HyunWook CHOI

hyunwook@kaist.ac.kr ◇ GitHub ◇ LinkedIn

Research Interests

My research interests lie in computer vision and machine learning, with a focus on developing practical and efficient solutions for understanding and modeling the visual world. My current research focuses on the following topics:

- World Models
- Video, 4D Generation
- Auto-Regressive Video Generation

I am particularly interested in leveraging structural priors from 3D and 4D representations, as well as auto-regressive generation paradigms, to construct conditional world models that can effectively capture the real world we live in.

Education

Korea Advanced Institute of Science and Technology (KAIST)   Advisor: Seungryong Kim
M.S/Ph.D Integrated Student in Artificial Intelligence   Mar 2026-

Korea University
B.S in Cyber Defence (GPA: 4.33/4.5, **ranked 1st**)   Mar 2022-Feb 2026
- Full-funded Scholarship
- Vice President of Cyber Defence

Research Experience

Undergraduate Research Intern   Advisor: Seungryong Kim
Kim Jaechul Graduate School of AI at KAIST   July 2024–Feb 2026
- Research in World Models, Video Generation, and Segmentation

Publications

Seoul World Model: Grounding World Simulation Models in a Real-World Metropolis
Junyoung Seo*, **Hyunwook Choi***, Minkyung Kwon, Jinhyeok Choi, Siyoon Jin, Gayoung Lee, Junho Kim, JoungBin Lee, Geonmo Gu, Dongyoon Han, Sangdoo Yun, Seungryong Kim, Jin-Hwa Kim
Arxiv preprint [Project Page]

MATRIX: Mask Track Alignment for Interaction-Aware Video Generation
Siyoon Jin, Seongchan Kim, Dahyun Chung, Jaeho Lee, **Hyunwook Choi**, Jisu Nam, Jiyoung Kim, Seungryong Kim
ICLR 2026 [Project Page]

README: Robust Error-Aware Digital Signature via Deep Watermarking Model
Hyunwook Choi, Sangyun Won, Daeyeon Hwang, Junhyeok Choi
Arxiv preprint [Project Page]

S4M: Boosting Semi-Supervised Instance Segmentation with Segment Anything Model
Heeji Yoon[*], Heeseong Shin[*], Eunbeen Hong, **Hyunwook Choi**, Hansang Cho, Daun Jeong, Seungryong Kim
ICCV 2025 [Project Page]

Referring Video Object Segmentation via Language-aligned Track Selection
Seongchan Kim[*], Woojeong Jin[*], Sangbeom Lim[*], Heeji Yoon[*], **Hyunwook Choi**, Seungryong Kim
Arxiv preprint [Project Page]

Project Experience

Small Korean VLM : AIKU Project [Github]

Co-Lead   March 2025-June 2025

- Built a Korean-specific dataset and successfully trained the first under-1B parameter Korean VLM, outperforming other models of similar scale.

NAIS : Educational App Development [Google Play]

Product Manager   March 2024-Feb 2025

- Led the product management team for an educational app by renowned Earth Science instructor, Jin-Hwan Na. Expanded downloads from 1.5K to over 5K and increased daily active users (DAU) to exceed 1K.

Tanghulu Maker : Game Development [Github]

Solo Game Developer   Oct 2023–Dec 2023

- Independently designed and developed a game using Unity and C#, achieving over 3K downloads.

Service

AIKU: Deep Learning Society, Korea University

Delivered an internal lecture guiding Diffusion Models and Their Applications based on KAIST CS492(D).

BRAIN: AI Society, Cyber Defence, Korea University

Delivered an internal lecture introducing Transformer architectures and attention mechanisms to members.

Honors and Awards

- National Science & Technology Scholarship (Ranked 1st in Department)
- Dean's List, Korea University (Spring 2024, GPA: 4.5/4.5)
- Semester High Honors, Korea University (Spring 2022, Fall 2022, Spring 2023, Fall 2023, Spring 2024, Fall 2024)
- 2nd Prize, Best Project, Korea University Deep Learning Association (Spring 2025)

Technical Skills

- Programming: Python, C++
- Deep Learning: Pytorch
- Game Engine: Unity

International Experience

London, United Kingdom   Oct 2010–Dec 2014