

# DAEIL HAN

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## SUMMARY

I am a Master's student at Seoul National University of Science and Technology (SEOULTECH), focusing on end-to-end planning for autonomous driving. My research addresses future prediction of vehicle occupancy and motion flow in bird's-eye view (BEV), and enhances camera-only models via knowledge distillation from LiDAR-camera fusion. I have experience working across the perception-to-planning pipeline, including model development, evaluation, and simulation-based validation.

## SKILLS

### Languages:

Python, C++, C

### Frameworks & Tools:

PyTorch, TensorFlow, ROS, Git, Docker

### Certifications:

TOEIC 900

## EDUCATION

Sep. 2024 – Present	<b>Master of Applied Artificial Intelligence</b> Seoul National University of Science and Technology - Expected graduation: Feb. 2026	Seoul, Korea
Mar. 2021 – Aug. 2024	<b>Bachelor of Applied Artificial Intelligence, Computer Science and Engineering</b> Seoul National University of Science and Technology GPA: 4.13 / 4.50	Seoul, Korea

## EXPERIENCE

Sep. 2023 – Present	<b>Research Assistant</b> <b>Computer Vision Laboratory, SEOULTECH</b>
<ul style="list-style-type: none"><li>• <b>Cross Modality Knowledge Distillation for Autonomous Driving:</b> Designing a unified cross-modal distillation framework to improve camera-based 3D object detection by transferring knowledge from a LiDAR-based teacher. The method introduces attention-guided orthogonal alignment and cross-head response distillation to align BEV features and enforce consistency across modalities.</li><li>• <b>Camera-based End-to-End Autonomous Driving:</b> Building a closed-loop vision-based autonomous driving framework that predicts control commands (Accel, Brake, Steer) from raw images. The system integrates a pretrained model with a nuScenes-style dataset, ROS communication, and the MORAI Simulator for real-time evaluation.</li><li>• <b>Machine Learning Force Fields:</b> Developing a force field model to predict total energy, per-atom forces, and predictive uncertainty from atomic point cloud data. The system is evaluated using a composite metric combining energy-force accuracy and OOD detection performance for active learning-based molecular simulation.</li><li>• <b>Occupancy and Flow Prediction:</b> Designing a spatiotemporal BEV-based network to predict future occupancy and motion flow in autonomous driving scenarios. To improve temporal alignment and spatial accuracy, I introduced a cost aggregation mechanism using cosine similarity and transformer attention, combined with a temporal MetaFormer encoder and multi-scale feature fusion.</li></ul>	

## AWARDS

Mar. 2025	<b>2025 Hyundai Motor Group Autonomous Driving Challenge</b> <b>Hyundai Motor Group</b>
<ul style="list-style-type: none"><li>• Building a closed-loop autonomous driving framework based on an end-to-end model, capable of predicting Accel, Brake, and Steer commands from raw images.</li><li>• Reconstructing the training pipeline on a nuScenes-style dataset, integrating the model with the MORAI Simulator via ROS for real-time evaluation.</li><li>• Responsible for system integration and model engineering excluding control and data generation modules.</li><li>• <b>5th Place</b></li></ul>	

Oct. 2024	<b>2024 Samsung AI Challenge: Machine Learning Force Fields</b>	SAIT
	<ul style="list-style-type: none"> <li>Developing a machine learning force field (MLFF) model to approximate quantum-level simulations by predicting total energy, per-atom forces, and predictive uncertainty from atomic structures.</li> <li>Evaluated on a proprietary semiconductor dataset using a composite metric combining energy-force RMSE and OOD AUROC.</li> <li><a href="#">2nd Place</a></li> </ul>	
Jun. 2024	<b>2024 Waymo Open Dataset Challenge – Occupancy and Flow Prediction</b>	Waymo
	<ul style="list-style-type: none"> <li>Predicting dense BEV occupancy and motion flow for all road agents using 1-second observation from the Waymo Open Motion Dataset.</li> <li>Submitted a hierarchical spatiotemporal model featuring temporal MetaFormer encoding and autoregressive decoding.</li> <li><a href="#">2nd Place</a></li> </ul>	
Dec. 2023	<b>SEOULTECH Capstone Design Expo – Department of Applied AI</b>	SEOULTECH
	<ul style="list-style-type: none"> <li>Designing a mobile application that recognizes animal species from user-taken photos, builds a personalized wildlife encyclopedia, and enables user interaction through community features.</li> <li>Responsible for frontend development and application architecture, including feature design, user flow, and project coordination.</li> <li><a href="#">1st Place</a></li> </ul>	

## PUBLICATIONS

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### International Conference

- Gaeun Kim<sup>\*</sup>, **Daeil Han<sup>\*</sup>**, Yeong Jun Koh, and Hanul Kim. "DualDistill: A Unified Knowledge Distillation Framework with Cross-Modal Feature Alignment for Camera-Based 3D Object Detection." in ICCV, submitted.

### International Journal

- Gaeun Kim<sup>\*</sup>, **Daeil Han<sup>\*</sup>**, Yeong Jun Koh, and Hanul Kim. "DualDistill: A Unified Knowledge Distillation Framework with Cross-Modal Feature Alignment for Camera-Based End-to-End Autonomous Driving." IEEE TPAMI, in writing.
- Daeil Han<sup>\*</sup>**, Gaeun Kim<sup>\*</sup>, Yeong Jun Koh, and Hanul Kim. "Spatiotemporal Occupancy and Flow Prediction with ConvGRU and Similarity Alignment." IEEE Access, in writing.

### Domestic Conference

- Yerang Lee, Minki Jeong, **Daeil Han**, and Beom-Seok Oh. "A Hierarchy Loss Function for Animal Image Classification Performance Enhancement." 2024 대한전자공학회 학술대회, 제주.
- Minki Jeong, Yerang Lee, **Daeil Han**, and Beom-Seok Oh. "Focus and Weave It: SR-GNN Lightweight for Mobile Vision Applications." 2024 대한전자공학회 학술대회, 제주.