Moon Ye-Bin

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RESEARCH SUMMARY

Ph.D. in vision-language models & agent, POSTECH, advised by Prof. Tae-Hyun Oh · prev. Research Intern at Huawei Noah's Ark Lab, London. I build **controllable multimodal data** so that model behavior becomes **understandable and traceable** — from model improvement (**TRAP Isolation** @ submitted, **SYNAuG** @ PRL, **TextManiA** @ ICCV) to model evaluation (**TRAP** @ submitted, **VLM Eye Exam** @ TMLR, **BEAF** @ ECCV). I am also interested in deploying models as autonomous agents (**RetouchLLM** @ submitted, **GUI agents** @ submitted, **model discovery** @ NeurIPS).

EDUCATION

POSTECH — Pohang, South Korea
Ph.D. in Electrical Engineering · Advisor: Tae-Hyun Oh — Mar. 2022 – Aug. 2026 (expected)
Thesis: *Controllable Multi-modal Synthetic Data: Methods for Model Improvement and Evaluation*

POSTECH — Pohang, South Korea
M.S. in Electrical Engineering · Sports AIX Program · Advisor: Tae-Hyun Oh — Mar. 2020 – Feb. 2022
Thesis: *Data and Annotation Efficient Image Recognition and Segmentation*

Chung-Ang University — Seoul, South Korea
B.S. in Electrical and Electronics Engineering · Department Honors — Mar. 2016 – Feb. 2020

RESEARCH EXPERIENCE

Huawei Noah's Ark Lab — London, UK
Research Intern · Collaborate with Roy Miles, Ismail Elezi, Jiankang Deng — Jan. 2025 – Dec. 2025

- Developed **RetouchLLM**, a training-free agentic image retouching framework using VLMs as iterative code-based editors guided by a style-based selection score. Work spans code generation, visual critique, and convergence without task-specific training data, operating directly on high-resolution images.

SELECTED PUBLICATIONS

† equal contribution · Full list available on Google Scholar

First Author

Moon Ye-Bin, Nam Hyeon-Woo, Baek Seong-Eun, Yejin Yeo, Tae-Hyun Oh "TRAP: Benchmark for Task-completion and Resistance to Active Privacy-extraction." **Under Review**

Moon Ye-Bin, Roy Miles, Tae-Hyun Oh, Ismail Elezi, Jiankang Deng "RetouchLLM: Training-free Code-based Image Retouching with Vision Language Models." **Under Review** *(Huawei Noah's Ark Lab)*

Moon Ye-Bin†, Nam Hyeon-Woo†, Wonseok Choi, Tae-Hyun Oh "SYNAuG: Exploiting Synthetic Data for Data Imbalance Problems." **Pattern Recognition Letters 2025**

Moon Ye-Bin†, Nam Hyeon-Woo†, Wonseok Choi, Tae-Hyun Oh "BEAF: Observing BEfore-AFter Changes to Evaluate Hallucination in Vision-language Models." **ECCV 2024**

Moon Ye-Bin, Dongmin Choi, Yongjin Kwon, Junsik Kim, Tae-Hyun Oh "ENInst: Enhancing Weakly-supervised Low-shot Instance Segmentation." **Pattern Recognition 2024**

Moon Ye-Bin, Jisoo Kim, Hongyeob Kim, Kilho Son, Tae-Hyun Oh "TextManiA: Enriching Visual Feature by Text-driven Manifold Augmentation." **ICCV 2023**

Co-Author

Chengxin Liu, **Moon Ye-Bin**, Tae-Hyun Oh "Entropy-Aware GUI Grounding: From Failure Analysis to Improved Localization." **Under Review** *(Samsung DS)*

Kwon Byung-Ki, Sohwi Lim, Nam Hyeon-Woo, **Moon Ye-Bin**, Tae-Hyun Oh "Early Failure Detection and Intervention in Video Diffusion Models." **Under Review**

Nam Hyeon-Woo, **Moon Ye-Bin**, Sohwi Lim, Kwon Byung-Ki, Tae-Hyun Oh "Zero-shot Rankability: Revealing Latent Ordinal Structure in Multimodal Large Language Models via Language." **ICML 2026**

