


Seongsu Kim

Ph.D. Candidate
Department of Artificial Intelligence

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EDUCATION

- 3/2023 - present **Pohang University of Science and Technology (POSTECH), Korea**
Geometrical Deep Learning for Solid States Physics and Quantum Chemistry
Artificial Intelligence for Scientific Research
Advisor: Prof. Sungsoo Ahn
- 3/2016 - 2/2023 **Gwangju Institute of Science and Technology (GIST), Korea**
Majored in *physics*
Minored in *mathematics, computer science*
- 7/2017 - 8/2018 **University of California, Berkeley**
Summer session study abroad program

PUBLICATION & CONFERENCE

Seongsu Kim, and Sungsoo Ahn., Gaussian Plane-Wave Neural Operator for Electron Density Estimation.
International Conference on Machine Learning (ICML), **2024**, arXiv:[2402.04278](https://arxiv.org/abs/2402.04278) (2024).  [project github](#)

EXPERIENCE

- 9/2021 - 2/2023 **Computational Many-body Physics Laboratory** Research Intern
 - Gwangju Institute of Science and Technology (Advisor: Prof. Donghee Kim)
 - Computer-simulated thermodynamics of *solid states physics*
 - Investigated the phase transition of physical models using the Monte Carlo method
 - Investigated the critical phenomena in the 2D long-range antiferromagnetic Ising model with anisotropy
 - Wrote the simulation code with C++, MPI and CUDA programming
- 6/2023 - 7/2023 **Statistical Artificial Intelligence Laboratory** Research Intern
 - Korea Advanced Institute of Science and Technology (Advisor: Prof. Jaesik Choi)
 - Investigated the various techniques of *explainable A.I.* including LIMEs, LRP, CRP, and GRAD-CAM.
- 12/2019 - 2/2020 **Quantum Field & Gravity Theory Group** Research Intern
 - Gwangju Institute of Science and Technology (Advisor: Prof. Keunyoung Kim)
 - Investigated the correspondence of deep learning and the Ads/CFT

PROJECTS

- 9/2023 - 11/2023 **Multiple Canonicalizations for Model Agnostic Equivariance** POSTECH
Short paper on the multiple canonicalizations with reduced sensitivity to data deformation

TEACHING AND MENTORING

- 9/2023 - 12/2023 **Teaching Assistant for Introduction to AI**
 - (Prof. Sungsoo Ahn, POSTECH)
 - Prepared supplementary materials and assignments with Python.
 - Formulated and graded problems for midterm and final exams
- 7/2019 - 8/2019 **Volunteer for IT and Cultural Education Abroad (Chisinau, Moldova)**
 - GIST-NIA, World Friend International IT and culture volunteer program
 - Served as a team leader and educational volunteer for IT and cultural exchange
 - Taught Python, Arduino, and drone classes in English to the Moldovan students.
 - Awarded for Excellence of the voluntary mission
- 9/2019-12/2019 **Teaching Assistant for Multivariable Calculus and Application**
 - (Prof. Chiwook Hwang, GIST)
 - Evaluated and graded weekly assignments
 - Graded midterm and final exams
 - Lectured supplementary sessions once a week
- 5/2017 - 9/2017 **Astronomical Observational Mentoring**
 - *Creativity Cultivation Project of the GIST*
 - Built a small observatory in the suburban area
 - Taught the astronomical observation to the elementary school students

EXTRACURRICULAR

- 3/2019 - 12/2019 **Entrepreneur Club**
- (Received 2,000\$ sponsorship from GIST)
 - Served as the club president and the back-end developer
 - Hosted weekly meetings and study groups
 - Developed a game based on the college life
 - Developed the flee market and school community application

HONORS & AWARDS

11/2022	International Collegiate Programming Contest (ICPC) Participated Seoul Regional (main contest of Korea) as a college representative	Contest
3/2016 - 2/2023	Government-Sponsored Tuition Scholarship Received 8 times	Scholarship
3/2016 - 2/2017	Government-Sponsored Presidential Science Scholarship Received 2 times	Scholarship

REVIEWER OF

2024	International Conference on Machine Learning (ICML)
2023	Association for the Advancement of Artificial Intelligence (AAAI)

WORK EXPERIENCE

1/2020 - 8/2021	Republic of Korea Army Mandatory military service
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LANGUAGES

English - Intermediate high, **Korean** - Native

SKILLS

Language	Python (Proficient) , C++, C, Java
Python Library	PyTorch, Lightning, Hydra, PyG, WandB, Numpy, Scikit-learn, Matplotlib
Software, OS, etc.	Version control (Git and GitHub), Linux, Vim, Slurm, Docker