Yoonki Cho

Postdoctoral Researcher, KAIST

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I work on representation learning and retrieval, with a focus on robustness, generalization, and efficient inference. My recent research explores universal multimodal embeddings for search across text, images, video, and visual documents.

Multimodal Representation Learning · Embedding Models · Retrieval & Search · Scalable Training · Efficient Inference

Research Experience

Postdoctoral Researcher, KAIST — Mar 2026 – present

Scalable Graphics, Vision, and Robotics Lab

- Developed HEME, a multimodal embedding model that uses the matching item as context during training and encodes each query independently at search time.
- Trained the 7B model on a mix of image, video, and document tasks. It scored 70.4 overall across 78 datasets on MMEB-V2.

Doctoral Researcher, KAIST — Mar 2021 – Feb 2026

Advisor: Sung-Eui Yoon

- Developed representation learning methods for robust retrieval in new domains (NeurIPS 2024) and under noisy supervision (CVPR 2022), both as first author.
- Co-developed methods to search a larger model's index with a lightweight query encoder (AAAI 2026) and to denoise image similarity graphs offline for re-ranking (ICIP 2025, Spotlight).
- Proposed and mentored a study on retrieval robustness to image corruptions (ICCV 2025).
- Co-developed a grounded video QA system that won the Google DeepMind Perception Test Challenge.

Publications & Preprints

Google Scholar · 500+ citations · 100+ GitHub stars on research code (Nov 2026)

Lead-authored

[1] **See the Answer, Learn to Embed: Learning Universal Multimodal Embeddings from Hindsight**
arXiv preprint, 2026 · **Yoonki Cho**, Youngju Na, Taegeun Yang, Jinhwan Seo, Sung-Eui Yoon

[2] **Towards Test-time Efficient Visual Place Recognition via Asymmetric Query Processing**
AAAI 2026 · Jaeyoon Kim*, **Yoonki Cho***, Sung-Eui Yoon (*equal contribution)

[3] **Generalizable Person Re-identification via Balancing Alignment and Uniformity**
NeurIPS 2024 · **Yoonki Cho**, Jaeyoon Kim, Woo Jae Kim, Junsik Jung, Sung-Eui Yoon

[4] **Part-based Pseudo Label Refinement for Unsupervised Person Re-identification**
CVPR 2022 · **Yoonki Cho**, Woo Jae Kim, Seunghoon Hong, Sung-Eui Yoon

Co-authored

[5] **Same Scene, Different Task: Skill Alignment for Compositional Generalization in VLAs**
arXiv preprint, 2026 · Taegeun Yang, Youngju Na, **Yoonki Cho**, Sung-Eui Yoon

[6] **EvBS: Event-guided Blur Synthesis for Domain-adaptive Motion Deblurring**
ACM Multimedia 2026 · Junsik Jung, Seokryun Choi, **Yoonki Cho**, Woo Jae Kim, Andrew Jeong, Sung-Eui Yoon

[7] **Class-Relational Approach for Visual Place Recognition under Extreme Appearance Changes**
IEEE Robotics and Automation Letters · 2026 · Jaeyoon Kim, **Yoonki Cho**, Sung-Eui Yoon

[8] **Towards Robustness of Person Search against Corruptions**
ICCV 2025 · Woojung Son, **Yoonki Cho**, Guoyuan An, Chanmi Lee, Sung-Eui Yoon

[9] **Enhancing Spatio-temporal Grounding in Multimodal Large Language Models**
ICCV 2025 Workshop · Jinhwan Seo, **Yoonki Cho**, Junhyug Noh, Sung-Eui Yoon

[10] **AegisRF: Adversarial Perturbations Guided with Sensitivity for Protecting Intellectual Property of Neural Radiance Fields**
BMVC 2025 · Woo Jae Kim, Kyu Beom Han, **Yoonki Cho**, Youngju Na, Junsik Jung, Sooel Son, Sung-Eui Yoon

[11] **Learning Event-guided Exposure-agnostic Video Frame Interpolation via Adaptive Feature Blending**
BMVC 2025 · Junsik Jung, **Yoonki Cho**, Woo Jae Kim, Lin Wang, Sung-Eui Yoon

[12] **Enhancing Visual Re-ranking through Denoising Nearest Neighbor Graph via Continuous CRF**
ICIP 2025 · Spotlight · Jaeyoon Kim, **Yoonki Cho**, Taeyoung Kim, Sung-Eui Yoon

[13] **Feature Separation and Recalibration for Adversarial Robustness**
CVPR 2023 · Highlight · Woo Jae Kim, **Yoonki Cho**, Junsik Jung, Sung-Eui Yoon

[14] **RCIK: Real-Time Collision-Free Inverse Kinematics Using a Collision-Cost Prediction Network**
IEEE Robotics and Automation Letters · 2022 · Mincheul Kang, **Yoonki Cho**, Sung-Eui Yoon

Education

Ph.D. in Computer Science, KAIST — Mar 2021 – Feb 2026
Thesis: **Robust Representation Learning and Efficient Inference for Visual Retrieval**

M.S. in Computer Science, KAIST — Mar 2019 – Feb 2021

B.S. in Computer Science, Korea University — Mar 2015 – Feb 2019

Selected Awards & Honors

Outstanding Ph.D. Thesis Award, KAIST School of Computing — 2026

Outstanding Reviewer, CVPR — 2026

1st Place (23 teams), Grounded VideoQA, Google DeepMind Perception Test Challenge — 2025

Industry Collaborations

NAVER LABS Main developer — 2022–2023
Developed a method to generate and restore textures for digital twins using differentiable rendering.

ISC, KAIST Project lead and main developer — 2021–2023
Developed person re-identification methods for changing surveillance conditions.

SK Telecom Main developer — 2019–2020
Developed methods to detect and match lines across images for multi-view registration.

Teaching & Service

Teaching assistant, Samsung Electronics AI Expert Course (Vision & Algorithm), 2023–2024.
Reviewer for CVPR, ICCV, ECCV, NeurIPS, AAAI, IEEE TNNLS and IJCV.