & Geometric DL

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Education

M.S./Ph.D. in Computer Science Korea Advanced Institute of Science and Technology (KAIST) • Advisor: Seunghoon Hong • Research focus: Deep learning for graphs and geometric data.	Mar 2021 – Feb 2026 (expected) South Korea
B.S. in Brain Engineering and Computer Science (Double Major) Korea Advanced Institute of Science and Technology (KAIST) • GPA 4.05/4.3 (Summa Cum Laude)	Mar 2016 – Feb 2021 South Korea

Experience

New York University , Visiting Scholar Host: Kyunghyun Cho, Rajesh Ranganath	Nov 2025 – Jan 2026 New York, NY, US
LG AI Research , Research Intern Host: Moontae Lee, Honglak Lee	Jan – Jul 2022 South Korea

Publications

(P: preprint, C: conference, J: journal, W: workshop, *: equal contribution)

- [P2] **Inverting Data Transformations via Diffusion Sampling**
Jinwoo Kim*, Sékou-Oumar Kaba*, Jiyun Park, Seunghoon Hong, Siamak Ravanbakhsh
Under review 2025
- [P1] **Flock: A Knowledge Graph Foundation Model via Learning on Random Walks**
Jinwoo Kim*, Xingyue Huang*, Krzysztof Olejniczak, Kyungbin Min, Michael Bronstein, Seunghoon Hong, İsmail İlkan Ceylan
arXiv 2025
- [C11] **Sequence Modeling with Spectral Mean Flows**
Jinwoo Kim, Max Beier, Petar Bevanda, Nayun Kim, Seunghoon Hong
NeurIPS 2025
- [C10] **Revisiting Random Walks for Learning on Graphs**
Jinwoo Kim, Olga Zagheni*, Ayhan Suleymanzade*, Youngmin Ryou, Seunghoon Hong
ICLR 2025; ICML 2024 GRaM Workshop
Spotlight Presentation (380/11672=3.26%)
- [C9] **3D Denoisers are Good 2D Teachers: Molecular Pretraining via Denoising and Cross-Modal Distillation**
Sungjun Cho, Dae-Woong Jeong, Sung Moon Ko, Jinwoo Kim, Sehui Han, Seunghoon Hong, Honglak Lee,
Moontae Lee
AAAI 2025
Oral Presentation
- [C8] **Simulation-Free Training of Neural ODEs on Paired Data**
Semin Kim*, Jaehoon Yoo*, Jinwoo Kim, Yeonwoo Cha, Saehoon Kim, Seunghoon Hong
NeurIPS 2024
- [W1] **Learning Symmetrization for Equivariance with Orbit Distance Minimization**
Tien Dat Nguyen*, Jinwoo Kim*, Hongseok Yang, Seunghoon Hong
NeurIPS 2023 NeurRep Workshop
- [C7] **Learning Probabilistic Symmetrization for Architecture Agnostic Equivariance**
Jinwoo Kim, Tien Dat Nguyen, Ayhan Suleymanzade, Hyeokjun An, Seunghoon Hong
NeurIPS 2023
Spotlight Presentation (378/12345=3.06%)
- [C6] **Universal Few-shot Learning of Dense Prediction Tasks with Visual Token Matching**
Donggyun Kim, Jinwoo Kim, Seongwoong Cho, Chong Luo, Seunghoon Hong
ICLR 2023
Outstanding Paper Award (4/4955=0.08%)

[C5] **Pure Transformers are Powerful Graph Learners**

Jinwoo Kim, Tien Dat Nguyen, Seonwoo Min, Sungjun Cho, Moontae Lee, Honglak Lee, Seunghoon Hong
NeurIPS 2022

[C4] **Transformers meet Stochastic Block Models: Attention with Data-Adaptive Sparsity and Cost**

Sungjun Cho, Seonwoo Min, Jinwoo Kim, Moontae Lee, Honglak Lee, Seunghoon Hong
NeurIPS 2022

[C3] **Equivariant Hypergraph Neural Networks**

Jinwoo Kim, Saeyoon Oh, Sungjun Cho, Seunghoon Hong
ECCV 2022

[C2] **Transformers Generalize DeepSets and Can be Extended to Graphs and Hypergraphs**

Jinwoo Kim, Saeyoon Oh, Seunghoon Hong
NeurIPS 2021

[C1] **SetVAE: Learning Hierarchical Composition for Generative Modeling of Set-Structured Data**

Jinwoo Kim*, Jaehoon Yoo*, Juho Lee, Seunghoon Hong
CVPR 2021

[J1] **Spontaneous Retinal Waves Can Generate Long-Range Horizontal Connectivity in Visual Cortex**

Jinwoo Kim*, Min Song*, Jaeson Jang, Se-Bum Paik
The Journal of Neuroscience 40(34) 2020

Honors

Awards

- **Outstanding Researcher Award**, KAIST-Mila Prefrontal AI Research Center 2024
- **ELLIS Mobility Grant [C10]**, ICML 2024 GRaM Workshop 2024
- **Outstanding Paper Award [C6]**, ICLR 2023 2023
- **Samsung Humantech Paper Award [C6]**, Silver Prize 2023
- **Qualcomm Innovation Fellowship Korea [C2]** 2022
- **KAIST Engineering Innovator Award** 2020

