

Hyeonbeen Lee

M.S. Student @ Incheon National University

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Summary

My research broadly spans **machine learning**, **artificial intelligence**, and **computer vision**, with a focus on **multimodal AI systems** that combine visual perception, language understanding, and efficient neural networks. I work on vision-language models, crowd counting, edge-device perception, multilingual therapeutic dialogue, and GUI agents.

Education

Incheon National University

M.S. in Computer Science and Engineering

Expected: Feb. 2027 | Advisor: Prof. Jangho Lee

Research Topic: Multimodal Agents

Incheon, Republic of Korea

Sep. 2025 ~ Present

Incheon National University

B.S. in Computer Science and Engineering

Capstone: Haru-Chaeum, a personalized AI feedback diary mobile application

Korean title: 하루채움: 개인화된 AI 피드백 일기 모바일앱 | 🏆 Excellence Award, CSE Capstone Design Presentation

Incheon, Republic of Korea

Mar. 2022 ~ Aug. 2025

Publications

Journal Articles

[J3] Efficient and Robust Temporal Modeling for LGPR Odometry With Mamba

Minje Jeon, [Hyeonbeen Lee](#), and Jangho Lee | IEEE Access, 2026. [SCIE, JCR Q2, JIF: 4.2, 2025 JCR]

[J2] DiffuseDesigner: Sketch-Based Controllable Clothing Image Generation

Jangho Lee, Jinpyung Kim, and [Hyeonbeen Lee](#) | Fashion and Textiles, 12:26, 2025. [SCIE, JCR Q2, JIF: 3.7, 2025 JCR]

[J1] TinyCount: An Efficient Crowd Counting Network for Intelligent Surveillance

[Hyeonbeen Lee](#) and Jangho Lee | Journal of Real-Time Image Processing (JRTIP), 21:153, 2024. [SCIE, JCR Q2, JIF: 4.9, 2025 JCR]

International Conference Papers

[I1] Beyond Translation: Exploring LLM-based Multilingual Cognitive Behavioral Therapy

[Hyeonbeen Lee](#) and Jangho Lee | 2026 IEEE International Conference on Big Data and Smart Computing (BigComp), pp. 63-67, 2026.

Domestic Conference Papers

[D4] ATOM NPU의 비전 모델 구조별 추론 성능 비교 분석

[Hyeonbeen Lee](#), Seunghyuk Hong, Minseon Kang, Jangho Lee, and Moonju Park | 2025 한국소프트웨어종합학술대회 논문집, 2025.

[D3] 엣지 컴퓨팅을 위한 효율적인 SSM 기반 군중 집계

[Hyeonbeen Lee](#) and Jangho Lee | ACK 2025 학술발표대회 논문집, 2025.

[D2] 일기 기반 공감형 정신 관리 에이전트에 관한 연구

[Hyeonbeen Lee](#) and Jangho Lee | 2025 한국컴퓨터종합학술대회 논문집, 2025.

[D1] 지능형 감시카메라에 적합한 군중 집계 모델 경량화 방안

[Hyeonbeen Lee](#) and Jangho Lee | 2024 한국컴퓨터종합학술대회 논문집, 2024.

Manuscripts Under Review

[M6] TIVEA: Benchmarking Textual Instructions and Visual Exemplars for Multimodal GUI Agents

[Hyeonbeen Lee](#), Jangho Lee, and Sunho Lim | IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2027), under review.

[M5] GarmentSense: Benchmarking VLMs on Human-Grounded Garment Perception Beyond Conventional Attributes

[Hyeonbeen Lee](#), Joeeun Lee, and Jangho Lee | IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2027), under review.

[M4] Show or Shield: When Vision-Language Model Agents Choose Images, Do They Protect Visual Privacy?
Junho Yoo, [Hyeonbeen Lee](#), Hwangil Jeong, Jangho Lee, and Youhyun Shin | IEEE/CVF Winter Conference on Applications of
Computer Vision (WACV 2027), under review.

[M3] ResidentExpert-ATOM: Profile-Guided Single-NPU MoE LLM Serving via CPU-NPU Hybrid Execution
[Hyeonbeen Lee](#) and Jangho Lee | EACL 2027 Industry Track, under review.

[M2] Pooling or Isolation? Performance Release Gates for Dialogue and Long-Document Serving on an AOT-Compiled
NPU Stack
[Hyeonbeen Lee](#) and Jangho Lee | EACL 2027 Industry Track, under review.

[M1] iMambaCount: Efficient Crowd Counting with an Inception-inspired State Space Model
[Hyeonbeen Lee](#) and Jangho Lee | ICT Express, under review, 2026.

Research Experience

Visual Information Perception Laboratory (VIPLab)

Incheon National University | Undergraduate & M.S. Student Researcher

Incheon, Republic of Korea
Sep. 2023 ~ Present

- Advisor: Prof. Jangho Lee
- Conducted research on computer vision, multimodal agents, vision-language models, and lightweight neural networks.
- Benchmarked vision models on edge devices and AI accelerators.
- Worked on multimodal agent benchmarks involving textual instructions, visual exemplars, and visual privacy.

Selected Research Projects

Large-Model Serving on AI Accelerators

ETRI

Mar. 2026 ~ Present

- Developing metadata for large-model serving on AI semiconductor accelerators.

AI Music Retrieval

Kazer

Jul. 2026

- Investigated AI-based music retrieval technologies and prepared an internal technical report.

AI Semiconductor Monitoring

ETRI

Sep. 2025 ~ Nov. 2025

- Developed monitoring software for AI semiconductor accelerators.

Virtual Try-On Simulation

MPAPA

Mar. 2024 ~ Dec. 2024

- Conducted research on virtual clothing try-on simulation and contributed to the development of a virtual fitting system.

Teaching & Academic Service

Student AI Leader

AI/SW Education Center, Incheon National University

Incheon, Republic of Korea

Aug. 2026 ~ Present

- Support the adoption and practical use of generative AI tools among university students and staff.
- Coordinate regular meetings, student AI activities, and hackathon assignments.
- Facilitate communication and collaboration among student participants and faculty members.

Teaching Assistant

2026 **Data Mining**, Incheon National University
2025 **Computer Vision**, Incheon National University
2025 **Data Programming**, Incheon National University
2024 **Computer Vision**, Incheon National University
2024 **Data Programming**, Incheon National University

Spring
Fall
Spring
Fall
Spring

Awards & Honors

2026 Sungkyunkwan University Multimodal AI Bias Challenge

Sungkyunkwan University / DACON

🏆 2nd Place

2026

- Developed a multimodal image-text question-answering model designed to make accurate predictions while avoiding unsupported inferences from social context.

Computer Science and Engineering Capstone Design Presentation

Incheon National University

🏆 Excellence Award | Project: Haru-Chaeum

2025

Certifications

AI / Data AICE Associate, SQLD
IT 네트워크관리사 2급