

Yinhua Piao

PERSONAL INFORMATION

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EDUCATION

2020–Present	Ph.D in Computer Science and Engineering Seoul National University, Seoul, Korea. Advisor: Prof. Sun Kim Thesis: Subgraph-informed Hierarchical Learning in Clinical and Biomedical Domains.
2018–2020	M.S. in Computer Science and Engineering Seoul National University, Seoul, Korea. Advisor: Prof. Sun Kim Thesis: Graph Convolutional Networks for Predictive Healthcare using Clinical Notes.
2014–2018	B.S. in Software Engineering Jilin University, Changchun, China.

HONORS, AWARDS & SCHOLARSHIPS

Aug. 2024	Youlchon AI Star Scholarship.
Feb. 2024	Samsung HumanTech Paper Award.
Apr. 2022	AIIS Retreat Best Poster Award.
Feb. 2022	Samsung HumanTech Paper Award (Bronze Prize).
Feb. 2022	AAAI Student Scholar Scholarship.
Jun.20–Jan.22	SNU Global Scholarships II.

SELECTED PUBLICATIONS

1. PIAO, Y., LEE, S., LU, Y., AND KIM, S. Improving out-of-distribution generalization in graphs via hierarchical semantic environments. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (2024)
2. *KIM, N., *PIAO, Y., AND KIM, S. Clinical note owns its hierarchy: Multi-level hypergraph neural networks for patient-level representation learning. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)* (Toronto, Canada, July 2023), A. Rogers, J. Boyd-Graber, and N. Okazaki, Eds., Association for Computational Linguistics, pp. 5559–5573
3. PIAO, Y., LEE, S., LEE, D., AND KIM, S. Sparse structure learning via graph neural networks for inductive document classification. In *Proceedings of the AAAI conference on artificial intelligence* (2022), vol. 36, pp. 11165–11173
4. *SHIN, J., *PIAO, Y., BANG, D., KIM, S., AND JO, K. Drpreter: Interpretable anticancer drug response prediction using knowledge-guided graph neural networks and transformer. *International Journal of Molecular Sciences* 23, 22 (2022), 13919

PUBLICATIONS

1. CHO, C., LEE, S., BANG, D., PIAO, Y., AND KIM, S. Chemap: predicting drug approval with chemical structures before clinical trial phase by leveraging multi-modal embedding space and knowledge distillation. *Scientific Reports* 14, 1 (2024), 23010
2. LEE, S., PARK, J., PIAO, Y., LEE, D., LEE, D., AND KIM, S. Multi-layered knowledge graph neural network reveals pathway-level agreement of three breast cancer multi-gene assays. *Computational and Structural Biotechnology Journal* (2024)
3. LU, Y., PIAO, Y., AND KIM, S. Enhancing drug-drug interaction prediction with context-aware architecture. In *The Second Tiny Papers Track at ICLR 2024*
4. PIAO, Y., LEE, S., LU, Y., AND KIM, S. Improving out-of-distribution generalization in graphs via hierarchical semantic environments. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition* (2024)
5. *KIM, N., *PIAO, Y., AND KIM, S. Clinical note owns its hierarchy: Multi-level hypergraph neural networks for patient-level representation learning. In *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers)* (Toronto, Canada, July 2023), A. Rogers, J. Boyd-Graber, and N. Okazaki, Eds., Association for Computational Linguistics, pp. 5559–5573
6. YI, J., LEE, S., LIM, S., CHO, C., PIAO, Y., YEO, M., KIM, D., KIM, S., AND LEE, S. Exploring chemical space for lead identification by propagating on chemical similarity network. *Computational and Structural Biotechnology Journal* 21 (2023), 4187–4195
7. PIAO, Y., LEE, S., LEE, D., AND KIM, S. Sparse structure learning via graph neural networks for inductive document classification. In *Proceedings of the AAAI conference on artificial intelligence* (2022), vol. 36, pp. 11165–11173

