Sumin Lee

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Research interests: Gaussian splatting & 3D scene representation, BEV perception, driving world models, and end-to-end autonomous driving.

EDUCATION

Hanyang University, M.S. in Automotive Engineering · GPA 4.33 / 4.5 — Mar 2025 – Feb 2027 (expected)

- Intelligent Robotics & Computer Vision (IRCV) Lab, advised by Prof. Soonmin Hwang.

Hanyang University, B.S. in Automotive Engineering · GPA 4.03 / 4.5 — Mar 2022 – Feb 2025

Inha University, Naval Architecture & Ocean Engineering → Mechanical Eng. (transferred) — Mar 2019 – Feb 2022

PUBLICATIONS

- **ReSMap: Recasting Satellite Priors for Robust and Accurate Online HD Map Construction** — **NeurIPS 2026**
  Kyungmin Kim*, **Sumin Lee***, Sungoh Jeong, Dohyun Lim, Seonghyun Park, Soonmin Hwang (*equal contribution)
- **3D Gaussian Splatting for Autonomous Driving** — ICLR 2027 · under review
  First author (title withheld during double-blind review)

IN PROGRESS

- **Latent World Model for Autonomous Driving** — targeting CVPR 2027
- **Dataset for Lane Topology** — targeting CVPR 2027
- **BEV Perception leveraging Gaussian Splatting** — targeting CVPR 2027
- **Zero-Shot Pseudo HD Map Generation from Raw Driving Logs** — targeting IEEE RA-L

RESEARCH EXPERIENCE

Graduate Researcher, *IRCV Lab, Hanyang University* — Mar 2025 – Present

- Leading research across diverse topics in vision-centric autonomous driving, with a particular interest in Gaussian splatting, BEV perception, and world models.

Undergraduate Researcher, *IRCV Lab, Hanyang University* — Sep 2023 – Feb 2025

- Progressed from path planning to camera–LiDAR multi-sensor perception, then to vision-centric end-to-end planning for autonomous driving.

SELECTED PROJECTS

Swin-Trajectory · **3rd place**, Waymo Open Dataset Challenge (End-to-End Driving), CVPR 2025 — Jun 2025

- Built a lightweight end-to-end planner on a Swin-Transformer backbone, predicting future waypoints from a **single front-facing camera** and ego-motion history (IRCV Lab × RideFlux team entry).
- Led the training pipeline and ablation studies for the team's final leaderboard submission.
- Achieved 14 ms/frame inference on a single RTX 4090, the top lightweight MLP-based entry (RFS 7.543).

Autonomous Valet Parking System · **Top 3 / 30 & Solo Award**, Capstone Design — 2024

- Built the full perception → planning → control stack solo in simulation: semantic segmentation, RGB-D calibration, and adaptive pure-pursuit control.

TECHNICAL SKILLS

Languages: Python, C++, CUDA, C · **Frameworks:** PyTorch, ROS, OpenCV, Open3D · **Systems:** Linux, Docker, CMake, Git

WRITING & COMMUNITY

Research blog (sumin1ee.github.io) with in-depth paper reviews on BEV perception, lane topology reasoning, and Gaussian splatting, plus a curated reading list of 120+ papers on autonomous driving and 3D scene representation.