Sanghyeok Chu

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SNU CVLAB, LinkedIn, Google scholar

Research Interests

My research focuses on leveraging natural language to solve diverse vision tasks. I am particularly interested in advancing vision-language research by addressing limitations in current models, methodologies, and evaluation frameworks. During my internship at LG AI Research, I conducted research on scalable vision encoders using Mixture-of-Experts architectures, with a focus on expert specialization. More recently, my work has centered on memory-centric VideoLLMs designed for causal, low-latency streaming video understanding.

Publications

1. Jisoo Kim*, Jungbin Cho*, **Sanghyeok Chu**, Ananya Bal, Jinhyung Kim, Gunhee Lee, Sihaeng Lee, Seung Hwan Kim, Bohyung Han, Hyunmin Lee, Laszlo A. Jeni, Seungryong Kim, "Pri4R: Learning World Dynamics for Vision-Language-Action Models with Privileged 4D Representation". *Under review.*
2. **Sanghyeok Chu**, Pyunghwan Ahn, Gwangmo Song, Seung Hwan Kim, Honglak Lee, and Bohyung Han, "Enhancing Mixture-of-Experts Specialization via Cluster-Aware Upcycling". In *CVPR*, 2026.
3. Donghun Ryou*, Inju Ha*, **Sanghyeok Chu**, and Bohyung Han, "Beyond the Ground Truth: Enhanced Supervision for Image Restoration". In *CVPR*, 2026.
4. **Sanghyeok Chu**, Seonguk Seo, and Bohyung Han, "Fine-Grained Video Captioning through Scene Graph Consolidation". In *ICML*, 2025.
5. Mijeong Kim, **Sanghyeok Chu**, and Bohyung Han, "Beyond homography: nonparametric image alignment via graph convolutional networks". In *Machine Vision and Applications*, 2022.
6. Donghwan Jang, **Sanghyeok Chu**, Joonhyuk Kim, and Bohyung Han, "Pooling revisited: Your receptive field is suboptimal". In *CVPR*, 2022.
7. **Sanghyeok Chu**, Dongwan Kim, and Bohyung Han, "Learning debiased and disentangled representations for semantic segmentation". In *NeurIPS*, 2021.

Work Experience

LG AI Research, Vision Lab — Seoul, Korea
Research Scientist Intern — 2025.06 – 2026.05

- Research on integrating the Mixture-of-Experts architecture into vision encoders for next-generation foundation models (2025.06 – 2025.12).
- Research on VideoLLMs for Physical Agents (2026.01 – 2026.05).

Education

Seoul National University — Seoul, Korea
M.S. & Ph.D. integrated course in Electrical Engineering and Computer Science — 2019.09 – Current
Advisor: Prof. Bohyung Han

Yonsei University — Seoul, Korea
B.S. in Electrical and Electronic Engineering — 2012.03 – 2019.09

Awards

- **3rd Place, OmniLabel Challenge 2023 (Track C)**
  Awarded at the *1st OmniLabel Workshop on Infinite Label Spaces for Semantic Understanding via Natural Language*, at *CVPR*, 2023.