Last updated in May. 2026

Sunghwan Kim

kimsh8564@yonsei.ac.kr kimsh0507.github.io Google Scholar GitHub

Research Interest

I aim to build human-like intelligent systems that can autonomously learn, reason, and adapt to diverse environments. My recent research interests include: (1) **Reinforcement Learning (RL)** to solve long-horizon tasks (2) Developing intelligent systems that **learn through interaction with the environment**, and (3) **Investigating language models (LMs)** to identify their limitations and enhance their performance across diverse applications.

Education

M.S. in Artificial Intelligence, Yonsei University — Sep. 2024 – Feb. 2027
- Advisor: Prof. Jingyoung Yeo

B.S. in Materials Science & **Engineering**, Yonsei University — Mar. 2018 – Aug. 2024
- GPA: 3.89/4.30
- Military Service (Aug. 2020 - Feb. 2022)

Experience

Microsoft Research, General Artificial Intelligence Group — Jul. 2025 – Dec. 2025
Research Intern (Mentor: Liang Wang, Nan Yang, Xingxing Zhang) — Beijing, China
- Analysis of RL for long-horizon LLM agents

Language & **AGI Lab**, Yonsei University — Jul. 2023 – Aug. 2024
Undergraduate Research Intern (Advisor: Prof. Jinyoung Yeo) — Seoul, Korea
- Analyzed LLMs' capabilities in providing emotional support and developed open-source datasets and models for a counseling chatbot.

HOLIX Growth Team — Feb. 2022 – Jun. 2022
Intern (Mentor: Rankyung Kim) — Seoul, Korea
- Analyzed large-scale user data to identify trends and extract key business insights.
- Developed data-driven strategies to optimize user engagement and product performance.

Publications

Conference Papers

[1] **On Training Large Language Models for Long-Horizon Tasks: An Empirical Study of Horizon Length**
Sunghwan Kim, Junhee Cho, Beong-woo Kwak, Taeyoon Kwon, Liang Wang, Nan Yang, Xingxing Zhang, Furu Wei, Jinyoung Yeo
ICML 2026

[2] **MEM1: Learning to Synergize Memory and Reasoning for Efficient Long-Horizon Agents**
Zijian Zhou*, Ao Qu*, Zhaoxuan Wu, **Sunghwan Kim**, Alok Prakash, Daniela Rus, Jinhua Zhao, Bryan Kian Hsiang Low, Paul Pu Liang
ICLR 2026, [pdf]

[3] **Embodied Agents Meet Personalization: Exploring Memory Utilization for Personalized Assistance**
Taeyoon Kwon*, Dongwook Choi*, **Sunghwan Kim**, Hyojun Kim, Seungjun Moon, Beong-woo Kwak, Kuan-

Hao Huang, Jinyoung Yeo
ICLR 2026, [pdf]

[4] **Web-Shepherd: Advancing PRMs for Reinforcing Web Agents**
Hyungjoo Chae*, **Sunghwan Kim***, Junhee Cho*, Seungone Kim, Seungjun Moon, Gyeom Hwangbo, Dongha Lim, Minjin Kim, Yeonjun Hwang, Minju Gwak, Dongwook Choi, Minseok Kang, Gwanhoon Im, ByeongUng Cho, Hyojun Kim, Jun Hee Han, Taeyoon Kwon, Minju Kim, Beong-woo Kwak, Dongjin Kang, Jinyoung Yeo
NeurIPS 2025 (**Spotlight**), [pdf]

[5] **ToolHaystack: Stress-Testing Tool-Augmented Language Models in Realistic Long-Term Interactions**
Beong-woo Kwak, Minju Kim, Dongha Lim, Hyungjoo Chae, Dongjin Kang, **Sunghwan Kim**, Dongil Yang, Jinyoung Yeo
EMNLP 2025 Findings, [pdf]

[6] **Rethinking Reward Model Evaluation Through the Lens of Reward Overoptimization**
Sunghwan Kim*, Dongjin Kang*, Taeyoon Kwon, Hyungjoo Chae, Dongha Lee, Jinyoung Yeo
ACL 2025 (**Oral**), [pdf]

[7] **LLM Meets Scene Graph: Can Large Language Models Understand and Generate Scene Graphs? A Benchmark and Empirical Study**
Dongil Yang, Minjin Kim, **Sunghwan Kim**, Beongwoo Kwak, Minjun Park, Jinseok Hong, Woontack Woo, Jinyoung Yeo
ACL 2025, [pdf]

[8] **Web Agents with World Models: Learning and Leveraging Environment Dynamics in Web Navigation**
Hyungjoo Chae, Namyoung Kim, Kai Tzu-iunn Ong, Minju Gwak, Gwanwoo Song, Jihoon Kim, **Sunghwan Kim**, Dongha Lee, Jinyoung Yeo
ICLR 2025 (*Sys2Reasoning at Scale Worksho*p at NeurIPS 2024), [pdf]

[9] **CACTUS: Towards Psychological Counseling Conversations using Cognitive Behavioral Theory**
Suyeon Lee*, **Sunghwan Kim***, Minju Kim*, Dongjin Kang, Dongil Yang, Harim Kim, Minseok Kang, Dayi Jung, Min Hee Kim, Seungbeen Lee, Kyoung-Mee Chung, Youngjae Yu, Dongha Lee, Jinyoung Yeo
EMNLP 2024 Findings, [pdf]

[10] **Language Models as Compilers: Simulating Pseudocode Execution Improves Algorithmic Reasoning in Language Models**
Hyungjoo Chae, Yeonghyeon Kim, Seungone Kim, Kai Tzu-iunn Ong, Beong-woo Kwak, Moohyeon Kim, **Sunghwan Kim**, Taeyoon Kwon, Jiwan Chung, Youngjae Yu, Jinyoung Yeo
EMNLP 2024, [pdf]

[11] **Can Large Language Models be Good Emotional Supporter? Mitigating Preference Bias on Emotional Support Conversation**
Dongjin Kang*, **Sunghwan Kim***, Taeyoon Kwon, Seungjun Moon, Hyunsouk Cho, Youngjae Yu, Dongha Lee, Jinyoung Yeo
ACL 2024 (**Outstanding Paper**), [pdf]

Preprints

[1] **Towards Direct Evaluation of Harness Optimizers via Priority Ranking**
Kai Tzu-iunn Ong, Minseok Kang, Dongwook Choi, Junhee Cho, Seungju Kim, Seungwon Lim, Geunha Jang, Minwoo Oh, Bogyung Jeong, **Sunghwan Kim**, Taeyoon Kwon, Jinyoung Yeo
Under Review

Awards and Honors

Outstanding Paper Award 2024
ACL, 2024

Scholarship for Bachelor's Degree 2019 – 2023
Shilla Cultural Scholarship Foundation (Shilla Holdings)

Grade Excellence Award 2018-1,2, 2019-2, 2022-2
Yonsei University

Creativity Award, Army Startup Competition 2021
Awarded by the Republic of Korea Army

Dean's List 2019-1
Yonsei University

Teaching Assistant

Natural Language Processing Mar. 2025 – Jun. 2025

Introduction to Artificial Intelligence Sep. 2024 – Dec. 2024