Lee Jung-Mok, Nam Hyeon-Woo, **Moon Ye-Bin**, Junhyun Nam, Tae-Hyun Oh "Automated Model Discovery via Multi-modal & Multi-step Pipeline." **NeurIPS 2025** *(SAIT)*

Nam Hyeon-Woo, **Moon Ye-Bin**, Wonseok Choi, Lee Hyun, Tae-Hyun Oh "VLM's Eye Examination: Instruct and Inspect Visual Competency of Vision Language Models." **TMLR 2025**

Wonseok Choi, Sohwi Lim, Nam Hyeon-Woo, **Moon Ye-Bin** et al. "Patch-wise Retrieval: A Bag of Practical Techniques for Instance-level Matching." **WACV 2026** *(Samsung Research)*

Jaehun Bang, **Moon Ye-Bin**, Kyungdon Joo, and Tae-Hyun Oh "Beyond the Highlights: Video Retrieval with Salient and Surrounding Contexts." **WACV 2026**

Nam Hyeon-Woo, **Moon Ye-Bin**, Tae-Hyun Oh "FedPara: Low-rank Hadamard Product Parameterization for Efficient Federated Learning." **ICLR 2022**

PATENTS

Visual Feature Augmentation Method and Apparatus 2024

- United States. US20250356623A1 (Application)
- Republic of Korea. KR20250166414A (Application)

Apparatus and Method for Classifying Instances of Novel Classes 2023

- United States. US20240273889A1 (Application)
- Republic of Korea. KR20240124787A (Application)

Method and Apparatus for Generating 3D HDR Radiance Fields

- United States. US20240212115A1 (Application)
- Republic of Korea. KR102742898B1 (Granted)

Method and Electronic Device for Recognizing Object Based on Mask Update 2022

- United States. US 12,602,904 B2 (Granted, Apr. 2026)
- Republic of Korea. KR20240079506A (Application)

Data Compression Method Based on Full-rank Reduced Parameterization and Data Processing Apparatus

- United States. US20230142985A1 (Application)
- Republic of Korea. KR102849124B1 (Granted)

Method and Apparatus for Training Artificial Intelligence Based on Episode Memory 2021

- United States. US 12,608,604 B2 (Granted, Apr. 2026)
- Republic of Korea. KR20230022629A (Application)

Image Search Method and Device Using Gradient-weighted Class Activation Map

- Republic of Korea. KR20220138577A (Application)

TECHNICAL SKILLS

Languages English (fluent), Korean (native)
Skills Python, MATLAB, PyTorch, HuggingFace, Git, SLURM, Weights & Biases
Research VLM/LLM training and evaluation, data construction, synthetic data, agentic systems, GUI agents

AWARDS & HONORS

Haedong Best Paper Award — Grand Prize ($2,000) IEIE SPC 2024
"Label Efficient Learning Methods for Computer Vision Applications"

Best Paper Award IPIU 2022
"Fully-convolution Network for Weakly-supervised Few-shot Instance Segmentation"

Best Paper Award IPIU 2021
"Self-supervised Few-shot Learning by Episodic Instance Discrimination"

Department Honors Scholarship Chung-Ang University, 2019

ACADEMIC SERVICE

Journal Reviewer: TPAMI (2025), IJCV (2025)
Conference Reviewer: CVPR (2023–2026), ICCV (2023, 2025), ECCV (2024, 2026), NeurIPS (2025), ICLR (2025), ICML (2026), WACV (2023, 2025), ACCV (2024), ACMMM (2025)

INDUSTRY PROJECTS

GUI Agent — Samsung DS 2026
Localized Image Retrieval — Samsung Research 2024
Time Series Regression with Large Language Models — Samsung SAIT 2024
Abnormal and Danger Signs Detection with LLMs — KRIT 2023–2024
Video Panoptic Segmentation and Depth Estimation — ETRI 2022
Data Augmentation for Domain Adaptive Object Detection — LG Display 2022
Weakly-supervised Low-shot Instance Segmentation — ETRI 2021
Self-supervised Few-shot Learning by Episodic Instance Discrimination — ETRI 2020