8. *SHIN, J., *PIAO, Y., BANG, D., KIM, S., AND JO, K. Drpreter: Interpretable anticancer drug response prediction using knowledge-guided graph neural networks and transformer. *International Journal of Molecular Sciences* 23, 22 (2022), 13919
9. LIM, S., LEE, S., PIAO, Y., CHOI, M., BANG, D., GU, J., AND KIM, S. On modeling and utilizing chemical compound information with deep learning technologies: A task-oriented approach. *Computational and Structural Biotechnology Journal* 20 (2022), 4288–4304
10. LEE, S., LEE, D., PIAO, Y., AND KIM, S. Spgp: Structure prototype guided graph pooling. In *NeurIPS 2022 Workshop: New Frontiers in Graph Learning* (2022)
11. BAE, J. H., SHIN, Y., PIAO, Y., LIM, J. H., AND KIM, S. Mo1641: Confidence estimation in clinical decision support system for determination of colonoscopy surveillance interval. *Gastroenterology* 162, 7 (2022), S–839
12. KIM, S., BAE, S., PIAO, Y., AND JO, K. Graph convolutional network for drug response prediction using gene expression data. *Mathematics* 9, 7 (2021), 772
13. PIAO, Y. Graph convolutional networks for predictive healthcare using clinical notes, 2020

PREPRINTS AND UNDER SUBMISSION

1. BANG, D., SUNG, I., PIAO, Y., LEE, S., AND KIM, S. Boundr.e: Predicting drug-likeness through knowledge alignment and EM-like one-class boundary optimization. In *Under Submission* (2024)
2. HA, S., KIM, J. H., PIAO, Y., AND KIM, S. MV-CLAM: Multi-view molecular interpretation with cross-modal projection via language model. In *NeurIPS 2024 Workshop on AI for New Drug Modalities* (2024)
3. LU, Y., PIAO, Y., LEE, S., AND KIM, S. Context-aware hierarchical fusion for drug relational learning. *bioRxiv* (2024), 2024–08
4. LEE, S., PIAO, Y., LEE, D., AND KIM, S. Multi-task informed learnable prototypes on few shot learning for molecular property prediction. *Under submission* (2023)
5. LEE, S., KIM, N., PIAO, Y., AND KIM, S. Grapht5: Unified molecular graph-language modeling via multi-modal cross-token attention. *Under submission* (2023)

COMMUNITY SERVICE

2022-2024	(Proceedings) AAAI, IJCAI, NeurIPS, CVPR, KDD, ACML.
2022-2024	(Journal) Npj Systems Biology and Applications, BMC Bioinformatics, Pattern Analysis and Applications, Scientific Reports, Transactions on Knowledge Discovery from Data, BMC Biology, BMC Medical Informatics and Decision Making.

PRESENTATIONS

Dec. 2023	Invited Talk , Multi-level Hypergraph Neural Networks for Patient-level Representation Learning. <i>ModuleCon, ModuleLab in Ewha Womans University</i>
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Dec. 2023	Invited Talk , Sparse Structure learning via GNNs for Document Classification. <i>ModuleCon, ModuleLab in Ewha Womans University</i>
Nov. 2022	Tutorial Self-supervised Learning on Molecule Graphs. <i>AI-BIO Researcher Training Course, AIIS in Seoul National University</i>
Sep. 2022	Invited Talk , Sparse Structure learning via GNNs for Document Classification. <i>CSE Fun Lunch Seminars in Seoul National University</i>
Apr. 2022	Invited Talk , Sparse Structure learning via GNNs for Document Classification <i>AI Retreat, AIIS in Seoul National University</i>

TEACHING

Fall 2024	Head Teaching Assistant , Algorithms.
Spring 2024	Head Teaching Assistant , Machine Learning on Bioinformatics.
Fall 2023	Teaching Assistant , Algorithms.
Spring 2023	Teaching Assistant , Machine Learning on Bioinformatics.
Fall 2022	Teaching Assistant , Algorithms.
Spring 2022	Teaching Assistant , Machine Learning on Bioinformatics..
Fall 2020	Teaching Assistant , Algorithms.

SUPERVISION

2023-2024	Sumin Ha & Junhyeong Kim , Master Student, SNU. Resulting paper are presented at NeurIPS AIdrugX Workshop 2024.
2023	Sangyeup Kim , Master Student, SNU. Resulting paper is under submission (with Nayeon Kim).
2022-2023	Nayeon Kim , Master Student, SNU. Resulting paper got a oral presentation (top 0.7%) at ACL 2023.
2021-2022	Jihye Shin , Master Student, SNU. Resulting paper got accepted by IJMS 2022.

LANGUAGES

Chinese and Korean: Native
English: Fluent

December 7, 2024