

Yeongwoo Song

PH.D. STUDENT

Complex Systems and Statistical Physics Lab, KAIST, Daejeon 34141, Korea

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Summary

I am a dedicated Ph.D. student of physics with a keen interest in the latest advancements in the field of artificial intelligence. My work focuses on the interdisciplinary field of physics and deep learning. Specifically, my research aims to advance artificial intelligence with the aid of physics and further understand its behavior and functions.

RESEARCH INTERESTS

- Physics for AI: Understanding and advancements of deep neural networks through the lens of complex systems and statistical physics.
- AI for physics: Automated discovery of physical laws or symmetries with the aid of artificial intelligence.

Education

Korea Advanced Institute of Science and Technology (KAIST)

INTEGRATED PH.D. PROGRAM IN DEPT. OF PHYSICS

- Advisor: Prof. [Hawoong Jeong](#)

Daejeon, Korea

Mar. 2022 - Present

Korea Advanced Institute of Science and Technology (KAIST)

B.S. IN PHYSICS

- Double major in Computer Science

Daejeon, Korea

Mar. 2016 - Feb. 2022

Experience

DYPHI Inc.

RESEARCHER (FULL-TIME)

- Collaborated with [Hyunchul Roh](#) (CTO).
- Performed model development in dataset establishment task for training deep-learning models from National Information Society Agency (NIA), Korea.

Daejeon, Korea

Mar. 2022 - Feb. 2021

Dingbro Inc.

RESEARCH INTERN (FULL-TIME)

- Collaborated with [Jae-Young Jo](#) (CEO).
- Participated in algorithm and dataset development for GNN-based protein-ligand binding prediction.
- Internship hosted by 2019 Winter Company-University Cooperation (CUop) Program in KAIST.

Daejeon, Korea

Dec. 2019 - Feb. 2020

Publications¹

PUBLISHED

Towards Cross Domain Generalization of Hamiltonian Representation via Meta Learning

YEONGWOO SONG & HAWOONG JEONG, IN: *The 12th International Conference on Learning Representations (ICLR 2024)*

2024

IN PROGRESS

Give Up and Restart All Over: Stochastic Restarting Enhances Training in Neural Networks

YEONGWOO SONG[†], YOUNGKYOUNG BAE[†], & HAWOONG JEONG

Presentations²

TOWARDS CROSS DOMAIN GENERALIZATION OF HAMILTONIAN REPRESENTATION VIA META LEARNING

- The 12th International Conference on Learning Representations (ICLR 2024), Vienna, Austria, May. 2024 (poster)
- The 28th International Conference on Statistical Physics (STATPHYS28), Tokyo, Japan, Aug. 2023 (oral)
- The 2023 Korea Physical Society Spring Meeting, Daejeon, Korea, Apr. 2023 (oral)
- NeurIPS 2022 Workshop for Machine Learning and Physical Sciences, New Orleans, USA, Dec. 2022 (poster)

¹†: equal contribution

²categorized by publications

GIVE UP AND RESTART ALL OVER: STOCHASTIC RESTARTING ENHANCES TRAINING IN NEURAL NETWORKS

- The 2023 Korea Physical Society Fall Meeting, Changwon, Korea, Nov. 2023 (poster, *outstanding presentation award*)
- The 22nd Workshop for Statistical Physics 2023, Hwasun, Korea, Aug. 2023 (oral)

Teaching Experience

GPU/CPU Cluster Maintenance

TEACHING/MAINTENANCE ASSISTANT

Dept. of Physics, KAIST
Feb. 2024 - present

KAIST Culture Festival

GRADUATE STUDENT MANAGER, TEACHING ASSISTANT

Art Convergence CTR.
Mar. 2022 - present

Special Topics in Physics (Complex Systems: Science of 21st Century) (PH489D)

TEACHING ASSISTANT

Dept. of Physics, KAIST
2023FA

Computational Physics (PH413)

TEACHING ASSISTANT

Dept. of Physics, KAIST
2022SP, 2023SP

General Physics II (PH142)

TEACHING ASSISTANT

Dept. of Physics, KAIST
2022FA

Honors

Excellent Leadership and Volunteer Graduate Award

KAIST

Feb. 2022

- Selected for showing exceptional leadership and participation in multiple volunteer acts (as one of 11 among all graduates in 2022).

KAIST Alumni Academic Scholarship

KAIST ALUMNI ASSOCIATION

Mar. 2017 - Feb. 2020

- Selected for keeping a diligent attitude, in thus expected to keep pursuing a career that makes the alma mater proud.

Undergraduate Humanities Scholarship

KAIST

Jul. 2019

- Selected for setting examples to colleagues by devoting to academic studies and volunteer acts (as one of 20 among all undergraduates).

National Excellence Scholarship in Natural Science and Engineering

KOREA STUDENT AID FOUNDATION (KOSAF)

Mar. 2016 - Dec. 2018

- Selected for excellent academic ability in science and engineering and potential to contribute to Korea's scientific advancement.

Skills³

Programming Python*, Mathematica

ML Frameworks PyTorch*

References

Hwoong Jeong

PROFESSOR

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Center for Complex Systems, KAIST, Daejeon 34141, Korea

³*: daily used