

Chaeyun Lim 임채윤

Integrated M.S.–Ph.D. Student in Applied Artificial Intelligence

Myongji University, South Korea · DAN Lab.

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RESEARCH INTERESTS

Artificial Intelligence (AI) · Wireless Networking (Wi-Fi MAC) · Extended Reality (XR)

Wi-Fi MAC & Latency – Reinforcement-learning-based contention window control for IEEE 802.11bn to reduce tail latency under dynamic QoS traffic.

Distributed Learning over Ad Hoc Networks – Communication-efficient federated learning (Baton-FL, Chain FL) for UAV and wireless ad hoc environments.

Immersive 3D Media – ROI-aware point cloud downsampling and 3D detection for efficient transmission of XR content.

EDUCATION

2025.03 – Present **Integrated M.S.–Ph.D. in Applied Artificial Intelligence**
Myongji University · DAN Lab.

2019.03 – 2025.02 **B.E. in Information and Communication Engineering (ICE)** · Valedictorian
Myongji University

RESEARCH EXPERIENCE

2025.03 – Present **Integrated M.S.–Ph.D. Student**
Myongji University · DAN Lab.

2024.05 – 2025.02 **Undergraduate Researcher**
Myongji University · DAN Lab.

ACTIVITIES

XR·AI United Society (XREAL)

2025.10 – 2026.02 **XREAL 9th OB** · Dev Team

2025.03 – 2025.08 **XREAL 8th Leader** · Dev Team Lead

2024.09 – 2025.02 **XREAL 7th Junior** · Dev Team

PUBLICATIONS

Journal

[J1] Chaeyun Lim, Seunghyun Park, Hyunhee Park, “Adaptive Point Cloud Downsampling Based on 3-D ROI Detection for Improved Perceptual Quality,” *IEEE Access*, vol. 15, pp. 68039–68053, 2026. DOI: 10.1109/ACCESS.2026.3689278 **SCIE**

International Conference

[C1] Chaeyun Lim, Hyunhee Park, “Chain Federated Learning: Communication-Efficient Serverless FedAvg for Wireless Ad Hoc Networks,” The 29th International Conference on Network-Based Information Systems (NBIS 2026), Osaka, Japan, 2026. Oral presentation. DOI: 10.1007/978-3-032-38477-5_3 **SCOPUS** **BEST PAPER**

[C2] Chaeyun Lim, Yongho Kim, Hyunhee Park, “Adaptive ROI-Aware Point Cloud Downsampling for 3D Media Transmission,” International Conference on Broadband and Wireless Computing, Communication and Applications (BWCCA 2025), UAE (Online), 2025. Oral presentation. DOI: 10.1007/978-3-032-10347-5_6 **SCOPUS**

Domestic Conference (Korea)

- [D1] Chaeyun Lim, Hyunhee Park, “**Baton-FL: Distributed Federated Learning via Model Passing for UAV Ad Hoc Networks,**” KICS Summer Annual Conference 2026, Jeju, Korea, 2026. Poster presentation.
- [D2] Chaeyun Lim, Hyunhee Park, “**Multi-head DQN-Based Adaptive Contention Window Exponent Control for IEEE 802.11bn P95 Latency Reduction in Dynamic QoS Traffic Environments,**” Joint Conference on Communications and Information (JCCI 2026), Yeosu, Korea, 2026. Oral presentation.
- [D3] Chaeyun Lim, Hyunhee Park, “**Geometry-guided Multi-View Data Augmentation from a Single Image with Generative Completion,**” KICS Winter Annual Conference 2026, Yongpyeong, Korea, 2026. Oral presentation. **OUTSTANDING PAPER**
- [D4] Chaeyun Lim, Hyunhee Park, “**3D Object Detection based on Multi-Axis Plane Projection for ROI-Preserving Point Cloud Downsampling,**” Korea Artificial Intelligence Conference (KAIC 2025), Jeju, Korea, 2025. Oral presentation. **OUTSTANDING PAPER**
- [D5] Chaeyun Lim, Hyunhee Park, “**An Idea Proposal for Egocentric 3D Pose Estimation Using Wi-Fi CSI,**” Joint Conference on Communications and Information (JCCI 2025), Sokcho, Korea, 2025. Oral presentation.
- [D6] Chaeyun Lim, Hyunhee Park, “**CBAM-YOLO11pico: On Smartphones and VR/AR Devices Proposing an Ultra-lightweight Model for Real-Time Object Detection,**” KICS Winter Annual Conference 2025, Yongpyeong, Korea, 2025. Undergraduate poster presentation.
- [D7] Chaeyun Lim, Sohyeon Jang, Hyunhee Park, “**Development of MR-based AI Companion Contents for Utilizing XR-AI technology in Daily life,**” KICS Autumn Annual Conference 2024, Gyeongju, Korea, 2024. Undergraduate poster presentation.

