

SUBIN KIM

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Education

Korea Advanced Institute of Science & Technology (KAIST)

Daejeon, South Korea

Master of Science, School of Computing

Mar. 2023 – Feb. 2025

- GPA: 3.78/4.3
- Advisor: Sungjin Ahn

Bachelor of Science, School of Computing

Mar. 2018 – Feb. 2023

- CGPA: 3.51/4.3, Major GPA: 3.85/4.3, Last 2 Years CGPA: 3.93/4.3
- scholaro converted CGPA: 3.479/4.0
- Minor in Industrial & Systems Engineering

Publications

*: equal contributions

- [1] {Hany Hamed*, **Subin Kim***}, Dongyeong Kim, Jaesik Yoon, Sungjin Ahn, “Dr. Strategy: Model-Based Generalist Agents with Strategic Dreaming”, *International Conference on Machine Learning (ICML)*, 2024.
- [2] **Subin Kim**, Prin Phunyaphibarn, Donghyun Ahn, and Sundong Kim, “Playgrounds for Abstraction and Reasoning”, *NeurIPS Workshop for on neuro Causal and Symbolic AI (NeurIPS nCSIW)*, 2022. *Korea Software Congress (KSC)*, 2022 (**Best Paper Award**).
- [3] **Subin Kim**, Prin Phunyaphibarn, Donghyun Ahn, Sundong Kim, “Test Bed for Abstraction and Reasoning”, *Journal of KIISE*, Vol. 51, No. 1, 2024.
- [4] **Subin Kim**, Sumin Han, Dongman Lee, “Analysis of impact on Seoul traffic congestion by Land Use using travel speed and POI”, *Korea Software Congress (KSC)*, 2021.

Research Experience

PORTAL Lab (Cornell)

Ithaca, NY, U.S.

Research Intern (Advisor: Sanjiban Choudhury)

(remote) Sep. 2024 – present

- **Hybrid training of Offline diffusion policy & online MBRL (Submission planned for ICML 2025)**
 - Investigate how the different image representation effects diffusion policy and world models.
 - Investigate how offline training with expert data can enhance the online learning through world models.
 - Implement MPPI planner (referred from TD-MPC) with n-step TD reward using the trained reward function and critic of the world model.

MLML Lab (KAIST)

Daejeon, South Korea

Research Assistant (Advisor: Sungjin Ahn)

Mar. 2023 – Sep. 2024

- **Divide-and-conquer strategy for goal-conditioned MBRL agent (ICML 2024)**
 - Proposed the concept of “strategic dreaming” in pixel-based MBRL, where the agent can leverage the structure of the state space to enable a divide-and-conquer-like strategy.
 - Improved prior methods in visually complex and partially observable navigation tasks.

* I would like to explain why I was unable to receive a letter of recommendation from the person who supervised the research I worked hardest on. During the Dr. Strategy project, Professor Sungjin Ahn encouraged me to complete my M.S. degree in 3 semesters and proceed directly to a Ph.D. in his lab, remarking that I showed strong research potential and that he enjoyed working with me. He also told both the first authors that he was impressed by our grit. Before the ICML scores were released, I expressed my desire to study abroad to him in a handwritten letter. However, over the couple of months after that, he expressed multiple times that he was not in favor of studying abroad. Although I enjoyed the time spent researching together, I was unable to receive a letter of recommendation from him.

DS Lab (KAIST)

Daejeon, South Korea

Undergraduate Research Intern (Advisor: Sundong Kim, Meeyoung Cha)

July. 2022 – Jan. 2023

- **Simplify & extend ARC for Research-optimized dataset (NeurIPS nCSIW 2022)**
 - Built *Mini-ARC* that extends the original ARC dataset with creative patterns and restricted size.

- Built *O2ARC*, which is an object-oriented web interface to solve & suggest mini-ARC.
- Hosted *Happy ARC Day* including over 40 participants to create and peer review Mini-ARC.
- Gave a *poster presentation* in NeurIPS@nCSIW & Recieved *Best Paper Award* from KSC.

