Seil Kang

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Professional Summary

A Ph.D. Student in Computer Science with a domain of study in investigating the behavior and inner workings of large-scale multimodal transformers. My research focuses on interpretability-driven model improvement and alignment of large-scale multimodal transformers such as Large Vision-Language Models (LVLMs) and Diffusion Transformers (DiT).

Education

Yonsei University — Seoul, South Korea
Ph.D. Student in Computer Science — Mar. 2023 – Present

Yonsei University — Seoul, South Korea
B.S. in Chemical Engineering — Mar. 2020 – Mar. 2023

Publications (*: Equal Contribution)

Conference Publications

1. **Rare Text Semantics Were Always There in Your Diffusion Transformer** [paper]
   Seil Kang*, Woojung Han*, Dayun Ju, Seong Jae Hwang
   Neural Information Processing Systems (**NeurIPS**), 2025
2. **Your Large Vision-Language Model Only Needs A Few Attention Heads for Visual Grounding** [paper]
   Seil Kang, Jinyeong Kim, Junhyeok Kim, Seong Jae Hwang
   Conference on Computer Vision and Pattern Recognition (**CVPR**), 2025
   Selected as Highlight Paper (< 3%)
3. **See What You Are Told: Visual Attention Sink in Large Multimodal Models** [paper]
   Seil Kang*, Jinyeong Kim*, Junhyeok Kim, Seong Jae Hwang
   International Conference on Learning Representations (**ICLR**), 2025

Journal Publications

1. **Complementary branch fusing class and semantic knowledge for robust weakly supervised semantic segmentation** [paper]
   Woojung Han, Seil Kang, Kyobin Choo, Seong Jae Hwang
   Pattern Recognition (**PR**), 2025, IF: 7.5

Workshop Papers and Pre-prints

1. **Interpretable Motion-Attentive Maps: Spatio-Temporally Localizing Concepts in Video Diffusion Transformers** [paper]
   Youngjun Jun, Seil Kang, Woojung Han, Seong Jae Hwang
   Pre-print
2. **ViKey: Enhancing Temporal Understanding in Videos via Visual Prompting** [paper]
   Yeonkyung Lee, Dayun Ju, Youngmin Kim, Seil Kang, Seong Jae Hwang
   Pre-print
3. **Interpreting Attention Heads for Image-to-Text Information Flow in Large Vision-Language Models** [paper]
   Jinyeong Kim, Seil Kang, Jiwoo Park, Junhyeok Kim, Seong Jae Hwang
   NeurIPS 2025 Workshop on Mechanistic Interpretability
   Selected as Spotlight Paper (< 13%)
4. **Neuron-Level Approach for Multi-Hop Reasoning in Large Vision-Language Models** [paper]
   Seil Kang, Jinyeong Kim, Seong Jae Hwang
   Pre-print

5. **FALCON: Frequency Adjoint Link with CONtinuous Density Mask for Fast Single Image Dehazing** [paper]
   Donghyun Kim, Seil Kang, Seong Jae Hwang
   CVPR 2025 Workshop on Image Restoration and Enhancement
6. **WoLF: Wide-scope Large Language Model Framework for CXR Understanding** [paper]
   Seil Kang, Junhyeok Kim, Donghyun Kim, Seong Jae Hwang
   Pre-print

Experience

MICV Lab, Yonsei, College of Computing

Ph.D. Student Mar. 2023 – Present

- Developed novel methodologies to enhance Transformer-based multimodal models (*e.g.,* Large Vision-Language Models and Multi-Modal Diffusion Transformer)

Undergraduate Researcher Mar. 2022 – Mar. 2023

- Co-developed FALCON, a frequency-domain approach for image dehazing, resulting in a second-author publication at CVPRW 2025.
- Contributed to a complementary-branch framework for weakly supervised segmentation, improving model robustness and achieving a second-author publication in Pattern Recognition (IF: 7.5).

Awards

South Korea 2025 AI Graduate School Symposium Aug. 2025
2nd prize, hosted by South Korea's Ministry of Science and ICT

Scholarly Activities

Invited Speaker

- **Samsung Electronics** and **S-oil** Aug. 2024
  Delivered a series of technical lectures on Large Language Models, Transformers, and Advanced Machine Learning to engineering and data science teams.

Conference Reviewer

- (2026) ICLR, CVPR
- (2025) ICCV, ICML, AAAI, CVPR

Skills

Programming Languages:	Python, C++, C
Frameworks:	PyTorch, TensorFlow, MCP
Spoken Languages:	Korean, English