

# Byeonghwi Kim

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## Research Interest

I am interested in building **multi-modal embodied agents** that integrate perception, reasoning and control to understand and interact with humans and environments for physically grounded services.

## Work Experience

**Krafton AI** | Research Intern @ Physical AI Team

• Mentor: *Dr. Kangwook Lee*

Seoul, South Korea

Jun. 2025 - Dec. 2025

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

• Mentor: *Dr. Roozbeh Mottaghi*

Seattle, WA, USA

Sept. 2021 - Mar. 2022

## Education

**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

Military Service (2014-2015)

## 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 Bhambrani\*, **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

## 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>	

## Scholarships

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<b>YoulChon AI Star Scholarship</b> (Nongshim Youlchon Foundation & SNU AI Institute)	2025
<b>SNU EE-Alumni Scholarship for Graduate Study</b> (SNU EE-Alumni Association)	2024-2025
<b>GIST President Fellowship</b> (Gwangju Institute of Science and Technology (GIST))	2020-2022
<b>Academic Excellence Scholarship</b> (Kwangwoon University)	2013-2020

## Academic Service

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### Reviewer / Program Committee Member

- Computer Vision
  - *IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 2024-2025
  - *IEEE Transactions on Circuits and Systems for Video Technology (TCSVT)*, 2025
  - *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, 2023-2026
  - *International Conference on Computer Vision (ICCV)*, 2025
  - *European Conference on Computer Vision (ECCV)*, 2024
  - *ACM International Conference on Multimedia (MM)*, 2025
  - *ACM International Conference on Multimedia (MM) - Datasets Track*, 2025

- IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2023-2026
- The British Machine Vision Conference (**BMVC**), 2025
- IEEE International Symposium on Robot and Human Interactive Communication (**RO-MAN**), 2024-2025
- ACM International Conference on Multimedia Asia (**MMAsia**), 2025
- Machine Learning
  - International Conference on Learning Representations (**ICLR**), 2024-2026
  - International Conference on Machine Learning (**ICML**), 2024-2025
  - International Conference on Machine Learning (**ICML**) - Position Paper Track, 2025
  - Conference on Neural Information Processing Systems (**NeurIPS**), 2023-2024
  - Conference on Neural Information Processing Systems (**NeurIPS**) - Datasets & Benchmarks Track, 2025
  - Conference on Neural Information Processing Systems (**NeurIPS**) - Position Paper Track, 2025
  - International Conference on Artificial Intelligence and Statistics (**AISTATS**), 2025-2026
  - AAAI Conference on Artificial Intelligence (**AAAI**), 2024-2026
- Robotics
  - Conference on Robot Learning (**CoRL**), 2025
  - IEEE Robotics and Automation Letters (**RA-L**), 2025
  - IEEE International Conference on Robotics and Automation (**ICRA**), 2022, 2025
  - IEEE/RSJ International Conference on Intelligent Robots and Systems (**IROS**), 2025

## 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

## 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*

## References

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References will be provided upon request.