DM Lab (KAIST)

Daejeon, South Korea

Undergraduate Research Intern (Advisor: Kijung Shin)

Dec. 2021 – June. 2022

- Open Dialogue Generation based on knowledge graph (*Introduction to Artificial Intelligence, Spring 2022*)
 - Improved an open dialogue generation model based on knowledge graphs.
 - Analyzed how appropriate or toxic the generated dialogues were in various situations.

PROSYS Lab (KAIST)

Daejeon, South Korea

Undergraduate Research Intern (Advisor: Kihong Heo)

June. 2021 – Sep. 2021

- Tracer: Signature-based Static Analysis for Detecting Recurring Vulnerabilities (*submitted to ICSE 2022*)
 - Participated as a second author in building a framework called ‘Tracer’ detecting software vulnerabilities by exploiting existing vulnerability patterns.
 - Gave a *poster presentation* for KAIST PL seminar (Host: Sukyoung Ryu)

CDSN Lab (KAIST)

Daejeon, South Korea

Undergraduate Research Intern (Advisor: Sumin Han, Dongman Lee)

Jan. 2021 – June. 2021

- Analysis of impact on Seoul traffic congestion by Land Use using travel speed and POI (*KSC 2021*)
 - Divides land use into nine categories and exploits this information to predict traffic patterns.
 - Utilizes Multiple Linear Regression, Random Forest Regression, XGBoost Regression, and FNN to predict traffic patterns.
- Spatio-Temporal Attention based Conditional Traffic Flow Prediction in Urban Areas (*submitted to ECML-PKDD 2021*)
 - Participated as a second author in predicting traffic flow through spatio-temporal neural networks.
 - Implemented data visualization of POI data & baseline neural models.

Work Experience

Bookend

Daejeon, South Korea

Software Engineering Intern

Aug. 2022 – Dec. 2022

- Built Chrome extension using Chat-GPT with React, OpenAI API.

Bank Of Wine

Daejeon, South Korea

Software Engineering Intern

June. 2022 – Aug. 2022

- Built internal payment system of the company with React, Redux, MongoDB, and AntD.

RedWit

Daejeon, South Korea

Software Engineering Intern

June. 2021 – Aug. 2021

- Built internal scheduling system of the company with React, Redux, and MongoDB.

Teaching Experience

Korea Advanced Institute of Science & Technology (KAIST)

Daejeon, South Korea

TA, Deep Reinforcement Learning and Game AI (CS492) (**Best TA Award**)

Mar. 2024 – June. 2024

TA, Hana Bank-KAIST Digital Warrior Program

Oct. 2021 – June. 2022

TA, Korean for International Students (HSS193, HSS586)

Mar. 2022 – Dec. 2022

TA, Korean Camp for International Students

Jan. 2022 - Feb. 2022

Awards & Scholarships

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| National Scholarship, KAIST (Aided by Government of South Korea) | 2023 – 2025 |
| Best TA Award, Deep Reinforcement Learning and Game AI (CS492) | 2024 |
| Best Paper Award, Korea Software Congress (KSC) | 2022 |
| National Excellence Scholarship, Korea Student Aid Foundation (KOSAF) | 2019 – 2022 |
| National Scholarship, Korea Student Aid Foundation (KOSAF) | 2018 |

Proficiency in Skills

- Languages: Python, Java, C++, JavaScript
- Library/Frameworks: PyTorch, TensorFlow
- Backend: Flask, Node.js, Express.js
- Frontend: React, HTML, CSS
- Clouds & Databases: AWS, MySQL, MongoDB
- Web Technologies: Docker, Socket.IO
- Developer Tools: Postman, VS Code, GitHub

Leadership Experience

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| Google ExploreCSR | Daejeon, South Korea |
| Workshop Organizer | Sep. 2023 - Aug. 2024 |
| Certified Korean Red Cross lifeguard | Daejeon, South Korea |
| | Jan. 2023 – Present |
| KAIST swimming team KAORI | Daejeon, South Korea |
| Senior member | Jun. 2021 - Present |
| 50m Silver medal in women backstroke (Daejeon Masters) | Jun. 2022 |
| 50m Bronze medal in women freestyle (Daejeon Masters) | Jun. 2022 |