

# Byeonghwi Kim

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## Research Interest

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Embodied AI, Humanoids, Physical AI, Vision-Language-Action Models

## Experience

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**Krafton** | Research Intern @ Physical AI Team, Deep Learning Division

• Mentor: *Prof. Kangwook Lee*

Seoul, South Korea

Jun. 2025 - Sept. 2025

**Allen Institute for AI (AI2)** | Research Intern @ PRIOR Team (Remote)

• Mentor: *Dr. Roozbeh Mottaghi*

Seattle, WA, USA

Sept. 2021 - Mar. 2022

## Education

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**Ph.D. Seoul National University** | Electrical and Computer Engineering

• Advisor: *Jonghyun Choi*

Sept. 2024 - Present

**Ph.D. Yonsei University** | Artificial Intelligence

**Course** • Advisor: *Jonghyun Choi*

Sept. 2022 - Aug. 2024

**M.S. Gwangju Institute of Science and Technology (GIST)** | Artificial Intelligence

• GIST President Fellowship

• Advisor: *Jonghyun Choi*

Mar. 2020 - Aug. 2022

**B.S. Kwangwoon University** | Computer Engineering

• Graduated with First-Class Honors (GPA: 4.42/4.50, Rank: 1/74)

• Advisor: *Cheolsoo Park*

Mar. 2013 - Feb. 2020

## Publications

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**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

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### Reviewer / Program Committee Member

- *Machine Learning*: ICLR (2024-2025), ICML (2024-2025), ICML Position Paper (2025), NeurIPS (2023-2024), NeurIPS Datasets & Benchmarks (2025), NeurIPS Position Paper (2025), AISTATS (2025), AAAI (2024-2025)
- *Computer Vision*: IEEE TPAMI (2025), CVPR (2023-2025), ICCV (2025), ECCV (2024), WACV (2023-2026), BMVC (2025)
- *Robotics*: IEEE RA-L (2025), ICRA (2022, 2025), IROS (2025), CoRL (2025), RO-MAN (2024-2025)
- *Multimedia*: ACM MM (2025)

## Honors and Awards

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<b>Gold Prize:</b> Outstanding Paper Awards (IPIU 2025, South Korea)	Feb. 2025
• <i>Zero-Shot Grasp Affordance Grounding via Generation</i>	
<b>Silver Prize:</b> Graduate School Innovation Outstanding Paper Awards (Yonsei University)	Jul. 2024
• <i>Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents</i>	
<b>Silver Prize:</b> Outstanding Paper Awards (IPIU 2024, South Korea)	Feb. 2024
• <i>Multi-Modal Grounded Planning and Efficient Replanning for Learning Embodied Agents with A Few Examples</i>	
<b>Bronze Prize:</b> Outstanding Paper Awards (IPIU 2024, South Korea)	Feb. 2024
• <i>Online Continual Learning for Interactive Instruction Following Agents</i>	
<b>Bronze Prize:</b> Graduate School Innovation Outstanding Paper Awards (Yonsei University)	Jul. 2023
• <i>Multi-Level Compositional Reasoning for Interactive Instruction Following</i>	
<b>1<sup>st</sup> Place:</b> Generalist Language Grounding Agents Challenge (CVPRW'23)	Jun. 2023
• <i>ECLAIR: Event-Cognizant Language Interaction Robots</i>	
<b>2<sup>nd</sup> Place:</b> ALFRED Challenge (CVPRW'21)	Jun. 2021
• <i>Agent with the Big Picture: Perceiving Surroundings for Interactive Instruction Following</i>	
<b>2<sup>nd</sup> Place:</b> ALFRED Challenge (ECCVW'20)	Aug. 2020
• <i>Improving Mask Prediction for Long Horizon Instruction Following</i>	
<b>GIST President Fellowship</b> (Gwangju Institute of Science and Technology (GIST))	2020-2022
<b>Academic Excellence Scholarship</b> (Kwangwoon University)	2013-2020

## Patents

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### 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

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- Invited talk** | Samsung AI Forum @ Samsung Research, South Korea Nov. 2024
- *Context-Aware Planning and Environment-Aware Memory for Instruction Following Embodied Agents*
  - *Story Visualization by Online Text Augmentation with Context Memory*
- 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*

## Teaching Experience

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- 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* 2024
- Teaching Assistant** @ LG Electronics
- *AI Advanced Course for CTO (Object Detection, Continual Learning)* 2023
- Teaching Assistant** @ Samsung Electronics
- *AI Expert Program (Continual Learning)* 2022-2025
  - *AI Expert Program (Object Detection)* 2023
- Teaching Assistant** @ Samsung Advanced Technology Training Institute
- *AI Academy for Application - Vision (Object Detection, Continual Learning)* 2022-2023

## References

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References will be provided upon request.