

Kihyun Na

kevinna95@gmail.com | [Google Scholar](#) | [GitHub](#)

EDUCATION

- Handong Global University** Pohang, Republic of Korea
Ph.D. in Computer Science & Engineering Mar. 2021 – Feb. 2026
– **Advisor:** Prof. Injung Kim
– **Dissertation:** Garment Feature Learning in Diffusion-based Virtual Try-On: Conditioning Mechanisms and Explicit Guidance
- Ajou University** Suwon, Republic of Korea
M.S. in Information & Communication Engineering Mar. 2018 – Feb. 2021
– Dean’s Award for Academic Excellence
- Handong Global University** Pohang, Republic of Korea
B.S. in Computer Science & Engineering Mar. 2013 – Feb. 2017

CURRENT APPOINTMENT

- Handong Global University** Pohang, Republic of Korea
Postdoctoral Research Fellow, BK21 AI Education and Research Group Mar. 2026 – Feb. 2027
– Instructor, “Deep Learning for Image Processing” (Spring 2026)
– Mentoring undergraduate research teams on ML/CV challenges.

PUBLICATIONS

Journal & Conference Papers

- [1] **Kihyun Na**, Jinyoung Choi, Injung Kim. (2025). **Rethinking Garment Conditioning in Diffusion-based Virtual Try-On: Decouple, Don’t Denoise**. *under review at ECCV 2026*. [Code] [Model]
- [2] **Kihyun Na**, Gyuhwan Park, Injung Kim. (2025). **CharDiff-LP: A Diffusion Model with Character-Level Guidance for License Plate Image Restoration**. *International Conference on Pattern Recognition 2026*.
- [3] **Kihyun Na**, Junseok Oh, Youngkwan Cho*, Bumjin Kim*, Sungmin Cho*, Jinyoung Choi, Injung Kim. (2025). **MF-LPR²: Multi-Frame License Plate Image Restoration and Recognition using Optical Flow**. *Computer Vision and Image Understanding (CVIU)*. [Dataset]
- [4] Sungjae Kim, **Kihyun Na**, Jinyoung Choi, Injung Kim. (2025). **BERT-APC: A Reference-free Framework for Automatic Pitch Correction**. *IEEE Transactions on Audio, Speech, and Language Processing*.
- [5] Sungjae Kim, **Kihyun Na**, Choonghyeon Lee*, Jehyeon An*, Injung Kim. (2022). **U-Singer: Multi-speaker Singing Voice Synthesis with Emotion Control**. *arXiv Preprint*.
- [6] Injung Kim, **Kihyun Na**, et al. (2017). **T-Commerce Sale Prediction Using Deep Learning and Statistical Model**. *Journal of KIISE Vol.44 No.8. (Undergraduate Research)*.

Competition & Workshop

- [C.1] Sunhee Heo*, Hyangwoo Lee*, **Kihyun Na**. (2026). **ICPR 2026 LRLPR – Team CAP²**. *ICPR 2026 Competition on Low-Resolution License Plate Recognition (4th Place)*. [Competition]

(* indicates undergraduate collaborators/mentees)

RESEARCH PROJECTS

- Diffusion-based Virtual Try-On** Jul. 2023 – Feb. 2026
Independent Researcher, Supported by Gov. Funded GPU Grant
– **Core Contribution:** Identified that conditioning signal must be decoupled from the denoising process in spatial-concatenation VTON; proposed three design principles (no architectural modification) that unlock full fine-tuning, matching dual-UNet SOTA (Leffa) at half the parameters.
– Secured competitive GPU grants (NVIDIA H100/H200/B200) to support large-scale model training.
- Deep Learning-based License Plate Image Restoration and Recognition** Jul. 2023 – Dec. 2024
Project Lead, Funded by NC& Co. Ltd.
– **Core Contribution (MF-LPR²):** Proposed a multi-frame restoration framework utilizing optical flow with novel spatio-temporal filtering to handle severe motion blur and low resolution (Published in CVIU).
– Constructed the **Realistic LPR dataset** containing real-world dashcam sequences with pseudo-GTs to benchmark realistic restoration performance.
– **Follow-up Research (CharDiff-LP):** Developed a diffusion-based model with character-level guidance (CHARM) to enhance recognition accuracy in single-frame scenarios (accepted at ICPR 2026).

