Seoyong **Lee**

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"Everything's gonna be alright"

Research Interests

Mathematical Algorithms; Parallel Computing;

Education

Seoul National University
Seoul, Korea

Dept. of Electrical and Computer Engineering
03/2020–Current

Leave of absence for alternative military service (01/2023-11/2024)
Anticipated Graduation : February 2026
GPA : 4.26/4.3

Korea Science Academy of KAIST
Busan, Korea

First high school in Korea for science-gifted students
03/2017–02/2020

Graduated with distinction in overall GPA, Awarded by the Mayor of Busan
GPA: 4.27/4.3

Research Experience

Accelerated Intelligent Systems Lab (AISys), SNU
Seoul, S. Korea

Undergraduate Researcher with Prof. Jinho Lee
04/2024–Current

Research Focus: Approximate Graph Pattern Mining

- Demonstrated that allocating structure-specific sampling probabilities, rather than naive uniform sampling, significantly enhances the convergence of approximate graph pattern mining. Developed a system leveraging this technique that outperforms previous methods and scales successfully to graphs with tens of billions of edges.
- First-author manuscript under review: "AGIS: Fast Approximate Graph Pattern Mining with Structure-Informed Sampling."

Industry Experience

AB180
Seoul, S.Korea

Data Scientist
10/2023–12/2024

- High-level planning and ideation for diverse projects, including ad attribution algorithms, AppTrackingTransparency (ATT) consent rate optimization, and in-app advertisement (IAA) optimization.
- Developed a Retrieval-Augmented-Generation (RAG) system and further enhanced it into a multi-agent system with expanded functionalities.

AIRS Medical
Seoul, S.Korea

Research Scientist
01/2023–10/2023

- Implemented SOTA deep-learning architectures to improve image restoration(denoising, super-resolution) performance and to mitigate artifacts produced by deep learning
- Implemented mathematical algorithms for the MRI reconstruction pipeline, including 3D-SENSE from Philips

Selected Honors & Awards

LG Optimization Grand Challenge *2024*
- Competition aimed at developing the best-performing algorithm for a variant of the Vehicle Routing Problem (VRP)
- Awarded the Grand Prize (1st place) out of 378 participating teams
- Presented a talk at the Korean Institute of Industrial Engineers Fall Conference

SAMSUNG Collegiate Programming Cup *2024*
- The most prestigious individual competitive programming contest in Korea
- 5th Place Award

National Science Technology Scholarship *2022–Current*
- Full funding for honorable undergraduates from Korean government
- ~$10K financial support in total

ICPC Asia Seoul Regional *2021*
- Annual competitive programming competition among the universities of the world
- 1st round 14th place
- 2nd round 23rd place

Scholarship for Academic Excellence *2017-2020, 2021*
- ~$10K financial support over the period

Korean Young Physicists' Tournament *2018*
- Preliminary round of International Young Physicists' Tournament (IYPT)
- Conducted research on open-ended real-world problems related to physics – "Conical Piles" and "Weighing Time"
- Grand Prize (1st place), Minister of Science and ICT Award

Academic Activities

Academic Mentor, SNU *Seoul, S.Korea*
Subject : Introduction to Algorithms *2022*
- Mentoring program governed by ECE department of Seoul National University

camborne science and international academy *Camborne, United Kingdom*
Exchange student *07/2019*
- expense fully covered by Korea Science Academy of KAIST

Imperial Global Summer School *London, United Kingdom*
programme: Physics *07/2018*
- Science camp with research & cultural experience in Imperial College London
- expense fully covered by Korea Science Academy of KAIST

Skills

Language Korean(native), Fluent English
Programming C++, Python, CUDA, Matlab
Tool Pytorch, Numpy, Scipy, Gurobi, Pandas, Git, Docker, Latex