KICS: Korean Institute of Communications and Information Sciences. Domestic conference papers are in Korean.

RESEARCH PROJECTS

Funded projects at DAN Lab. Projects are led by the lab's principal investigator unless marked PI.

- 2026.10 – 2028.09 **Joint Energy-QoE Optimization for Video Delivery in Satellite-UAV-6G Networks via Stochastic Modeling and Generative AI**
Korea–France Cooperation Foundation Program (PHC STAR – Partenariat Hubert Curien) · Joint research with IRISA / Université de Rennes
Role: Main researcher
- 2026.09 – 2027.08 **Meta-Reinforcement Learning for Adaptive Channel Access Optimization in Self-Healing Multi-AP Networks**
National Research Foundation of Korea (NRF) · Graduate Research Fellowship Program
Role: Principal Investigator · sole awardee of a competitive national research fellowship **PI**
- 2025.04 – 2029.03 **Development of Hybrid Inspection Equipment Incorporating Deep-Learning-Based Optical Character Recognition (OCR) and Chipping Detection**
Korea Technology and Information Promotion Agency for SMEs (TIPA) · SME Technology Innovation Development Program (Export-Oriented) · Joint research institution
Role: Leading research and experiments
- 2025.04 – 2025.10 **Development of an Embedded-AI Virtual Keypad for Small Edge Devices**
Industry-commissioned research project · Innopiatech Co., Ltd.
Role: Main researcher for the year · research, development, experiments and final report
- 2024.08 – 2027.12 **Development of a Vision Recognition Technology SDK Based on Domestic AI Semiconductors**
Ministry of Trade, Industry and Energy (MOTIE) / KEIT · Materials & Components Technology Development Program (Heterogeneous Technology Convergence) · Joint research institution
Role: Leading research, experiments and report writing (since 2025.03)
- 2022.03 – 2027.02 **AI-MAC Protocol on Distributed Machine Learning for Intelligent Flying Base Stations**
National Research Foundation of Korea (NRF) · Basic Science Research Program (Mid-Career Researcher)
Role: Research and paper writing (since 2025.03)

AWARDS

2026.09	Best Paper Award , NBiS 2026 (The 29th International Conference on Network-Based Information Systems)
2026.07	Excellence Award , Gyeonggi RISE G7 (AI) Industry-Coupled PBL (IC-PBL+) Competition
2026.02	Outstanding Paper Award (Haedong Award) , Korean Institute of Communications and Information Sciences (KICS)
2025.09	Outstanding Paper Award , Korea Artificial Intelligence Conference (KAIC 2025)
2025.02	Valedictorian (Top of Graduating Class), Dept. of Information and Communication Engineering, Myongji University
2024.10	Encouragement Award , XR Developer Challenge (Metaverse Developer Competition)

SCHOLARSHIPS

2026.06	Merit Scholarship for Master's Students in Science & Engineering , Korea Student Aid Foundation (KOSAF)
2023.06	National Science & Technology Scholarship , Korea Student Aid Foundation (KOSAF)

CERTIFICATIONS

2024.06	Engineer Information Processing (Korean National Certification)
2024.03	Pilot of an Ultra Light Vehicle (Unmanned Multicopter, 1st)