Byeonghwi Kim

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Research Interest

Embodied AI, Robotics, Physical AI, Autonomous Agents

Experience

Allen Institute for AI (AI2) | Research Intern @ PRIOR Team (Remote) — Seattle, WA, USA — Sept. 2021 - Mar. 2022

- *Mentor: Dr. Roozbeh Mottaghi*

Education

Ph.D. **Seoul National University** | Electrical and Computer Engineering — Sept. 2024 - Present

- *Advisor: Jonghyun Choi*

Ph.D. Course **Yonsei University** | Artificial Intelligence — Sept. 2022 - Aug. 2024

- *Advisor: Jonghyun Choi*

M.S. **Gwangju Institute of Science and Technology (GIST)** | Artificial Intelligence — Mar. 2020 - Aug. 2022

- *GIST President Fellowship*
- *Advisor: Jonghyun Choi*

B.S. **Kwangwoon University** | Computer Engineering — Mar. 2013 - Feb. 2020

- *Graduated with First-Class Honors* (GPA: 4.42/4.50, Rank: 1/74)
- *Advisor: Cheolsoo Park*

Publications

Multi-Modal Grounded Planning and Efficient Replanning for Learning Embodied Agents with A Few Examples
Taewoong Kim, **Byeonghwi Kim**, Jonghyun Choi
AAAI 2025 (Oral)

Pre-emptive Action Revision by Environmental Feedback for Embodied Instruction Following Agents
Jinyeon Kim*, Cheolhong Min*, **Byeonghwi Kim**, Jonghyun Choi
CoRL 2024

ReALFRED: An Embodied Instruction Following Benchmark in Photo-Realistic Environments
Taewoong Kim*, Cheolhong Min*, **Byeonghwi Kim**, Jinyeon Kim, Wonje Jung, Jonghyun Choi
ECCV 2024

Online Continual Learning for Interactive Instruction Following Agents
Byeonghwi Kim*, Minhyuk Seo*, Jonghyun Choi
ICLR 2024

Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents
Byeonghwi Kim, Jinyeon Kim, Yuyeong Kim, Cheolhong Min, Jonghyun Choi
ICCV 2023

Multi-Level Compositional Reasoning for Interactive Instruction Following
Suvaansh Bhambri*, **Byeonghwi Kim***, Jonghyun Choi
AAAI 2023 (Oral)

Factorizing Perception and Policy for Interactive Instruction Following
Kunal Pratap Singh*, Suvaansh Bhambri*, **Byeonghwi Kim***, Roozbeh Mottaghi, Jonghyun Choi
ICCV 2021

Agent with the Big Picture: Perceiving Surroundings for Interactive Instruction Following
Byeonghwi Kim, Suvaansh Bhambri, Kunal Pratap Singh, Roozbeh Mottaghi, Jonghyun Choi
Embodied AI Workshop @ CVPR 2021

Automated White Blood Cell Counting in Nailfold Capillary Using Deep Learning Segmentation and Video Stabilization
Byeonghwi Kim*, Yuli Sun Hariyani*, Young-Ho Cho, Cheolsoo Park
Sensors 2020

Academic Service

Reviewer / Program Committee Member

- *Machine Learning*: ICLR (2024-2025), ICML (2024-2025), NeurIPS (2023-2025), AISTATS (2025), AAAI (2024-2025)
- *Computer Vision*: IEEE TPAMI (2025), CVPR (2023-2025), ICCV (2025), ECCV (2024), WACV (2023-2025)
- *Robotics*: IEEE RA-L (2025), ICRA (2022, 2025), IROS (2025), CoRL (2025), RO-MAN (2024-2025)
- *Multimedia*: ACM MM (2025)

Honors and Awards

Gold Prize: Outstanding Paper Awards (IPIU 2025, South Korea) Feb. 2025
- *Zero-Shot Grasp Affordance Grounding via Generation*

Silver Prize: Graduate School Innovation Outstanding Paper Awards (Yonsei University) Jul. 2024
- *Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents*

Silver Prize: Outstanding Paper Awards (IPIU 2024, South Korea) Feb. 2024
- *Multi-Modal Grounded Planning and Efficient Replanning for Learning Embodied Agents with A Few Examples*

Bronze Prize: Outstanding Paper Awards (IPIU 2024, South Korea) Feb. 2024
- *Online Continual Learning for Interactive Instruction Following Agents*

Bronze Prize: Graduate School Innovation Outstanding Paper Awards (Yonsei University) Jul. 2023
- *Multi-Level Compositional Reasoning for Interactive Instruction Following*

1st Place: Generalist Language Grounding Agents Challenge (CVPRW'23) Jun. 2023
- *ECLAIR: Event-Cognizant Language Interaction Robots*

2nd Place: ALFRED Challenge (CVPRW'21) Jun. 2021
- *Agent with the Big Picture: Perceiving Surroundings for Interactive Instruction Following*

2nd Place: ALFRED Challenge (ECCVW'20) Aug. 2020
- *Improving Mask Prediction for Long Horizon Instruction Following*

Teaching Experience

Teaching Assistant @ Seoul National University
- *Introduction to Algorithms* Spring 2025
- *Deep Learning* Fall 2024
- *Introduction to Random Variables and Random Processes* Spring 2024

Teaching Assistant @ Yonsei University
- *Deep Learning - Theory and Practice* Fall 2022, Spring 2023, Fall 2023

Teaching Assistant @ Gwangju Institute of Science and Technology
- *Machine Learning and Deep Learning* Spring 2021

Teaching Assistant @ Korea Telecom (KT)

- *KT-SNU AI Training Course - Computer Vision* Jul. 2024

Teaching Assistant @ LG Electronics

- *AI Advanced Course for CTO (Object Detection, Continual Learning)* Jul. 2023

Teaching Assistant @ Samsung Electronics

- *AI Expert Program (Continual Learning)* Jul. 2022, Jul. 2023, Sept. 2024
- *AI Expert Program (Object Detection)* Jul. 2023

Teaching Assistant @ Samsung Advanced Technology Training Institute

- *AI Academy for Application - Vision (Object Detection, Continual Learning)* Aug. 2022, Dec. 2022, Jul. 2023

Patents

Method of Continual Learning on Embodied Agent Model Capable of Receiving Language Instructions and Performing Tasks, Method of Testing the Embodied Agent Model, Learning Device and Testing Device Using the Same
Jonghyun Choi, **Byeonghwi Kim**, Minhyuk Seo
Korea Patent 10-2746049

Method for Performing Tasks According to CAPEAM Model Including Context-Aware Planning Module and Environment-Aware Memory Module and AI Agent Using the Same
Jonghyun Choi, **Byeonghwi Kim**, Jinyeon Kim, Cheolhong Min, Yuyeong Kim
Korea Patent 10-2675973

Presentation

Invited poster presentation @ AI SEOUL 2024, Seoul Metropolitan Government, South Korea Feb. 2024

- *Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents*

Invited talk @ LG AI Research, South Korea Jun. 2023

- *Multi-Level Compositional Reasoning for Interactive Instruction Following*
- *Agent with the Big Picture: Perceiving Surroundings for Interactive Instruction Following*
- *Factorizing Perception and Policy for Interactive Instruction Following*

Invited talk @ Electronic & Information Research Information Center, South Korea May 2023

- *Multi-Level Compositional Reasoning for Interactive Instruction Following*

References

References will be provided upon request.