

Shinseong Kim.

Ph.D. Student in Artificial Intelligence

Yonsei University
Visual Intelligence Lab
Seoul, Republic of Korea
github.com/GrainSack

RESEARCH PROFILE

I study generative models through the lens of mathematics, with a focus on diffusion, flow matching, and predictive representations for physically plausible video world models.

Diffusion & flow matching / Controllable generation / Consistent generation / Video world models / Physical understanding / Robot Planning (VLA, WAM)

EDUCATION

Ph.D. in Artificial Intelligence

2024 — Present

Yonsei University
Visual Intelligence Lab · Advisor: Prof. Youngjung Uh
Diffusion and flow-based generative models, identity-consistent generation, and predictive states for video world models.

M.S. in Mathematics

2021 — 2023

Yonsei University
Advisor: Prof. Sungchul Lee
Thesis: Neural Tangent Matrix Factorization Recommendation System. Studied harmonic analysis and oscillatory integrals; explored neural tangent kernels and graph-based machine learning.

B.S. in Mathematics

2012 — 2019

Chonnam National University
Gwangju, Republic of Korea

RESEARCH EXPERIENCE

Microsoft Research Asia

2026

Research Intern · Multimodal Reasoning Group · Beijing, China
Worked with Jianlong Fu on video world models and future-predictive representations. Developed an internal predictive state for video diffusion transformers to improve the physical plausibility of generated futures and enable early candidate selection.

Visual Intelligence Lab

Aug — Dec 2023

Research Intern · Yonsei University · Seoul, Republic of Korea

HONORS & AWARDS

Outstanding Reviewer
IEEE/CVF Conference on Computer Vision and Pattern Recognition
CVPR 2026

PUBLISHED PAPERS

- 01

Balanced Conic Rectified Flow

Kim Shin seong, Mingi Kwon, Jaeseok Jeong, Youngjung Uh

NeurIPS 2025

Balancing real-image inversion trajectories and generated pairs to reduce synthetic-data bias in rectified-flow training.

[Paper ↗](#) [arXiv ↗](#) [Project ↗](#) [Code ↗](#)
- 02

TCFG: Tangential Damping Classifier-free Guidance

Mingi Kwon*, **Shin seong Kim***, Jaeseok Jeong, Yi Ting Hsiao, Youngjung Uh

CVPR 2025

A geometric view of classifier-free guidance: damp misaligned tangential components to keep generation closer to its intended condition.

[Paper ↗](#) [arXiv ↗](#) [Project ↗](#) [Hugging Face ↗](#) [Diffusers ↗](#) [Library source ↗](#)

PREPRINTS & MANUSCRIPTS

- 03

World Models Need a Physical Registry: Learning Internal Predictive States for Physically Plausible World Models

Shinseong Kim, Jaeseok Jeong, Jianlong Fu, Youngjung Uh

arXiv 2026 · Submitted to ICLR 2027

An internal predictive state that evolves alongside video representations, bringing physically plausible futures into focus before denoising is complete.

[Paper ↗](#) [Project ↗](#) [Code ↗](#) [Hugging Face ↗](#)
- 04

When a Trigger Is Not a Key: Capability Leakage and Isolation in Personalized Diffusion Models

Shinseong Kim · Second author

Manuscript · Submitted to NDSS 2027

Research on trigger conditioning, capability leakage, and isolation in personalized diffusion models.
- 05

ASemConsist: Adaptive Semantic Feature Control for Training-Free Identity-Consistent Generation

Shin Seong Kim*, Minjung Shin*, Hyunin Cho, Youngjung Uh

arXiv preprint · 2025

Training-free semantic feature control that balances a consistent identity with the freedom of each individual scene.

[Paper ↗](#) [Project ↗](#) [Code ↗](#) [Hugging Face ↗](#)

* Equal contribution. Submission does not imply acceptance.

ACADEMIC SERVICE

Conference reviewer
CVPR · NeurIPS · AAAI · ICLR · ICML

LANGUAGES

Korean · Native
English · Fluent
Japanese · Beginner

Last updated October 29, 2026