

# SUBIN KIM

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## Education

### University of Pennsylvania

U.S.

*Doctor of Philosophy, Electrical and Systems Engineering*

*(expected) Aug. 2025 –*

- Advisor: Dinesh Jayaraman

### 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] Arnav Kumar Jain, Vibhakar Mohta, **Subin Kim**, Atiksh Bhardwaj, Juntao Ren, Yunhai Feng, Sanjiban Choudhury, Gokul Swamy, “A Smooth Sea Never Made a Skilled SAILOR: Robust Imitation via Learning to Search”, *Submitted to NeurIPS 2025*.
- [2] {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*.
- [3] **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)*.
- [4] **Subin Kim**, Prin Phunyaphibarn, Donghyun Ahn, Sundong Kim, “Test Bed for Abstraction and Reasoning”, *Journal of KIISE, Vol. 51, No. 1, 2024*.
- [5] **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)*

*Sep. 2024 – May. 2025*

- **Hybrid training of Offline diffusion policy & online MBRL (Submitted to NeurIPS 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.

## DS Lab (KAIST)

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

Daejeon, South Korea

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)

Undergraduate Research Intern (Advisor: Kijung Shin)

Daejeon, South Korea

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)

Undergraduate Research Intern (Advisor: Kihong Heo)

Daejeon, South Korea

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)

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

Daejeon, South Korea

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

Software Engineering Intern

Daejeon, South Korea

Aug. 2022 – Dec. 2022

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

### Bank Of Wine

Software Engineering Intern

Daejeon, South Korea

June. 2022 – Aug. 2022

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

### RedWit

Software Engineering Intern

Daejeon, South Korea

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)

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

Daejeon, South Korea

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

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

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