TEACHING

- Handong Global University** Pohang, Republic of Korea
Instructor Spring 2026
– Deep Learning for Image Processing [[Course Page](#)]
- Handong Global University** Pohang, Republic of Korea
Teaching Assistant Sep. 2015 – Dec. 2020
– Application of Deep Learning (2020 Fall, Graduate RA)
– Machine Learning (2016 Fall), Object Oriented Design Pattern (2016 Spring), C++ Programming (2015 Fall)

PATENTS

- [1] Junyeong Choi, Gyuhwan Park, Injung Kim, **Kihyun Na**. (2025). **Method for generating high-quality license plate image using image restoration model**. Republic of Korea Patent Application 10-2025-0060012. (Pending)
- [2] Injung Kim, **Kihyun Na**, et al. (2018). **Method of providing home shopping and T-commerce using big data**. Republic of Korea Patent KR20170018035A. (Issued)

GRANTS, HONORS, AND AWARDS

- Gyeongsangbuk-do Governor's Commendation (Outstanding Graduate Student)** Feb. 2026
Gyeongsangbuk-do Provincial Government – Selected as 1 of 3 across 16 universities in the province
- Advanced GPU Utilization Support Program (4 × NVIDIA B200 Servers)** Feb. 2026 – Mar. 2026
Ministry of Science and ICT & National IT Industry Promotion Agency
- High-Performance Computing Support Program (4 × NVIDIA H200)** Sep. 2025 – Dec. 2025
Ministry of Science and ICT & National IT Industry Promotion Agency
- AI Industrial Convergence Cluster Project (2 × NVIDIA H100)** Mar. 2024 – Dec. 2024
Ministry of Science and ICT & Artificial Intelligence Industry Cluster Agency
- Commander's Commendation for Software Proficiency (TOPCIT, Ranked 1st in Command)** Aug. 2018
Defense Communication Command, Ministry of National Defense
- KAIT President's Award (Big Contest 2015)** Nov. 2015
Korea Association for ICT Promotion

INDUSTRY PROJECTS

- Autonomous Valet Parking Support Algorithm** May. 2022 – Oct. 2024
Project Lead, Funded by Ministry of Trade, Industry and Resources
Optimized Detection & Segmentation models for NPU-based SoC environments via network architecture search and ONNX optimization.
- Video Processing AI for Autonomous Driving** Jul. 2023 – Dec. 2023
Project Lead, Funded by NC& Co. Ltd.
Automatic de-identification system for privacy protection in driving footage using semantic segmentation.
- Driver Monitoring System / Traffic Sign Recognition** May. 2022 – Feb. 2023
Project Lead, Funded by NC& Co. Ltd. / NEXTCHIP Co. Ltd.
Real-time drowsy driving prevention (Head Pose, Gaze); traffic sign detection with fine-tuned PP-YOLOE+.
- Smart Safety Countermeasure Platform** Oct. 2020 – Mar. 2021
Project Lead, Funded by RIST
Document-based safety regulation search system (Sentence-BERT + BM25F hybrid engine).
- Smart T-Commerce Service Development** Jun. 2016 – Feb. 2017
Project Lead, Funded by W Shopping
Sales prediction model linked with broadcast content for scheduling decision support.

SERVICE

- Republic of Korea Air Force** Republic of Korea
First Lieutenant, Information & Communications Officer Mar. 2017 – May. 2020
– Communication Platoon Leader and Personnel Section Chief; completed M.S. degree concurrently.

TECHNICAL SKILLS

Languages: Python, C++, Java, JavaScript, MATLAB
Tools: Docker, Git, Linux Administration

Frameworks: PyTorch, TensorFlow, Diffusers, OpenCV
Core Competencies: Generative Models, Computer Vision