

Kim In Gon

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Research Interests

My research interests lie in Vision AI – particularly robot vision, vision-language models (VLM/LLM), and autonomous robot navigation – with a focus on making perception models work reliably inside real robots and edge devices.

Education

Kumoh National Institute of Technology

Mar. 2024 – Feb. 2026

M.S. in IT Convergence Engineering

- Advisor: Prof. Soo Young Shin (WENS Lab)
- GPA: 4.44/4.5
- Thesis: *LLM-Based Situational Awareness Navigation System*

Korea National University of Transportation

Mar. 2018 – Feb. 2024

B.S. in Electrical Engineering

- GPA: 3.18/4.5

Experience

Vision AI Researcher

Daejeon, Korea

K3I, Vision AI Lab

Mar. 2026 – Present

- Research and development of on-device Vision AI systems, from model design and evaluation to edge deployment.

Publications

SCOPUS Journals

1. **I. G. Kim**, S. Y. Shin, “Hybrid LLM Navigation System for Edge-Cloud Reasoning,” *The Journal of Korean Institute of Communications and Information Sciences (JKICS)*, vol. 51, no. 6, pp. 1175–1186, 2026.
2. **I. G. Kim**, S. Y. Shin, “A MobileViT-Based Detection System for Motorcycle Traffic Violations,” *The Journal of Korean Institute of Communications and Information Sciences (JKICS)*, vol. 50, no. 12, pp. 1822–1829, 2025.

Domestic Conferences

1. **I. G. Kim**, S. Y. Shin, “Dual-LLM Approach to Natural Language-Guided Autonomous Navigation,” *KICS Artificial Intelligence Conference*, pp. 65–66, 2025.
2. **I. G. Kim**, S. Y. Shin, “Meta-Learning-Based Writer Identification Using Vision Transformers with Limited Handwriting Samples,” *KICS Summer Conference*, pp. 582–583, 2025.
3. **I. G. Kim**, S. Y. Shin, “An LLM-Based Automated Strawberry Quality Assessment System for Smart Farming Environments,” *35th Joint Conference on Communications and Information (JCCI)*, 2025.
4. **I. G. Kim**, S. Y. Shin, “AI Monitoring System Based on VLM to Prevent Child Separation in Crowded Spaces,” *KICS Winter Conference*, pp. 790–791, 2025.
5. **I. G. Kim**, S. Y. Shin, “Natural Language-Based Robot Control Using Large Language Models,” *KICS Fall Conference*, pp. 53–54, 2024.
6. **I. G. Kim**, S. Y. Shin, “Detection of Two-Wheeled Vehicles Traffic Violations Using Computer Vision and Deep Learning,” *KICS Artificial Intelligence Conference*, pp. 417–418, 2024.
7. **I. G. Kim**, S. Y. Shin, “Intelligent Agricultural System Based on UAV and UGV Using Hyperspectral Cameras,” *KICS Summer Conference*, pp. 371–372, 2024.

8. J. H. Woo, **I. G. Kim**, S. Y. Shin, “MR Glass-Based Multi-Camera Streaming System,” *KICS Conference*, pp. 143–144, 2024.

Patents

Nine patent applications filed with the Korean Intellectual Property Office (KIPO). Applicant: Kumoh National Institute of Technology Industry-Academic Cooperation Foundation.

- Mobile Robot Navigation System and Method Using Hybrid LLM Routing Based on Natural-Language Commands and Environment Scores (KR 10-2025-0212453, filed Dec. 2025).
- Vision Transformer-Based Meta-Learning Method for Writer Identification Using a Small Number of Handwriting Samples (KR 10-2025-0134352, filed Sep. 2025).
- Joint Optimization System for a Multi-STAR-RIS-Based, Index-Modulation-Aided Rate-Splitting Multiple Access System (KR 10-2025-0080768, filed Jun. 2025).
- Hyperspectral Camera-Based Intelligent Agriculture System Using Unmanned Aerial and Ground Vehicles (KR 10-2025-0080134, filed Jun. 2025).
- Salon Chair Equipped with an Airflow Function to Improve User Comfort (KR 10-2025-0072817, filed Jun. 2025).
- Auto-Tracking System Optimizing Display Position According to User Position and Gaze (KR 10-2025-0035676, filed Mar. 2025).
- Advanced Bird and Wildlife Management System for Airport Safety Using Deep-Learning-Based UAV Swarms and Acoustic Deterrence (KR 10-2025-0008806, filed Jan. 2025).
- Logistics Data Management System Using Blockchain-Based Unmanned Aerial Vehicle Deployment (KR 10-2024-0164746, filed Nov. 2024).
- Guide System for Visually Impaired Runners (KR 10-2024-0047611, filed Apr. 2024).

Awards

3rd Place, Surveillance and Reconnaissance (Civilian Division)

May 2024

2nd ROK Second Operations Command Dronebot Combat Competition

Technologies

Languages: Python, C++

Vision AI: PyTorch, OpenCV, Vision Transformers, VLM/LLM integration (Ollama)

Robotics: ROS2, Nav2, SLAM, Gazebo, LiDAR and RGB-D sensor integration

Edge & Infrastructure: NVIDIA Jetson, CUDA, TensorRT, Docker, Linux