Scholarships and fellowships

- **Kwanjeong Education Foundation Scholarship** 2022 – 2023
- **Korea National Science & Technology Scholarship** 2018 – 2019
- **KAIST Alumni Fellowship** 2017 – 2020
- **KAIST Presidential Fellowship** 2016 – 2020
- **Hansung Scholarship for Gifted Students** 2015 – 2016

Invited Talks

Sequence Modeling with Spectral Mean Flows [C11]

- Ben-Gurion University of the Negev (BGU) (Host: Ilan Naiman) Dec 2025

Extrinsic Symmetries for Neural Networks [C7, W1, C10]

- Mila – Quebec AI Institute (Host: Minsu Kim, Junyeob Baek) Jul 2025
- KAIST AI899 Geometric DL (Host: Sungsoo Ahn) May 2025
- Mila – Quebec AI Institute (Host: Siamak Ravanbakhsh, Sékou-Oumar Kaba) Dec 2024
- KAIST–Mila Prefrontal AI Research Center (Host: Sungjin Ahn) Nov 2024
- Sungkyunkwan University (SKKU) (Host: Chang Woo Myung) Aug 2024
- Pohang University of Science and Technology (POSTECH) (Host: Sungsoo Ahn) Nov 2023

Universal Few-shot Learning of Dense Prediction Tasks with Visual Token Matching [C6]

- KAIST–Samsung Electronics DS Division Exchange Meetup (Host: Chulmoo Kang) Aug 2023

Pure Transformers are Powerful Graph Learners [C5]

- Microsoft USA (Host: Nabiha Asghar) Jan 2023
- NeurIPS 2022 at KAIST (Host: Dongkwan Kim) Nov 2022
- Learning on Graphs and Geometry Reading Group (LoGaG) (Host: Hannes Stärk) Aug 2022

Higher-order Transformers for Sets, Graphs, and Hypergraphs [C2]

- Qualcomm Korea (Host: Jaewon Choi) Jan 2023
- KAIST AI Workshop 21/22 (Host: Dongkwan Kim) Jan 2022
- NeurIPS 2021 Social: ML in Korea (Host: Jung-Woo Ha) Dec 2021

Hierarchical Variational Autoencoders for Generative Modeling of Sets [C1]

- Naver AI Author Meetup for CVPR 2021 (Host: Jung-Woo Ha) Sep 2021
- Korean Conference on Computer Vision 2021 (Host: Jongwoo Lim) Sep 2021

Retinal Waves and Prenatal Wiring of Primary Visual Cortex [J1]

- Society for Neuroscience, Chicago, IL, US Oct 2019

Academic Services

Conference Reviewer: AISTATS 2025–2026, ICLR 2025–2026, NeurIPS 2022–2025, ICML 2023–2025, IJCNN 2025, LoG 2022–2025, TAG-DS 2025, IJCNN 2025, ICCV 2025 SP4V Workshop, ICML 2024 GRaM Workshop, CVPR 2022, ACCV 2022

Journal Reviewer: Neural Networks 2023, 2025, IJCV 2025, TMLR 2024

Teaching

Teaching Assistant, KAIST School of Computing

- Undergraduate Research Program (URP) 2022, 2024
- Introduction to Deep Learning (CS492I) 2021, 2022, 2023
- Computer Vision (CS576) 2022, 2023
- School of Computing Colloquium (CS966/CS986) 2021

Teaching Assistant, Samsung Electronics

- Samsung Research AI Expert Program 2021 – 2024

Student Mentoring and Collaboration

- Chanhyuk Lee, M.S. Student @ KAIST 2025 – present
- Jiyun Park, B.S. Student @ KAIST [P2] → M.S. Student @ KAIST 2024 – present
- Kyungbin Min, B.S. Student @ KAIST [P1] 2025
- Nayun Kim, B.S. Student @ KAIST [C11] → Intern @ EPFL LTS4 2024
- Youngmin Ryou, B.S. Student @ KAIST [C10] → on leave for mandatory military service 2023 – 2024
- Nicole Shen, B.S. Student @ MIT → Intern @ MIT LIDS 2024
- Semin Kim, M.S. Student @ KAIST [C8] → Ph.D. Student @ KAIST 2023 – 2024
- Ayhan Suleymanzade, B.S. Student @ KAIST [C7, C10] → Intern @ TU Munich 2023 – 2024
- Olga Zagheni, M.S. Student @ UniTrento [C10] → Ph.D. Student @ UvA Amsterdam 2023
- Tien Dat Nguyen, B.S. Student @ KAIST [C5, C7, W1] → M.S. Student @ Waterloo 2021 – 2023
- Daniel Sungho Jung, B.S. Student @ Penn State → Ph.D. Student @ SNU 2021
- Saeyoon Oh, B.S. Student @ KAIST [C2, C3] → Engineer @ FuriosaAI 2021

Projects

Extending Language Models for Physical Data Understanding

2024 – 2025

Korea National Research Foundation (NRF)

Image Inpainting with Visual Commonsense Reasoning

2021 – 2023

Korea Ministry of Science and ICT

Cooperative Intelligence for Heterogeneous Robots

2021 – 2023

Korea National Research Foundation (NRF)

References

[Seunghoon Hong](#), Associate Professor at KAIST

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