

SEOYEON BYUN

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RESEARCH INTEREST

My research lies at the intersection of **computer vision** and **human-computer interaction**. I build vision-based machine intelligence that learns not only from perception but from interaction and action outcomes. My work focuses on (1) structured visual environments such as UI design canvases for grounded reasoning [C1], (2) compositional mechanisms that preserve coherence under iterative scene changes [P2], and (3) interaction-driven representation updates in vision-language models,

EDUCATION

Korea University <i>B.S. in Computer Science and Engineering (GPA: 4.08 / 4.5)</i>	Mar 2022 – Present <i>Seoul, South Korea</i>
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PUBLICATIONS

*: equal contribution, †: corresponding author, C: conference, P: preprint

[C1] CANVAS: A Benchmark for Vision–Language Models on Tool-Based User Interface Design

Daeheon Jeong*, Seoyeon Byun, Kihoon Son, Daehyun Kim, Juho Kim†
To appear in AAAI Conference on Artificial Intelligence (AAAI),

[P2] Compositional Stagewise Diffusion for Progressive Generation

Jaesang Yu, Seoyeon Byun, Taesoo Kim, Yoonju Lee, Yilun Du, Juho Kim†
Under review

[P1] Saccadic Variability in Patients with Parkinson’s Disease

Kyoungwon Baik*, Seoyeon Byun, Seoui Kwag, Hyunsoh Park, Yukang Kim, Tonghoon Woo, Sun-Uk Lee†, Chan-Nyoung Lee, Gerard J. Kim, Byung-Jo Kim, Ji-Soo Kim, Kun-Woo Park
Under review

RESEARCH EXPERIENCE

KIXLAB, KAIST <i>Research Intern (Advisor: Prof. Juho Kim)</i>	Jan 2025 – Present <i>Daejeon, South Korea</i>
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- [Project Page] Designed and implemented multi-turn vision-language interaction workflows for human-aligned generative UI systems, in collaboration with *Samsung Design Office* to support iterative UI reasoning and design feedback loops.
- [Project Page] Designed a large-scale heuristic UX evaluation framework using multimodal models, with *Samsung CX Insight Team*.
- [Project Page] [C1] Built a scalable evaluation pipeline for tool-based UI agents in web canvas environments, supporting multi-turn reasoning and preference-based metrics.
- [Project Page] [P2] Reformulated spatial grounding into stage-wise diffusion mechanisms to improve compositional text-to-image generation reliability.

Neurotology & Neuro-ophthalmology Lab, Korea University Anam Hospital

Researcher (PI: Prof. Sun-Uk Lee)

Apr 2025 – Present

Seoul, South Korea

- Engaged in advancing video head-impulse testing (vHIT) modeling for next-generation diagnostic tools and interfaces.
- Modeled biomarkers for bilateral vestibular etiology using conditional inference trees.
- [Project Page] [P1] Characterized oculomotor variability in Parkinson’s disease using time-series based saccadic movement.

Center for Artificial Intelligence, KIST

Research Intern (PI: with Prof. Donghoon Kang)

Summer 2024

Seoul, South Korea

- Explored multimodal alignment between pose-image-caption for compositional 2D pose estimation.

- Explored 3D reconstruction techniques for real-time VR experience design.
- Developed interactive 3D visualization tools and VR/XR interface prototypes.
- Contributed to a project on XR cybersickness mitigation and user-centered safety evaluation in immersive environments, leading to ongoing collaboration with the Neurotology Lab [P1].

HONORS & AWARDS

Top 100 Award, Google Solution Challenge	2024
Grand Prize, iNthon, Datathon Track	2024
<i>Korea University College of Informatics Datathon, Topic: Common Sense Reasoning</i>	
Sangah IT Scholarship Foundation	Spring 2024 – Fall 2025

Merit-based scholarship approximately US \$13,600

TEACHING

Human-Computer Interaction	Fall 2024
<i>Korea University COSE432 Teaching Assistant, Instructor: Gerard J. Kim</i>	

SERVICES AND LEADERSHIP

Academic Service	
<i>Reviewer, AAAI 2026.</i>	2025
Google Developer Group on Campus (GDGoC)	
<i>Organizer @ GDGoC Korea University</i>	<i>Jul 2024 – Jul 2025</i>
<ul style="list-style-type: none">· Oversaw operations for a community of 100+ student developers, leading strategic planning and partnership development.· Hosted 40+ technical events, including workshops, study programs, and speaker series.· Co-organized four international hackathons, expanding cross-country collaboration between Korea and Japan.	

<i>AI Core Engineer @ GDGoC Korea University</i>	Sep 2022 – Jun 2024
<ul style="list-style-type: none">· Awarded in the Google Solution Challenge for a Video-to-VR solution improving accessibility for mobility-impaired users.· Delivered a personalized diffusion-based profile service showcased at two major university events.	